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From the Imaginary Money to Metal Standards

The Italian contribution to monetary and financial thought in the 18th century

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Introduction

The subject of this study is “imaginary money”, a feature of the ancient monetary system, i.e. from Charlemagne to Napoleon, in which the unit of account was separate from the means of payment, so that it was called “imaginary” because it could not be physically handled.[1] Imaginary money formed the pillar of monetary policy in the *Ancien Régime* and enabled the ruler to control the commodity money system to make it flexible and adaptable. Two points were particularly critical: firstly, the change in value of the precious metals (i.e. gold, silver, copper) used for minting coins, and secondly, the rigidity of the money supply. As for the former, imaginary money allowed for an adjustment of both the face value of the coins and the metal content to rebalance the value of the coins and prevent Gresham's Law from displacing the undervalued metal, and as for the latter, it allowed for an increase in the money supply. In particular, there could be a “money enhancement” or “money augmentation” if the face value of the coin was increased by law, or a “money diminution” if it was decreased. On the other hand, the metal content of the coin could be changed at the mint, thereby “debasing” the coin (i.e. reducing its intrinsic value) or “reinforcing” it.

However, imaginary money was neutralised with the introduction of the gold standard in England and finally abolished with the issue of the French franc in 1803. Both were metal standards, the first being based on gold (monometallism) and the second on silver and gold (bimetallism). In fact, silver was originally introduced as the standard in England with the Great Recoinage of 1696, but was then supplanted by gold because the former was undervalued compared to the latter and flew away, so that the latter became the standard in 1717. The neutralisation of imaginary money advocated by John Locke, i.e. the immutability of the standard, prevented the rebalancing between gold and silver demanded by many observers, such as Isaac Newton. On the other hand, the monometallic framework guaranteed the system against further Gresham shocks, but also made the monetary system susceptible to deflationary tensions. The latter could be observed immediately after the Great Recoinage, but also when the gold standard evolved into an international system and overcame the bimetallic standard that had emerged in France. As Robert Mundell wrote, the causes of the Great Depression and even the Second World War can be seen in the insistence on the uncritical maintenance (or reintroduction) of the gold standard:

> After a great war, in which inflation has occurred in the monetary leader and gold has become correspondingly undervalued, a return to the gold standard is only consistent with price stability if the price of gold is increased. Failing that possibility,

[1] Imaginary money was usually expressed in pounds (L.), shillings (s.) and pennies (d.), i.e. 1 L. = 20 s., 1 s. = 12 d.. See Appendix 1 for the details.

> countries would have fared better had they heeded Keynes' advice to sacrifice the benefits of fixed exchange rates under the gold standard and instead stabilise commodity prices rather than the price of gold. | Had the price of gold been raised in the late 1920's, or, alternatively, had the major central banks pursued policies of price stability instead of adhering to the gold standard, there would have been no Great Depression, no Nazi revolution, and no World War II.[2]

This claim is quite strong, but it illustrates the severe constraints, sometimes referred to as the "golden fetters" or "golden straitjacket", of the gold standard. Mundell, on the other hand, claims that it was not the gold standard but its mismanagement that caused the tragedy. This is not the place to analyse these facts historically, but it can be said that gold devaluation which Mundell refers to looks like a violation of the "sanctity" of the standard that originally accompanied its introduction according to Lockean principles. The debate thus becomes rather ideological and concerns the same essence of money. It sees two traditionally opposing positions, "metallism" on the one hand and "chartalism" on the other, with the gold standard being the model for the former and Keynes' call for insulation in the pursuit of national economic goals being the counter-movement for the latter.

However, it seems that imaginary money could provide the necessary flexibility to deal with shocks in the economy. The main question of this investigation is therefore why imaginary money was discarded in favour of a rigid metal standard? Was this done for ideological, political or economic reasons? To answer these questions, I first examined the literature on imaginary money, which began in the first half of the 20th century with Marc Bloch in France and Luigi Einaudi in Italy,[3] and then the literature on the Great Recoinage to discover a great debate on money over the centuries, culminating at the end of the 17th century and in the 18th century. Schumpeter pointed in particular to the importance of Italian scholars at this time.[4] As Franco Venturi duly reports, in the middle of the 18th century, Italy was hit by a lively debate on money, which took place mainly in Milan and Naples, but actually interested the whole peninsula.[5] The economic writings of John Locke were translated by Pagnini and Tavanti in Florence, and a collection of monetary writings by Argelati was published in Milan, including Bernardo Davanzati's famous lecture on money.[6] Pompeo Neri and Gianrinaldo Carli published their works in Milan and Ferdinando Galiani, after Carlo

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[2] Mundell R. A., *A Reconsideration of the Twentieth Century*, Prize lecture, December 8, 1999, https://www.nobelprize.org/prizes/economic-sciences/1999/mundell/lecture/, p. 230.

[3] See Bloch M., "Esquisse d'une histoire monétaire de l'Europe", in *Cahiers des Annales*, 9, Paris, Colin, 1954; Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", *Rivista di storia economica*, Year 1 N.1., 1936.

[4] See Schumpeter J. A., *History of Economic Analysis* (1954), Taylor Francis, 2006.

[5] See Venturi F., *Settecento riformatore, Da Muratori a Beccaria*, pp. 443-522, Einaudi, 1969.

[6] See Pagnini G. F., Tavanti A., *Ragionamenti sopra la moneta, l'interesse del denaro, le finanze e il commercio, scritti e pubblicati in diverse occasioni dal signor Giovanni Locke, tradotti la prima volta dall'inglese con varie annotazioni*, Florence, Andrea Bonducci, 1751; Argelati F., *De Monetis Italiae variorum illustrium virorum*, Milano, 1750-1759.

Antonio Broggia, published a book in Naples.[7] The debate then developed in Milan with the contribution of Pietro Verri and Cesare Beccaria.[8] I therefore attempt to reconstruct the different levels of the debate on monetary stabilisation. On the one hand, the "international debate" (i.e. the ideas that circulated across borders), which began in England at the end of the 17th century and shifted to France in the first half of the 18th century; on the other hand, the "national debate" (i.e. the Italian one, even if Italy was not yet a state, but it was addressed as a nation, e.g. by Carli, and it actually was due to the common language and history), which mainly consisted of the debates in the Duchy of Milan and in the Kingdom of Naples.

Before I go into the debate among contemporaries, I would like to discuss some relevant positions in the literature. Firstly, a historiographical question must be considered. According to Carlo Maria Cipolla, in the 17th and 18th centuries, the complementarity between the different types of currencies that characterised the Middle Ages and that had been well explained by Fernand Braudel, i.e. the duality of the market in the two levels of the international market and the wholesale market on the one hand, where "noble money" (i.e. gold and silver coins) circulated, and the retail market, where "low money" (i.e. copper and alloy coins) circulated, was no longer in force.[9] According to Cipolla, from this perspective, the entire monetary history of these two centuries is nothing more than a chain of failures to integrate low money (or "small money") with noble money, the solution being found only in England in 1823, when the "standard rule" for issuing divisional money was found (i.e. a limited circulation of convertible alloy coins). This approach contrasts with that of complementarity, which again still makes sense in the 18th century, when low money is not pure division money, but the money used both in the retail market and in the labour market. Instead of integrating the upper and lower levels of the monetary system, the intention was to keep them separate, each money for its own purpose, with different currencies that were not convertible between them, as was the case with low money and noble money, but also with the *ducato di banco* (i.e. bank money) in Venice and Genoa, which was used to settle bills of exchange and pay taxes. Of course, a balance between the different circuits was necessary, and the agio that formed in the exchange rate between the

[7] See Carli G. R., "Dell'origine e del commercio delle monete", in Custodi P., SCIEP, parte moderna, vol. 13, 1804 (1751); Neri P., "Osservazioni sopra il prezzo legale delle monete", in Custodi, SCIEP, parte antica, vol. 6, 1804 (1751); Broggia C. A., "Trattato delle monete", in "Trattato de' tributi, delle monete, e del governo politico della sanità", in Custodi, SCIEP, parte antica, voll. 4-5, 1804 (1743); Galiani F., *Della moneta*, Feltrinelli, 1963 (1751).

[8] See Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762*, Napoli, nella stamperia di Giovanni Gravier, 1770 (1762); Verri P., "Dialogo sul disordine delle monete", in Custodi P., SCIEP, parte moderna, vol. 16, 1804 (1762).

[9] See Cipolla C. M., *Moneta e civiltà mediterranea*, Neri Pozza Editore, 1957 and Sargent T. J., Velde F. R., *The big problem of small change*, Princeton University Press, 2002. For complementary money see Braudel F., *Afterthoughts on material civilization and capitalism*, Johns Hopkins University Press, Baltimore, 1979; Fantacci L., "The dual currency system of Renaissance Europe", in *Financial History Review* 15.1, pp. 55-72, 2008; Amato M., Fantacci L., "Complementary currency", in *Handbook of the History of Money and Currency*, pp. 501-522, ed. Battilossi S., Cassis Y., Yago K., Springer, 2020.

complementary currencies was, on the one hand, an indicator of imbalance and, on the other hand, an obstacle that prevented the outflow of noble money according to Gresham's law.[10]

The regulation of complementary currencies, such as low and noble money, and especially bank money in Genoa, Venice and Amsterdam, centred on imaginary money, which acted as the linchpin of the system, and the agio was managed in Amsterdam and Venice to control the money supply.[11] Naples, for example, was an exception because the unit of account was actual money, but we will see that even in such a framework a monetary policy was possible that brought about a devaluation of debt, an increase in the means of payment and a wealth redistribution.

In fact, according to Marcello de Cecco, the redistribution of wealth ("distributive justice") was one of the main functions of imaginary money. In his work on the Latin Monetary Union,[12] he claims that the bimetallic system that developed in France and its satellite states before all international soil was given over to the gold standard preserved some features of the imaginary money system, since the Banque de France was able to manage the money in such a way as to resist market forces, i.e. to avoid a devaluation of silver that would have harmed the nations that issued the bulk of silver coins, such as Italy. This view contrasts with that of Einaudi, who interpreted imaginary money as an instrument for adjusting the value of money to market value (i.e. "commutative justice"). Einaudi relies mainly on Beccaria, who envisaged a "minister of the tariff" to adjust the legal rate of coins to the market value of the metal content, and on Galiani to design a flexible tariff (*voce*), i.e. a tariff that can be overridden by the contracting party, so that any market deviation could be immediately recognised by the minister, who could adjust the tariff.[13] Einaudi, however, compared the policy of money enhancement theorised by Galiani to a modern "devaluation", thinking of the injection of paper money into the economy and the resulting inflation, and therefore emphasised the mature Galiani's doubts about this policy.[14] Whatever Galiani's doubts were (which we will try to fathom), the ancient policy of money enhancement was something different from modern devaluation, as Marc Bloch explains by

[10] See for example Rostagno M. V., "The Ancien Régime and the classics", in *Monetary standards and exchange rates*, Marcuzzo M. C., Officer L. H., Rosselli A., Routledge, 1997.

[11] See Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", in *Credito, banche e investimenti, secoli XIII - XX*, Istituto F. Datini, Atti della quarta settimana di studio, 14-21 aprile 1972, Firenze, 1985; Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," in *Financial History Review*, 7, 2000.

[12] De Cecco M., "The Latin Monetary Union revisited once again", in *From the Athenian Tetradrachm to the Euro*, ed. P.L. Cottrell, G. Notaras, G. Tortella, Routledge, 2018 (2007).

[13] See Quadrio Curzio A., Scazzieri R., eds., *Sul disordine delle monete a Milano nel Settecento*, Electa, 1986; Quadrio Curzio A., ed., *Alle origini del pensiero economico in Italia*, 2. Economia e istituzioni. Il paradigma lombardo tra i secoli XVIII e XIX, Il Mulino, 1996.

[14] See Einaudi L., "Galiani economista", in *Saggi bibliografici e storici intorno alle dottrine economiche*, Edizioni di Storia e Letteratura, 1953 (1944); Galiani F., "Dialogues sur le commerce des bleds", in Custodi P., SCIEP, parte moderna, vol. VI, 1804 (1770).

referring to a "gold exchange standard" system on the one hand and the imaginary money system on the other:

> Let us assume that the amount of gold equivalent to one franc is officially devalued: If, before the devaluation, I promised to pay 1000 francs and kept 10 notes of 100 francs in my drawer to do so, it is these 10 notes that I still have to give to my creditor; [...] Let us imagine instead that, as a subject of the Great King in 1680, I incurred a debt of 506 *livres*, due at the end of 1686. Having earned some money at the beginning of 1686, I set aside 46 louis d'or in a fine linen bag, which will serve to pay my creditor: for the louis is then worth 11 *livres*. On the 26th of July, a decree was passed to the effect that each of these louis is now worth 11 *livres* and 10 *sous*, i.e. 11 *livres* and a half. I now have to keep 44 louis to pay off my debt (44 times 11.5 is actually 506). I can use the remaining 2 louis as I wish. In other words, my means of payment have suddenly increased.[15]

Then the monetary "mutations", as Bloch called them, were necessary to increase liquidity in the economy and free it from the grip of deflation, as was Keynes' concern, which we saw above. On the contrary, modern devaluation, whether in a gold exchange standard system in terms of gold or in a "fiat money" system in terms of purchasing power, is a slower process, as Bloch claims, and one can add that it follows a reverse process, the money supply is increased first and devaluation follows.

This study is divided into four chapters and a conclusion. The first chapter is introductory and first examines imaginary money as an institution, then examines the international debate on the monetary and financial innovations that took place in the 17th and 18th centuries. As we have already said, imaginary money is a unit of account that is regulated independently of actual money, which makes possible monetary manoeuvers. Another important function of imaginary money, which allows the extrinsic value (i.e. face or nominal value) of the coin to be set higher than its intrinsic value (i.e. metal content), is the consistent realisation of seigniorage in the mint. If the coins are issued at a higher value (i.e. "mint equivalent" [ME]) than the "mint price" (MP) of the precious metal, the difference is retained by the mint in precious metal, so that the seigniorage is defined as ME - MP.[16]

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[15] Bloch M., "Esquisse d'une histoire monétaire de l'Europe", in *Cahiers des Annales*, 9, Paris, Colin, 1954, p. 64 (editor's translation): *"Supposons que la quantité d'or répondant à un franc soit officiellement diminuée: si, avant la dévaluation, j'ai promis de payer 1000 francs, et que j'aie, pour cela, conservé dans mon tiroir 10 billets de 100 francs, ce sont ce 10 billets qu'après comme avant il me faudra remettre à mon créancier; [...] Imaginons au contraire que, sujet du Grand Roi, j'aie contracté en 1680 une dette de 506 livres, payable à la fin de l'année 1686. Ayant gagné quelque pécune au début de l'année 1686, j'ai mis de côté, dans un beau sac de toile, 46 louis d'or qui me serviront à régler mon créancier: car le louis vaut alors 11 livres. Survient le 26 juillet une ordonnance , laquelle décrète que chacun de ces louis aura désormais pour cours 11 livres 10 sous, autrement dit 11 livres ½. Il me suffira désormais de conserver 44 louis pour faire face à ma dette (44 fois 11 1/2 font en effet 506). Je pourrais employer à mon gré les 2 louis restants. En d'autre termes, mes moyens de paiement seront brutalement augmenté."*

[16] See Redish A., *Bimetallism, an Economic and Historical Analysis*, op. cit. Seigniorage is discussed in connection with Louis XIV's monetary policy in chapter 1, paragraph 4.

As for financial innovations, the first public banks emerged in Genoa, Venice and then Amsterdam with the aim of stabilising the currency for international trade and the settlement of bills of exchange. They were clearing centres that replaced the fairs of the 16th century. The public banks in Naples were instead founded to increase liquidity and finance the government.[17] The founding of the Bank of England, on the other hand, was a financial revolution that helped the nation state to flourish. Its most important achievement was that public debt became an asset that supported the Bank's credit expansion, partly because a monetary revolution had been carried out with the Great Recoinage and the introduction of an irrevocable metal standard protected creditors from devaluation. John Law wanted to repeat this mechanism in France, but instead of identifying the money with precious metal, he wanted to replace it with paper money. He also attempted to replace the public debt with Mississippi Company stock, but was forced to maintain it through buyback practices (i.e., the "system" over-issued banknotes to buy its own stock),[18] which eventually caused the system to implode due to inflationary pressures.

In general, a money debate can be categorised into the following currents of thought:

1. Locke's "conventionalism", which establishes the value of money as the result of a pre-political and irreversible convention.[19] This idea, which was put into practice with the Great Recoinage, introduced the system of the gold standard. It was indeed revolutionary, as it broke with both "nominalism" and "naturalism" (see below). The main objective of such a revolution can be seen in the introduction of the store of value function of money. The unit of account was irrevocably equated with the unit of weight of precious metal, so that money became "capital".[20]
2. Newton's "naturalism", which interpreted the value of money as the result of the "proportion" between the precious metals of which it is composed, e.g. the bimetallic ratio between gold and silver, which represents the relative scarcity of each of these metals and is reflected in the market price of the metals. This approach goes back to the Pole Nicolas Copernico (1516), who established the principles that later became known as Gresham's Law and as whose successor

[17] See Kindleberger C. P., "Currency Debasement in the Early Seventeenth Century and the Establishment of Deposit Banks in Central Europe", in *Essay in History*, the University of Michigan, 1999; Costabile L., Neal L. (eds.), *Financial Innovation and Resilience. A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, Palgrave Studies in the History of Finance, Palgrave-Macmillan, 2018.I look at the public banks in Ch. 1, but deal with those of Naples in Ch. 4.

[18] The late phase of Law's system was characterised by the merger of the Banque Royale with the Mississippi Company.

[19] See in particular Eich S., "John Locke and the politics of monetary depoliticization", in *Modern Intellectual History*, Vol. 17, Issue 1, Cambridge University Press, pp. 1-28, March 2020.

[20] See Macpherson C. B., *The Political Theory of Possessive Individualism: Hobbes to Locke*, Clarendon Press, 1969; Amato M., Fantacci L., *Fine della finanza*, Donzelli, 2009; Desan C., *Making Money*, Oxford University Press, 2014.

Newton can be seen in relation to monetary theory as well as in relation to the heliocentric theory, which he confirmed through the law of universal gravitation.

3. Barbon's "nominalism", which represented the traditional practice in England of accepting money by tale, which had its roots in the Middle Ages but was confirmed by the English courts at the beginning of the 17th century when, after the debasement of coins, the creditor's refusal to accept money by tale was rejected by the courts.[21] This principle can also be applied to François Melon in France, who favoured the enhancement of money by the French sovereign and, as heir to the ancient jubilee used to cancel debts, considered it an excellent means of debt devaluation.[22]
4. Law's "chartalism", which is similar to the nominalism of Barbon and the naturalism of Newton, but does not agree with either of them, because Law defines the value of money as the result of supply and demand (unlike Barbon) and thus negates the intrinsic value of money (unlike Newton, although both refer to market values). According to Law, however, there are different types of money that can satisfy the demand for money, provided they are backed by secure assets, and precious metals are by no means the most stable, so in a surprisingly modern stance, Law wants to replace precious metal with paper money backed by financial assets. This is also the position of Nicolas Dutot, who, in his controversy with François Melon, was misinterpreted by Italian authors as a Lockean because, in agreement with Law, he was against the money enhancement for fiscal purposes.[23]

In the second chapter, we look at the debate in Italy in the mid-18th century and try to place it in the context of the currents of thought that we have identified with regard to the international landscape. The first works by Pompeo Neri and Gianrinaldo Carli in Milan, by Girolamo Costantini in Venice, all published in 1751, and by Broggia (1743) and Galiani (1751) are considered. A preliminary conclusion is that all Italian authors can be broadly categorised as naturalists. Neri, in particular, rooted naturalism in Roman law and hardly polemicised with scholasticism, which in his opinion misinterpreted Roman legal principles on money and heralded nominalism. He thus fought against the latter and defended Locke's principle, which he had enshrined in Roman jurists (e.g. Giulio Paolo) and also in Bernardo Davanzati, that only precious metal is true money because it represents a "pledge" and can definitively regulate a credit relationship, while other means of payment such as notes or token money still represent a credit that must ultimately be enforced by a legal system.

Carli, also referring to Davanzati's concept of "universal money", claims that "no trading nation can make arbitrary changes to the coins without being doomed to failure", i.e. precious metal is universal money and no country can deviate from it in an open economy,

[21] See Desan C., *Making Money*, Oxford University Press, 2014.
[22] See Melon J. F., *Essai politique sur le commerce*, The Hague, 1734.
[23] Both Dutot and Melon had been Law's functionaries.

i.e. the coins are taken at intrinsic value in international trade and any deviation from this value due to seigniorage leads to negative economic distortions. If we define the exchange rate as E*= Pa + s / P*a,[24] where E* is the legal parity of a coin a abroad, P is the domestic tariff of the coin, P* is the foreign tariff of the same coin, s is the seigniorage, we see that the exchange rate depreciates as s rises, making imports more expensive, so Carli argues that s should be kept at the level of the minting cost (usually 2 per cent). Neri in fact presided over the conference between Milan and Turin to create a monetary union in which the seigniorage was set at 2 percent of coinage, even though, following Locke and Davanzati, he was theoretically opposed to any surplus calculated on the value of money.

For both Carli and Neri, the solution to the problem of "monetary disorder", which was identified as a discrepancy ("disproportion") between the scale of denominations and the scale of intrinsic values of the coins, was a recoinage according to Locke's principles. In this framework, Galiani's proposal of "*alzamento"*, i.e. the policy of money enhancement used to devalue debts, redistribute wealth and increase the means of payment, was not accepted at all. It was merely regarded as the nominalism practised by the scholastics and promoted by Melon in France. Neri, who was strongly committed to the defence of creditors, rejected the idea completely. However, he recognised Galiani's naturalism and downplayed the *alzamento* as the author's "exception" that proves the rule. Costantini agrees with Carli and Neri in Milan, but follows the Venetian tradition in the use of imaginary money and adopts a more flexible approach. While Carli and Neri sought an "immutable standard" in the spirit of Locke, Costantini pursued a more Newtonian approach, i.e. he played with imaginary money in order to rebalance the bimetallic ratio and reduce the value of low money in excess.

In this chapter we also consider the nature of low money, which, as we have seen, played the role of complementary money for retail trade and the payment of wages. The fact that it is not convertible with noble money (i.e. there is no public body that exchanges it at the tariff, so the exchange is done by money changers and a premium is built up on noble money) makes it possible to insulate the lower end of the market and protect it from the exogenous shocks in the balance of trade. However, regulating the low money supply is important to keep both the premium and inflation under control. The first approach is to remint copper to restore the metal content after the massive debasement. However, the nature of copper seems to be "fiat", as both Carli and Broggia state without realising it. Carli says: "Copper is considered a measure of other metals and consequently has no value of its own except in relation to the things whose price it forms", in line with Broggia, who describes copper as "fundamental money" that "gives prices and does not take prices". The nature of copper as fiat money allowed it to be increasingly debased, but at the same time widely accepted by tale so that it could be endogenously expanded. In fact, there was a surplus and the solution envisaged by Neri (following Gemignano Montanari and in agreement with Costantini) was to limit the quantity, which was implemented with the

[24] See Rosselli, A., "Early views on monetary policy: The Neapolitan debate on the theory of exchange", op. cit.

Milanese monetary reform of 1788. On the other hand, the introduction of monometallism in England and the successive integration of alloyed money as divisional money led to the homogenisation of money and to a loss of flexibility in the money supply and independence with regard to international capital movements.

In this sense, imaginary money made it possible to regulate the complementary currencies, such as low money, noble money and bank money, so that they were independent of each other and fulfilled their specific functions. In fact, these currencies were not exchanged at par and the agio had the function of a "sluice gate"[25] between them. In the third chapter, however, the disadvantages of the agio become clear in the case of Milan. Here the agio was due to the excessive issue of copper money, which exerted pressure on noble money, which in turn led to inflation. The mechanism behind this process was as follows: merchants exchanged low money, which was abundant on the retail market, for noble money on the wholesale market and paid a premium for it, which they in turn added to retail prices. The solution lay in a recoinage that drastically reduced the low money ("to the limit of scarcity", according to Neri), which happened with the currency reform of 1788. In particular, the nominal value of copper was reduced by 20 per cent and the loss was passed on to the population, against the will of both Carli and Beccaria, who had planned in the Economic Council (*Consiglio dell'economia*) to finance the loss by issuing treasury notes (i.e. paper money) along the lines of those issued in Turin, where a currency reform had been carried out in 1755.

As we have seen, the problem in Milan, but not only there, was attributed to monetary disorder, which, beyond low money in excess, was characterised by a false valuation of noble money according to its intrinsic value. This problem was approached either according to Lockean principles, i.e. a recoinage, or according to Newtonian principles. Pietro Verri and the early Cesare Beccaria (before he joined the Economic Council), proposed to link the imaginary money to the market value of the gold sequin, which was higher than the tariff. This would have meant an augmentation similar to that proposed by Newton in England. The other foreign coins would have had to be valued at the new standard according to intrinsic value. Carli affirmed that Locke was the model, not Newton, and pushed through a plan for the recoinage in the Economic Council.[26] Beccaria, who joined the Council in 1771, worked on expanding the plan. However, the reform was implemented directly under the control of Vienna in 1788.

[25] Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," op. cit., p. 122.

[26] It is curious that Carli mentioned the divergence between Carli and Newton, since it was not known until the publication of Newton's document to the government, but he did. See Li Ming-Hsun, *The Great Recoinage of 1696 to 99*, Weidenfeld and Nicolson, 1963; Carli G. R., "Osservazioni preventive al piano intorno alle monete di Milano", in Custodi, SCIEP, parte moderna, vol. 14, 1804 (1766), p. 8.

Beyond monetary reform, in this chapter I consider Verri and Beccaria's approach to "political economy", which I compare with that of Adam Smith.[27] It is worth noting that in Milan the cause of the outflow of noble money, and silver in particular, is attributed to arbitrage, while Verri points to the trade deficit. According to Groenewegen,[28] Adam Smith may have adopted Verri's concept of the "balance of annual produce" to assess the economic situation of a nation. However, while Smith contrasts this concept with the balance of trade in his famous critique of mercantilism,[29] for Verri the two concepts were not opposites. Looking at the small state of Milan, Verri even identified the trade surplus as the driving force behind a positive balance of annual produce. For both Verri and Beccaria, the trade surplus enables an increase in the amount of money in circulation in the nation, which triggers a virtuous circle of growth. The main driver of economic growth seems to be Keynesian "effective demand", because the circulation of money, which is not neutral, increases investment and production. It should be borne in mind that the economic conditions are those of a developing country on the road to industrialisation. The most important prerequisite for achieving a trade surplus is a more competitive economy. Competition would increase productivity and allow for a trade surplus, which in turn would attract noble money into the country and increase investment and production. According to Beccaria, this process would stimulate inflation, which in this case is not negative because it is due to the increase in wages. In the case of a trade deficit (Beccaria speaks of a lack of noble money in the nation), on the other hand, inflation is caused by the circulation of bad money. The resulting inflation is therefore negative, because in this case the circulation of bad money does not trigger investment and a monetary reform is necessary.[30]

Both Verri and Beccaria pursue a "microfoundation" of the quantity theory of money. Verri in particular notes that the adjustment mechanism developed by David Hume (i.e. inflation in the surplus country and deflation in the deficit country, so that the terms of trade are reversed and a new equilibrium is created) does not always work. Rather, it depends on what happens to the precious metal inflows. If the precious metal is held unproductively, the quantity theory of money works and prices rise. If the inflows lead to increased circulation between firms, competition would keep prices stable or even lower them so that the surplus position in international trade is maintained. Verri's key message is that the increase in money in circulation increases investment, especially investment in new firms, which ultimately breaks up the monopolies that limit production. So at the microeconomic level, competition is the key; at the macroeconomic level, effective demand is the key, both

[27] See Beccaria C., "Elementi di economia pubblica", in Custodi P., SCIEP, parte moderna, vol. XII, 1804 (1769); Verri P., *Meditazioni sulla economia politica,* ed. De Felice R., Bruno Mondadori, 1998 (1771); Smith A., An *Inquiry into the Nature and Causes of the Wealth of Nations* (2-volume bundle), ed. R.H. Campbell, A.S. Skinner, W.B. Todd, Liberty Fund, 1982 (1776).

[28] Groenewegen P., "Verri's Political Economy", in Id., *Eighteenth-century Economics*, Routledge, 2002.

[29] See Smith A., An *Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., book IV, ch. 3, part II, pp. 450-460.

[30] See Beccaria C., "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", in Vianello C. A., *La riforma monetaria in Lombardia,* pp. 35-71, 1939 (1771).

in the trade balance and in the investment component. The transfer from the first to the second component takes place through an increase in money in circulation, which works at the micro level and encourages new firms to enter the market (e.g. through lower interest rates). One can add with Beccaria that in a system in which there is complementary money, the deflation that Hume foresees in a deficit country within the framework of the quantity theory of money could not occur, but possibly a "stagflation", because the spread of low money and the increase of the agio on noble money could stimulate inflation, but not trigger investment.

This is the added value of Verri and Beccaria, which, as Schumpeter notes, "should be added as examples of the treatment accorded to the subject of money in the comprehensive treatises on general economics".[31] However, we can also say the same about Galiani, whose model of *alzamento* (i.e. money enhancement) has macroeconomic implications, as can be seen by reading the fourth chapter.

Here, I analyse the money debate in Naples. First, however, the monetary and financial system is analysed. As already mentioned, a system of public banks developed in the 16th century and two monetary reforms took place in the 17th century. The Neapolitan public banks seem to have had a different aim to those in Genoa, Venice and Amsterdam, i.e. their aim was to increase liquidity and provide credit to the government by issuing paper money, similar to the Bank of England, while the other aim was to create a stable currency for international trade. However, if the monetary reform of 1622 in Naples has some similarities with the Great Recoinage in England, the following reform of 1689-1691 had an opposite sign and was characterised by a money enhancement. The latter was the subject of a debate between Broggia and Galiani. Broggia, who advocated a naturalistic approach, criticised the *alzamento* because it went beyond adjusting the value of silver to market value and aimed to devalue the debt and generate extraordinary seigniorage, which in turn was precisely the policy that Galiani praised when the state was under pressure to repay the debt. Indeed, both the money augmentations in Naples under the Marquis de San Esteban and in France under the Duke d'Orléans (to which Galiani also refers) were characterised by a strong debtor position of the state vis-à-vis foreigners and national rentiers. By devaluing debt, this policy ensured liquidity on the market and a redistribution of wealth in favour of the productive class of peasants and craftsmen.

IIn order to understand the *alzamento* policy theorised by Galiani, it is necessary to consider his approach to money. Indeed, Galiani interprets the origin of money through a historical model that he constructed by reading Omer and the Bible and that also replicates the process of the emergence of money in the Bronze Age among the Sumerians. Money is interpreted as a unit of account to measure the value of goods, and it is equated on the one hand with the weight of silver and on the other with a key commodity, such as the ox

[31] Schumpeter J. A., *History of Economic Analysis,* op. cit., p. 278.

among the Greeks or the sheep among the Hebrews (or, one might add, the bushel of barley among the Sumerians).[32] The state thus determines the unit of account and chooses silver as a pledge for the exchange due to its special characteristics. In line with this vision, the unit of account can be changed (i.e. shifted) if necessary. Imaginary money is certainly the more appropriate instrument for managing the unit of account, but even in a framework where there is no imaginary money, as in Naples, the unit of account can be managed.

Although Galiani places the precious metal at the top of the "monetary hierarchy"[33] because it can fulfil the function of a pledge both within borders and in international trade (i.e. it is "universal money", as Davanzati and Locke claim), he also envisages other types of money, either representative or fiat. It is amazing that he was able to anticipate the emerging financial revolution, even though he had limited information. Indeed, he recognised that money in republics was backed by public debt, as was the case in Venice and Amsterdam, and he supported this type of fiat money because republics are "chimerical entities", so citizens appear to be indebted to themselves. After all, money is a "credit to society", as Georg Simmel also claimed around one hundred and fifty years later,[34] and it is ultimately covered by the social product. However, he could not quite realise that such a financial innovation was a real revolution in England. But it is clear that he did not have enough information about the institutional order in such a country, and he still believes that in a monarchy neither the government nor the public banks should issue fiat money, except for a limited period and in emergencies.

In the conclusion, I summarise the Italian debate on imaginary money in the 18th century and highlight some of the advantages that imaginary money retained in the 18th century on the one hand, and the disadvantages that led to its demise on the other. Let me summarise here the advantages and disadvantages that I discovered in the study. First of all, we can recall the naturalistic approach of Newton, Verri, Beccaria (and Einaudi with them), according to which imaginary money makes it possible to regulate the legal value of coins according to the market value of the metal content, without resorting to recoinage. On the other hand, we have seen that imaginary money also makes it possible to regulate the complementarity of money. Indeed, it makes it possible to establish an "imaginary value" of money, i.e. a value that does not correspond to the metal content, e.g. in the case of low money, where the legal value is higher than the intrinsic value, or in the case of the *ducato di banco*, where the legal value is higher than the actual ducat. In practice, this creates fiat money. The agio that arises when these monies are exchanged for noble money represents the discrepancy to the "par" and can in principle be regulated by controlling the money supply. In the case of bank money, this can be done through open market operations (i.e.

[32] See Hudson M., Wunsh C., ed., *Creating Economic Order. Record-Keeping, Standardization, and the Development of Accounting in the Ancient Near East*, CDL Press, 2004.
[33] See Mehrling P., "The inherent hierarchy of money", in *Social Fairness and Economics: Economic Essays in the Spirit of Duncan Foley*, ed. Taylor L., Rezai A., Michl T., Routledge, 2013.
[34] See Simmel G., *The Philosophy of Money*, Routledge, 1978 (1907), p. 176.

buying and selling bank money for real money), whereas in the case of low money, recoinage is more likely to be necessary, even if other measures are possible, such as reducing the value of the coins or withdrawing them from circulation through taxation.[35]

A special topic is the debasement of coins and their augmentation (i.e. in face value). The former was no longer accepted in the form in which it was practised in the Middle Ages, as it was regarded as sovereign clipping or counterfeiting of coins. However, changing the weight and fineness of coins could be accepted as part of a general reform, which could also order their augmentation. The latter, however, was a policy that Louis XV pursued in France until the stabilisation of the *livre* in 1726, but it was also applied in Turin in 1733, so that it can be said to have been exhausted in the first half of the 18th century. *Alzamento* in the form theorised by Galiani and praised by Melon is thus clearly a policy of the *Ancien Régime* that was to be replaced by more modern financial operations. Also money enhancement, which was not carried out for fiscal purposes but to restore the bimetallic relationship, was increasingly abandoned from the English Great Recoinage onwards.

In fact, the money enhancement brought with it a number of disadvantages. Firstly, the damage to creditors, who received a smaller amount of precious metal for the same number of units of account. Secondly, inflation, because prices rose either due to the devaluation of the exchange rate, as Galiani says, or simply due to the adjustment of the prices of goods to the new precious metal price, as Newton says. In general, we can say that inflation was not considered a problem when it coincided with economic expansion. For both Galiani and Beccaria it was a sign of the inflow of precious metal into the country and for the latter it was mainly due to wage increases. In 18th century Milan, however, inflation resulted from the agio on noble money, which in practise was a spontaneous form of money enhancement, due to the surplus of low money. Beccaria, as we have seen, saw inflation as negative in this case.

A particular problem of inflation was that wages were rigid, so that labourers were the hardest hit, even though wages consisted not only of money but also of food, so that it is difficult to quantify the exact amount. Nevertheless, the problem is widely reported in Milan. Even the mature Galiani expresses his doubts about the increase in money due to this fact.[36] However, if the *alzamento* had been applied to all money, as Galiani envisages in his theoretical model, while in practise it was only applied to noble money, the workers would have earned more, as wages (at least the low wages that were paid daily) were usually calculated in coins and not in units of account (i.e. the workers were creditors of the wage,

[35] The reduction of the value of small money was frequently practised in Spain in the 17th century (see Sargent T. J., Velde F. R., *The big problem of small change*, op. cit.) and was discussed but not applied in Milan. The abolition of small coins was proposed by the late Carli before the monetary reform and is said to have been implemented in Milan after the reform (see Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, vol I, Università degli studi di Genova, 1984).

[36] See Galiani F., "Dialogues sur le commerce des bleds", op. cit.

but since it was paid in coins, their augmentation would have meant a wage increase), but Galiani does not go into this in detail, he focuses on the construction of a macroeconomic model which, together with that of Verri and Beccaria, represents a brilliant work of political economy for the time.

While for Verri and Beccaria money is a commodity, for Galiani money is primarily a unit of account whose relationship to precious metals can be managed by the state authorities. However, his position differs from nominalism for two main reasons: 1. As for Locke and Neri, the precious metal is a pledge that guarantees the payment of a debt, even at an international level (i.e. it is universal money as for Davanzati and Carli). The precious metal is therefore at the top of the monetary hierarchy, which distinguishes its position from Law's one. 2. In line with John Law, according to Galiani's theory of value, the value of the precious metal is determined by supply and demand. This point distinguishes his position from that of the naturalists, who regard the value of the metal as something natural, even if it is associated with scarcity. Galiani's position is therefore something special, but his approach to the origin of money and the possibility he conceived of shifting the value of money in relation to the unit of account definitely makes him a chartalist.

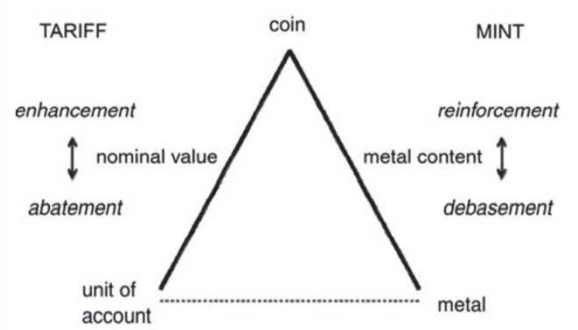
In summary, we can conclude that imaginary money manoeuvres were no longer used as massive strategies in the second half of the 18th century. However, it is worth noting that the Milanese monetary reform of 1788, enforced under the rule of Maria Theresa, established three different values for gold and silver to give national coins and even bullion a *"prezzo di affezione"* ("price of affection") over foreign coins, which meant a seigniorage for the government, a disincentive for citizens to melt their national coins, and an incentive for foreigners to melt their coins in the Milanese mint. The imaginary money thus served the political purpose of creating a national coinage. Towards the end of the century, it was also widely used to value foreign coins authorised for internal circulation. However, as long as the nation state empowers itself, the national coinage is well structured, monetary policy and also the country's borders are under control and, above all, the financial revolution is complete, imaginary money becomes a tool of the past.

I. Imaginary Money and its Stabilisation since the 17th Century

1. Imaginary money

The focus of this research is imaginary money, which characterised the *Ancien Régime* system. As Amato and Fantacci argue, duality is the essence of the monetary system of the *Ancien Régime*.[37] Duality lies, first, in the distinction between money as a unit of account (i.e., imaginary money) and as a means of payment (i.e., actual money), and, second, in the distinction between a currency for wholesale and international trade (i.e., large coins) and small trade (i.e., small coins), following Braudel's division into type A and type B markets.[38] The former distinction enabled the sovereign "to regulate, through the tariff, the power of money to discharge debts: by raising the value of the coins, all debts were made lighter and general insolvency crises could be averted", moreover, "the increase in the nominal value of the coinage could serve to stave off the deflationary tendencies of a metal standard, where the money supply would have been otherwise constrained by the availability of precious metal."[39] In fact, on the one hand, the ruler could modify the face value of the coins through the tariff, on the other hand, he could modify the metal content in the mint, as the following chart shows:[40]

tab./fig. 1 **The levers of monetary policy in the *Ancien Régime***



Source: Fantacci L., "Complementary currencies: a prospect on money from a retrospect on premodern practice", op. cit., 2005, p. 56.

[37] Amato M., Fantacci L., "Complementary currency", in *Handbook of the History of Money and Currency*, ed. Battilossi S., Cassis Y., Yago K., Springer, 2020.
[38] Braudel F., *Afterthoughts on material civilization and capitalism*, Johns Hopkins University Press, Baltimore, 1979.
[39] Amato M., Fantacci L., "Complementary currency", op. cit. p. 505.
[40] Fantacci L., "The dual currency system of Renaissance Europe", *Financial History Review* 15.1, 2008, p. 62.

The sovereign could change the metal content of the coins, either through a "reinforcement" (to strengthen the coinage) or a "debasement" (to weaken the coinage) or to change the nominal value of the coins, either through an "enhancement" or "augmentation" (to raise the money) or an "abatement" or "diminution" (to lower the money). Such manoeuvres also deprived money of its function as a store of value, because there was no assurance that what a coin was worth today would have the same value tomorrow. This feature "contributed to contrast the hoarding of money and to incentivize its circulation."[41] As for the latter distinction, i.e., the division between "internal" and "external" money, referring to a market type A and a market type B, we can summarise the characteristics of these markets in the following table by Fantacci:[42]

tab./fig. 2 **Type A and type B markets**

Market type A	***Market type B***
public, regulated	private and free
where goods are exchanged retail in view of their immediate use	where goods are exchanged wholesale in view of further exchange
in a local setting	on a global scale
for subsistence	for profit
by direct exchange of resources between the country and the city, producers and consumers	by merchants, members of a restricted caste of specialised intermediaries
according to a principle of distributive justice	according to principle of commutative justice
the means of exchange being small coins, of copper or billon	the means of exchange being large coins, of gold or silver
the measure of value being imaginary money	the measure of value being the weight of pure metal

Source: Fantacci L., "Complementary currencies: a prospect on money from a retrospect on premodern practice", *Financial History Review* 15.1, 2005, p. 56.

In summary, imaginary money, usually settled in pounds of 20 shillings, each equivalent to 12 pennyweights, is the unit of account of a commodity money system in which each metal used as money plays a different role depending on the market for which it is intended, usually gold and silver ("noble money") for market type B and copper and alloys ("low money" or "small money") for market type A. Regardless, the sovereign values all types of

[41] Amato M., Fantacci L., "Complementary currency", op. cit. p. 505.
[42] Fantacci L., "Complementary currencies: a prospect on money from a retrospect on premodern practice", *Financial History Review* 15.1, 2005, p. 56.

money admitted to circulation within its borders at a rate set by a legal tariff in the form of imaginary money, which is the linchpin of the system. However, this option affects the exchange rate, i.e., the ratio between the nominal value of the foreign and domestic currency (or vice versa, depending on the convention) for a unit of weight of the precious metal, which affects the balance of payments.

This system dates back to Charlemagne, who, in restoring the monetary system in the 9th century, chose the *libra* (i.e. pound, in fact a silver unit of weight)[43] as the standard, divided in 20 *solidi* (shillings) and 240 *denarii* (pennies), but issued neither the *libra* nor the *solidus*, but the silver *denarius*, the *libra* being "imaginary." Following Marc Bloch,[44] we can say that this was the case until the 13th century. This period was characterised by a state money, because Charlemagne had centralised the minting of coins. However, the princes and bishops maintained the minting of coins, albeit on behalf of the king. This facility was necessary to satisfy the demand for money at the local level, but it led to a discrepancy in the monetary standard of each local administration, and from the 11th century onwards, different units of account were created depending on the specific weight and fineness of the actual *denarius* (e.g. the *livre tournois, parisis, provinois* in France). Thus, the pound-based system of account spread throughout Europe, even to England, but with many differences related to either the metal standard or the subdivisions of the currency. Nevertheless, the unit of account (or imaginary money) was used everywhere to value actual coins or alternative means of payment such as goods or livestock. It is worth mentioning that in some areas, especially those that had been part of the Byzantine Empire, there was no system based on the pound, but nevertheless an ideal money occurred. We can consider, for example, the case of Sardinia, which is interesting because it is a territory isolated from the rest of the world in the period under consideration, that is, between the 11th and 13th centuries, when the former Byzantine currency - the bezant (a gold coin) - no longer circulated and became an imaginary money with which to measure payments in kind.[45]

From the 13th century onwards, due to the increase of market transactions on the one hand and the debasement of small coins on the other, the need for higher value coins arose, so that higher values were minted, such as the silver *grosso* in Venice (i.e. value 2 s.), until gold was also minted again (i.e. since the time of the Roman Empire), first in Florence in 1252 - the gold florin (i.e. value 1 L.) - then in Genoa and Venice and in the rest of Europe. However, the constant debasement of the small coins in the mint, whether for profit (i.e. seigniorage) or to counteract the shortage of money, led to a devaluation of the unit of account and a shift in the value of the larger coins, which gained in value. At the same time, the same process of debasement led to small money being minted in less valuable metals such as copper and alloys, while the *denarius* was no longer issued. The unit of account,

[43] Cipolla C. M., *Moneta e civiltà mediterranea*, Neri Pozza Editore, 1957, p. 53.
[44] Bloch M., "Esquisse d'une histoire monétaire de l'Europe", *Cahiers des Annales*, 9, Paris, Colin, 1954.
[45] Alias F., *Uso e diffusione dei mezzi di scambio non monetari in Sardegna tra XIII e XIV secolo*, paper presented at the Istituto Datini conference held in Prato, May 14-18, 2023.

which (with exceptions) was no longer represented by actual coin, became definitively imaginary. It was also possible to find a currency that was both imaginary and real, with different values and therefore different units of account at the same time. Cipolla cites, for example, the *fiorino* in Milan, which became imaginary at 384 *d*. in the 14th century and served as the unit of account for large transactions; it then coexisted with a real florin of higher value, while the *lira* played the role of unit of account for smaller transactions.[46] In general, we can say that what Ferdinando Galiani says about imaginary money is true:

> *Per ordinario questa istessa moneta ideale suol essere di conto, cioè a dire con essa si stipola, si contrae e si valuta ogni cosa: il che è nato da una medesima cagione, che le monete, le quali oggi sono ideali, sono le più antiche di ogni nazione, e tutte furono un tempo reali, e, perché erano reali, con esse si contava. Ma, avendo i principi variata la mole e la forma delle monete, sono quelle divenute immaginarie, e solo ritenute nel conto per maggiore facilità.*
>
> [Ordinarily this ideal money is the unit of account, that is, by it everything is fixed, contracted, and valued: which has arisen from the same cause, that the coins which are now ideal are the oldest of every nation, and were all once real, and, because they were real, you reckoned by them. But after the principles have changed the size and shape of the coins, they have become imaginary and are kept only for convenience as a unit of account.][47]

Since the unit of account was separate from the money itself, which had no number stamped on the reverse, the ruler could change the face value of the coins, and these operations, which Bloch calls "mutations," were an effective monetary policy, as we have already seen. They were used to rebalance the bimetallic ratio between gold and silver, or to increase the money supply, or to fight financial crises by immediately devaluing the debt (i.e., “raising the money”). Of course, this type of monetary policy, i.e., the debasement and the enhancement, and generally the alteration of the currency was controversial and often criticised, mainly because the rulers used it to increase seigniorage.

Finally, money was stabilised relative to precious metal. In this chapter, we will analyse this stabilisation process to understand the real causes (i.e. whether there are other reasons besides the abuse of the sovereign). According to Bloch, stabilisation occurred first in England, where money was stabilised from 1717 to 1931, then in France, where money was stabilised from 1726 to 1928 (except for an adjustment in 1785). The transition from the livre to the franc in 1803, although decisive because of the number engraved on the reverse of the coin that sanctioned the unification of the unit of account and the means of payment, basically reproduced the relations of the previous system.[48] However, we date the first stabilisation back to 1696 in England, when the Great Recoinage established the principles

[46] Cipolla C. M., *Moneta e civiltà mediterranea*, op. cit. p. 61.
[47] Galiani F., *Della moneta*, Feltrinelli, 1963 (1751), p. 93 (editor’s translation).
[48] Bloch M., “Esquisse d’une histoire monétaire de l’Europe”, op. cit. p. 50.

of the gold standard, which was introduced in 1717 and formalised in 1844. This was indeed a revolution that influenced subsequent monetary history.[49] Nevertheless, we point out that the trend towards stabilisation started even earlier, with the stabilisation of bank money at the beginning of the 17th century. So, we will deal with this part first and then analyse the Great Recoinage and the corresponding debate before turning to the events in France that marked the beginning of the 18th century.

2. Bank money from the 17th century

According to Kindleberger, "in the seventeenth century banks sought to stabilise the unit of account and clearing payments," referring in particular to the banks of Amsterdam, Hamburg, Nuremberg, Venice, and Genoa.[50] In fact, the process of debasement of coins, which spread throughout Europe due to the profit motive of both rulers and private minters, followed Gresham's Law, which favoured the issuance of coins with ever decreasing intrinsic value, which, in the general confusion (e.g., the money market was characterised by a problem of asymmetric information)[51] were exchanged at face value for better coins, so that the latter were consequently hoarded, melted down or exported.[52] This process also operated between neighbouring provinces of different states, so that money changers engaged in arbitrage, and these states, to counteract the outflow of good coins diverted by arbitrage, adjusted the tariff to lower the face value of the worse coins or to revalue the better ones, in "a game-theoretic tactic of tit-for-tat which accelerated the depreciation in general."[53] In this context, the uncertainty of the intrinsic value of the coins, which had to be weighed and established in their fineness by the public authorities through recoinage or

[49] See Amato M., Fantacci L., *Fine della finanza*, Donzelli, 2009; Desan C., *Making Money*, Oxford University Press, 2014; De Cecco M., "Gold standard"*, The New Palgrave: a Dictionary of Economics*, First Edition, 1987; Eich S., *The currency of politics*, Princeton University Press, 2022.

[50] Kindleberger C. P., "The Debasement in the Holy Roman Empire in 1619-23 and the Establishment of Deposit Banks, in *Banchi pubblici, banchi privati e monti di pietà nell'Europa preindustriale*, Atti del Convegno di Genova, 1 - 6 ottobre, 1990, p. 46. See also id., "Currency Debasement in the Early Seventeenth Century and the Establishment of Deposit Banks in Central Europe", in *Essay in History*, the University of Michigan, 1999; ibid., "Free Minting".

[51] Schnabel I., Hyun Song S., *The 'Kipper- und Wipperzeit' and the Foundation of Public Deposit Banks*, 2006, Unpublished. The authors explain: "we assume that traders within a particular jurisdiction would be more familiar with the differing qualities of coins produced within their own jurisdiction, but would have less familiarity with the heterogeneity of coinage produced in other regions. In this sense asymmetric information lies at the heart of our story, akin to Akerlofís (1970) "lemons" problem. However, the nature of the asymmetric information differs from the original "lemons" problem in that the asymmetric information would apply equally to both sides of the transaction. That is to say, one side has better information about his own coins than the other side; but no one has an absolute advantage over the others. In this sense, the asymmetric information applies "symmetrically", p. 7.

[52] For an in-depth analysis of the 'Kipper- und Wipperzeit" see also Kindleberger C. P., "The Economic Crisis of 1619 to 1623", in *The Journal of Economic History* , vol. 51, N. 1, Cambridge University Press, 1991.

[53] Kindleberger C. P., "The Debasement in the Holy Roman Empire in 1619-23 and the Establishment of Deposit Banks", op. cit. p. 40.

through other practices such as the sealed coin bags that established the intrinsic value (i.e., a packaged quantity of weighed coins whose value was established), made it laborious to ensure commutative justice in the market. Indeed, "standards are a public good" and "the public-good character of stable and recognizable money lies in lowering transaction costs for trade by providing a means of avoiding the onerous burden of individuals weighing and assaying large numbers of coins."[54]

Kindleberger's assertion in fact mirrors what Adam Smith says in Wealth of Nations, precisely in the digression about the Bank of Amsterdam,[55] where Smith says, in reference to small states:

> [...] the currency of a small state, such as Genoa or Hamburg, can seldom consist altogether in its own coin, but must be made up, in a great measure, of the coins of all the neighbouring states with which its inhabitants have a continual intercourse. Such a state, therefore, by reforming its coin, will not always be able to reform its currency. If foreign bills of exchange are paid in this currency, the uncertain value of any sum, of what is in its own nature so uncertain, must render the exchange always very much against such a state, its currency being in all foreign states necessarily valued even below what it is worth. In order to remedy the inconvenience to which this disadvantageous exchange must have subjected their merchants, such small states, when they began to attend to the interest of trade, have frequently enacted that foreign bills of exchange of a certain value should be paid, not in common currency, but by an order upon, or by a transfer in the books of a certain bank, established upon the credit, and under the protection of the state, this bank being always obliged to pay, in good and true money, exactly according to the standard of the state. The banks of Venice, Genoa, Amsterdam, Hamburg, and Nuremberg, seem to have been all originally established with this view [...][56]

According to Smith, the problem was the exchange rate in settling foreign bills of exchange, which was weakened by the debased currency, so it was decided to pay them with bank money, which "bore an agio, which was greater or smaller, according as the currency was supposed to be more or less degraded below the standard of the state."[57] Consider first the public banks of Venice, Genoa, and Amsterdam, which can be seen as prototypes of central banks,[58] even though they lacked, at least formally, the credit function that was instead a feature of the Bank of England. The latter is considered the model of a central bank, although it was preceded by the Bank of Sweden, founded in 1668, which was the first central bank with a credit function and to issue banknotes, but which was overtaken by the

[54] Kindleberger C. P., "The Debasement in the Holy Roman Empire in 1619-23 and the Establishment of Deposit Banks," op. cit. p. 39.
[55] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, Book 4, ch. 3, part 1, ed. R.H. Campbell, A.S. Skinner, W.B. Todd, Liberty Fund, 1982 (1776), pp. 441 - 450.
[56] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit. pp. 441-442.
[57] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit. p. 442.
[58] See Ugolini S., *The Evolution of Central Banking: Theory and History*, Palgrave Macmillan, 2017.

importance of the Bank of England, which, as we shall see, was the centre of the English financial revolution. However, one of the functions commonly required as a prerequisite for a central bank is that of lender of last resort, which did not develop until the 19th century.[59] This traditional view is challenged, however, by Ulrich Bindseil, who asserts that the fundamental characteristic of a central bank is the issuance of "central bank money", i.e. "financial money of the highest possible credit quality, which is accepted for settlement of any other financial claim in the same way as species money is accepted (i.e. being considered credit, liquidity, and market risk free, to use modern terminology)", and such a role he attributes to, for example, the Bank of Amsterdam and the Bank of Hamburg (the latter modelled on the former), which brings us back to the core of the chapter.[60]

In Venice, according to Ugo Tucci,[61] the system develops as follows. First the *Banco della Piazza di Rialto* is founded in 1587, then the *Banco Giro* in 1619, but until 1637 the two banks coexist because they had different functions, i.e. the first was a deposit bank, while the second was a public bank whose book money, the *partita di Banco*, was initially backed exclusively by public debt and only later also by private deposits. There were two units of account, one for the *partita*, i.e. the *lira di banco*, and one for the actual money, i.e. the *lira di piccoli*. The former was equivalent to 10 *ducati di banco*, which was equivalent to 12 actual *ducati*. The 20 percent premium was introduced in the period from 1621 to 1625 due to the difference between the intrinsic value of the actual *ducato* and the former *ducato* to which the *lira di banco* was linked. Thus, the *ducato di banco*, which became imaginary, was equivalent to 12 actual *ducati*, and this convention was further maintained, so that it can be claimed that 1 *lira di banco* is equal to 12 actual *ducati*. If the above 20 percent agio is a convention, it was not the premium that formed in the 18th century, when the actual *ducato* was evaluated at two different tariffs, as *moneta corta* (i.e., 1 *ducato* = 6 L. 4 s.) to pay taxes and private transactions when there was such an agreement between the parties, and as *moneta lunga* (i.e., 1 *ducato* = 7 L. 10 s. since 1716 and 8 L. since 1733) to pay the other private transactions, as you can see in the following table:

[59] See for example Goodhart C., *The Evolution of Central Banks*, The MIT Press, 1988.

[60] Bindseil U., *Central Banking before 1800: A Rehabilitation*, Oxford University Press, 2019, p. 2; see also Roberds W., Velde F. R., "Early Public Banks I: Ledger-Money Banks", in Fox D., Ernst W., ed., *Money in the Western Legal Tradition*, Oxford University Press, 2016, who talk of "first generation" public banks.

[61] Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", in *Credito, banche e investimenti, secoli XIII - XX*, Istituto F. Datini, Atti della quarta settimana di studio, 14-21 aprile 1972, Firenze, 1985.

tab./fig. 3 **Units of account in Venice**

1 lira di banco	*= 10 ducati di banco*	*= 12 ducati (moneta corta)*	20% *aggio* on *ducato di banco*
*1 ducato moneta corta (*or *valuta alla parte)*		*= 6 L. 4 s. (lire di piccoli)*	29% *sopraggio* on *ducato moneta corta*
*1 ducato moneta lunga (*or *effettivo)*		*= 8 L. (lire di piccoli)*	

Source: Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", in *Credito, banche e investimenti, secoli XIII - XX*, Istituto F. Datini, Atti della quarta settimana di studio, 14-21 aprile 1972, Firenze, 1985.

Thus, the first premium of 20 percent is conventional, and the excess premium (*sopraggio*) on the *ducato moneta corta*, i.e., the unit of account of bank money (i.e., 12 *ducati moneta corta* = 1 *lira di banco*) used only for certain transactions such as payment of taxes and bills of exchange, is 29 percent over the *ducato moneta lunga*, i.e., the unit of account of actual money used for other private transactions.[62] As Tucci says, "the *Banco Giro* provided the Venice market with a simple and fast cash service that offered an alternative to the deterioration of the species due to consumption and changes in value to which species were subject. This was, especially in the last five or six decades of the eighteenth century, the main function that the institution fulfilled in the context of a disorderly and corrupt monetary circulation, creating a money that was integral in its metal content (the species that came in and out of the bank were valued only on the basis of their pure metal content)."[63] But we will consider the "monetary disorder" in the next chapter. For now, it is important to understand how the premium on bank money came about. Let us explain this with an example: If one owned a quantity of coins worth 100 *ducati moneta lunga* (i.e. L. 800 *di piccoli*) and wanted to buy the *partita*, i.e. exchange real money for bank money, one had to pay a premium when exchanging the 100 *ducati moneta lunga* for 100 *ducati moneta corta*, i.e. L. 800 for L. 620 *partita*.[64] In fact, the *partita* was not only an indispensable means of payment for merchants, since from 1593 it was obligatory to pay bills of exchange with it, and it was also used for the payment of taxes, as we have just said, but it was also a necessary asset (not least because it was unseizable by creditors). From 1666, merchants demanded and were given the opportunity to deposit specie in the *Banco* in exchange for a *fede*, which was necessary for withdrawals and giro transactions.

[62] 100 *ducati moneta corta* (or *valuta alla parte*) = 620 *lire di piccoli*; 100 *ducati moneta lunga* (or *effettivi al corrente valore di piazza*)= 800 *lire di piccoli*; the difference of 180 L. is 29 percent, cf. Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. cit. p. 172.

[63] Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. cit. p. 172 (editor's translation).

[64] See note above.

However, the stability of the *partita* was not a necessary characteristic. In fact, there were times when the government expanded the existing *partita* to finance public expenditures or reduced the species reserves, which also led to two periods of inconvertibility between 1648 and 1666 and between 1714 and 1739. However, these episodes were not due to credit expansion, because the *Banco Giro* was never a credit bank, but only a deposit and giro bank, and the government committed to maintain the fixed parity of 120/100 through open market operations. Take for example the period of inconvertibility in the 18th century. At first, the government tried to establish parity by *stagnazione* of the *partita*, i.e., converting it into a term deposit bearing interest at about 6 percent (note that the *partita* did not yield interest), in order to reduce the circulation of the *partita*. But these measures, after initial success, were not as effective as reducing the *partita*, which was then bought by the government in several tranches until convertibility was restored. As Tucci notes, "it was understood that the need for circulation determined the value of bank money and that it was possible to maintain a high and stable *partita* rate by limiting its quantity, while metal coverage was of secondary importance,"[65] meaning that the *Banco Giro* issued fiat money based on the principles of fractional reserve, even if this was not yet formalised.

In Genoa, the *Casa di S. Giorgio*, founded in 1407, offered its services as a deposit and giro bank in the 17th century (although it had also been a credit bank in the 15th century). It accepted only noble money (i.e. gold and silver full-bodied coins of high denomination, like *scudi*) and could handle large transactions in *scudi* (a unit of account equivalent to the silver *scudo crociato* coin) or record transactions on its books in *lire di numerato* (pegged to the *scudo crociato* as "1 *scudo*" L. 4 s. 10, i.e. 1 *lira* = 8.176 gr. of silver).[66] However, at that time there was a major problem with the devaluation of silver low money, which was widely used by the population, against silver and gold *scudi*. After several attempts to stabilise the agio between low money and noble money, a new bank was established in 1675, managed by the *Casa di S. Giorgio*, which accepted all currencies[67] and calculated in *lire correnti* (i.e., the common unit of account) according to the new rates established in the decree of 1675. It was also made compulsory to settle bills of exchange and all transactions exceeding a certain amount (i.e. 100 L.) in bank money. The new bank could pay with any kind of money, with exceptions, and paid the government in small money, which the government used to pay wages and goods. To meet the needs of trade, a second (1676), a third (1714) and a fourth (1739) bank of the same type were founded.[68] The main objective of these banks was to provide a stable unit of account for transactions, with which all coins could be valued

[65] Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. cit. p. 198 (my translation).
[66] Felloni G., *Il debito consolidato della Repubblica di Genova nel secolo XVIII e la sua liquidazione*, in Scritti in onore di Giordano Dell'Amore, vol. 2, Milano, Giuffrè, 1969, pp. 995 - 1000.
[67] Except coins of less than 1 L. value.
[68] See Sieveking H., *Studio sulle finanze genovesi nel medioevo e in particolare sulla Casa di S. Giorgio,* in "Atti della Società Ligure di Storia Patria", vol.XXXV, seconda part, Genoa, 1906, pp. 246 - 254.

according to the decree of 1675. According to Giuseppe Felloni,[69] however, since 1710 a higher abusive rate of coins developed in the market and in 1741 the government issued a new tariff in *lira fuori di banco* (i.e., the unit of account for circulating coins) to distinguish from the *lira di banco*, which was practised within the banking system, i.e., the former was devalued by an average of 15 percent compared to the latter, as you can see from the following table, which shows the tariff of two noble coins, the gold *doppia delle cinque stampe* and the silver *scudo crociato*, and the correspondence of the units of account to the weight of gold and silver:

tab./fig. 4 **Units of account in Genoa**

	Lira di banco (1675)	*Lira fuori di banco* (1741)
Doppia (gold)	18 L. 16 s.	21 L. 12s.
gold	0.328 gr.	0.285 gr.
Scudo (silver)	7 L. 12 s.	8 L. 16 s.
silver	4.841 gr.	4.181 gr.

Source: Felloni G., *Il debito consolidato della Repubblica di Genova nel secolo XVIII e la sua liquidazione*, in Scritti in onore di Giordano Dell'Amore, vol. 2, Milano, Giuffrè, 1969, pp. 995 - 1000.

When another abusive rate came on the market, a new bank, the *Banco di Permesso*, was created in 1751 to perform specific tasks such as the payment of taxes. Its unit of account was the *lira di permesso*, which had a 15 percent premium over the abusive rate. In 1755, when the abusive rate stabilised at the 1751 level, the old *lira fuori di banco* was replaced by a new one that reflected the current abusive value of the coins, so that it expressed a 15 percent devaluation over the *lira di permesso* and a 25 percent devaluation over the *lira di banco*. Thus, the *lira di banco* was held stable from 1675 until 1792 when a currency reform caused a devaluation of slightly more than 5 percent. On the other hand, the *lira fuori di banco* was devalued against the *lira di banco* in 1741 (i.e., 15 percent) and 1755 (i.e., 25 percent).

Finally, let us see the case of the Bank of Amsterdam. Adam Smith introduces the foundation in the above quoted digression as follows:

> Before 1609 the great quantity of clipt and worn foreign coin, which the extensive trade of Amsterdam brought from all parts of Europe, reduced the value of its currency about nine per cent below that of good money fresh from the mint. Such

[69] Felloni G., *Il debito consolidato della Repubblica di Genova nel secolo XVIII e la sua liquidazione*, op. cit.

> money no sooner appeared than it was melted down or carried away, as it always is in such circumstances. The merchants, with plenty of currency, could not always find a sufficient quantity of good money to pay their bills of exchange; and the value of those bills, in spite of several regulations which were made to prevent it, became in a great measure uncertain. | In order to remedy these inconveniences, a bank was established in 1609 under the guarantee of the city.[70]

The Bank of Amsterdam, founded in 1609, was a public deposit and giro bank that charged a fee only for withdrawals and guaranteed the value of deposits, since the unit of account (i.e., the bank guilder or florin) was fixed in silver, in accordance with the value that Charles V had fixed for the silver florin in 1544.[71] The introduction of bank money was intended to counteract the devaluation of coinage, so the bank accepted coins by weight and then the settlement of bills of exchange, above a certain amount, was to be in bank money. However, the process of debasement of real coins continued. In particular, the full-bodied *rixdollars* (i.e., silver small money) suffered from competition from the lighter *patagons* from neighbouring Spanish Netherlands and developed a premium over the latter. In 1619, therefore, the government raised the value of the *rixdollar* in line with its market value and the minting of *rixdollars* increased, but in 1622 it gave *patagons* such a high rate that it was no longer profitable to mint *rixdollars*. In 1638, *patagons* were raised again, displacing *rixdollars* under Gresham's Law.[72] The response of the Bank of Amsterdam was to accept *patagons* with a "haircut", creating a de facto dual monetary rate between bank guilders and current guilders, which was formalised by a coinage ordinance in 1659. The mint also issued new *rixdollars* with the same characteristics and face value as the *patagons*, which were soon superseded. A new rate was therefore set for the current guilder, which was then accepted throughout the Netherlands, creating a premium on the bank guilder over the current guilder.[73] As a result, an "open market" was set up in front of the bank, where deposits could be exchanged for cash at a premium with the legalised moneychangers, who had to deposit their money at the Wisselbank within 24 hours.[74]

From 1683, a receipt was issued for each new deposit, which in the 80s became necessary to withdraw species from the Bank. As a result, other deposits became unencumbered and circulated as fiat money. The transition to fiat money was quite easy, as deposit holders always preferred to sell them on the market at a premium rather than withdraw the species

[70] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit. pp. 442.
[71] Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," in *Financial History Review*, 7, 2000, p. 121.
[72] See Quinn S., Roberds W., "The Bank of Amsterdam and the Leap to Central Bank Money", in *American Economic Review*, May 1, 2007; id., *Death of a Reserve Currency*, Federal Reserve Bank of Atlanta working paper 17, 2014.
[73] See Roberds W., Velde F. R., "Early Public Banks I: Ledger-Money Banks", op. cit., p. 345; id., *An economic explanation of the early Bank of Amsterdam, debasement, bills of exchange, and the emergence of the first central bank*, Federal Reserve Bank of Atlanta working paper 13, 2006.
[74] Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," op. cit. p. 121.

from the bank for a fee. In this way, bank money (i.e. deposits) was exchanged either on a primary market for receipts when the holder needed to withdraw specie (and it was indeed a liquid market), or on a secondary market for coins at a premium (agio). The Bank used open market operations to stabilise the agio, which was set (by law in 1782, but the rule was in effect before then) at 4-5 percent above current money,[75] as Van Dillen's report on the law shows:

> That the agio of bank money shall be held to a constant standard as much as is possible; and in particular, that [the agio] should be as little as possible be driven below four percent, or above five percent. To prevent this, whenever the agio is high, [the commissioners] shall enable the assayer to buy current money with bank money; and they should likewise anticipate that with a fall in the agio, they must exchange current money for bank money. But whenever the commissioners are of the thought that the circumstances are not advantageous for these activities, then they should implement these only as they deem appropriate.[76]

However, in the crisis of the 1790s, the Bank was no longer able to defend the agio, which became negative due to the lack of species in the vaults until the final collapse. The problem of the Bank of Amsterdam was that, on the one hand, it lent outside the charter to the East India Company and the Amsterdam municipality, but on the other hand, it was not supported by the fiscal power of the government, as was the case with the Bank of England, which could dispose of immediately saleable government securities (Exchequer bills). However, it must be said that after the official recognition of the bank guilder in the Dutch monetary system in 1659, "there ensued a 100-year period of remarkable monetary stability, during which neither the metallic value of the florin (i.e., the actual guilder) nor the domestic price level followed any persistent trend. Over most of this period, the Bank of Amsterdam maintained the value of the banco florin (i.e., the bank guilder) via open market operations, meaning the exchange of receipts against balances held at the Bank."[77]

We can now summarise the common characteristics of the banks of Venice, Genoa and Amsterdam:

1. These were deposit and giro banks (mostly public, i.e., except in Genoa), not formally credit banks.
2. They were established to stabilise the currency and the exchange rate.
3. Bank money was the obligatory means of settling bills of exchange.
4. Bank money yielded a premium (i.e., the agio) over current money.
5. Bank money was to some extent fiat money.

[75] See Quinn S., Roberds W., "The Bank of Amsterdam Search for Success and Stability", in Costabile L., Neal L. (eds.), *Financial Innovation and Resilience . A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, Palgrave Studies in the History of Finance, Palgrave-Macmillan, 2018; id., "A Policy Framework for the Bank of Amsterdam, 1736–1791," in *The Journal of Economic History*, Vol. 79, Issue 3, September 2019.
[76] Quinn S., Roberds W., "A Policy Framework for the Bank of Amsterdam, 1736–1791," op. cit., p. 751.
[77] Quinn S., Roberds W., "The Bank of Amsterdam and the Leap to Central Bank Money", op. cit. p. 265.

1. We know that the banks mentioned above conducted their credit operations informally. The *Banco Giro*, although it was not supposed to lend money to the outside world, was created to manage the public debt, and its balance sheet was so directly linked to the public debt that at certain times the government was forced to decree the inconvertibility of the *partita*. The cases of the *Banco di S. Giorgio* and the Bank of Amsterdam are different in that they were not supposed to lend to the government or other institutions following government policy, but did so anyway. This is evident in the case of the Bank of Amsterdam, because its default in 1795 was due to loans to the East India Company and Amsterdam municipality.[78] 2. The cases of Amsterdam, Genoa and Venice, as well as Hamburg and Nuremberg, represent an attempt to counteract the devaluation of the currency, which was due to the impossibility of controlling the species circulating in each territory, which consequently weakened the exchange rate. The solution was to set the unit of account at silver and, at least in the case of Venice and Amsterdam, to try to maintain parity through open market operations that consisted of buying and selling the respective assets. 3. The value of bank money was guaranteed by the fact that it was the necessary means of payment for bills of exchange, which created a demand for bank money.[79] 4. However, this is not the only reason for the rise of the agio. As we have just seen, above all, the guarantee of the Bank to provide sound money in exchange, without the need to ascertain such value, was the reason for the agio, as well as the guarantee that the deposits were made available for the storage and transfer of money without cost (except for the fees). In the cases of Genoa and Venice, although the government managed to keep the bank money stable, it failed to contain the devaluation in the current money market. For this reason, the agio on bank money increased over time along with an inflationary trend that accompanied the decline of the republics.[80] In Amsterdam, on the other hand, the agio between bank guilder and current guilder fluctuated within a fixed range determined by transactions on the open market. As Larry Neal notes, "the Dutch were able to reap the advantages of a fixed exchange rate for their international trade and finance, encouraging their own merchants as well as foreign merchants to use their financing facilities for long-distance trade and long-term finance. At the same time, they were able to maintain the shock absorber benefits of a flexible exchange rate for their domestic economic activity."[81] Thus, the Bank of Amsterdam could manage the money supply in the local market through the agio, which "acted as a sluice gate because, as it rose, further specie inflows into the Wisselbank's coffers were discouraged since bank money became more expensive. Conversely, when it fell, specie

[78] See Quinn S., Roberds W., *Death of a Reserve Currency*, Federal Reserve Bank of Atlanta working paper 17, 2014; Sieveking H., *Studio sulle finanze genovesi nel medioevo e in particolare sulla Casa di S. Giorgio,* op. cit. p. 259.

[79] It is also worth noting that, at least in Venice, Amsterdam and Hamburg, bank deposits were unseizable by creditors, see Roberds W., Velde F. R., "Early Public Banks I: Ledger-Money Banks", op. cit., pp. 338, 344, 350.

[80] See Amato M., *Il Bivio della moneta*, EGEA, 1999.

[81] Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," op. cit. p. 122.

inflows were more likely as bank money became cheaper."[82] 5. In the case of Amsterdam, bank money is (quasi) fiat money because it is not entirely convertible with specie. We have seen that from 1683 a receipt is required to withdraw coins from the deposit, so the bank's accounts were divided into encumbered deposits (guaranteed by the receipt) and unencumbered deposits, which circulated as fiat money. In the case of Venice, we have seen that the *Banco* released *fedi di credito* for deposits that were transferred and gave the *Banco* the right to operate the giro. A similar system existed in Genoa, where the *fede di credito* was introduced from Naples. It was a paper assigned to a specific person, but ultimately circulated like a banknote, since the holder was entitled to apply for the giro at the bank. However, this is not a necessary condition for it to be fiat money, but the fact that in Venice, as Tucci reports, bank money was not fully backed by precious metal.

3. The financial revolution and the Great Recoinage in England

In this section we analyse the English case from the end of the 17th century until the introduction of the gold standard. This period is characterised by three revolutions: first, the Glorious Revolution of 1689, which ushered in a new political system based on the independence of Parliament, on the one hand, and the courts, on the other, counterbalancing the power of the sovereign; second, the financial revolution, which created the capital market, especially with the establishment of the Bank of England in 1694; and finally, John Locke's monetary revolution, which took place with the Great Recoinage of 1696.

Let us introduce the Bank of England with the words of Larry Neal: "Unlike the Wisselbank in Holland," he says, "the Bank of England was not the creation of the merchant guild of the capital city. Rather, it was chartered by the national parliament of England at the urging of the king."[83] The purpose of this institution was financing the sovereign.

When the Bank of England was founded in 1694, the following means of payment were in circulation: first, coins, most of which was clipped for the last recoinage dated 1601 (milled money, which could not be clipped, was not issued until 1663); then there were bills of exchange and goldsmith's receipts, which circulated as money; in addition, the Exchequer issued receipts for money advances to anticipate revenue, first in the form of tallies (i.e.

[82] Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," op. cit. p. 122.
[83] Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," op. cit. p. 124.

notched timbers), then in the form of Exchequer bills, both of which bore interest. However, when England declared war on Holland in 1672, the Exchequer stopped repaying debts (i.e., Charles II did not comply with treasury orders) and confined itself to issuing tallies as an advance on revenue or to pay directly for goods and services.[84] But war spending became extremely high during the nine-year war with France (1688-1697), when William's government tried everything to finance the war, as Feavearyear says:

> They increased taxation as far as they dared. They raised in the city ordinary personal loans from every one who would lend. They issued tallies upon the excise and upon other revenues until there were several millions of pounds' worth outstanding and payments were two years in arrear. They raised a million upon a tontine which provided for the payment of 7 per cent. interest upon the whole sum to the surviving contributors until only seven were left, after which each annuity went on as it was until the death of the holder. They issued a lottery loan of a million, with large prizes for the drawers of lucky numbers in addition to 10 per cent. interest upon the principal. Finally, and almost as a last resource, they founded the Bank of England.[85]

While the sovereign was in dire need of funds, the state of coinage, as we have just said, was quite poor, for there was a great deal of clipped and counterfeit money, and the milled ones, which could not be clipped, was often melted down, for the market price of silver was constantly above the mint price, so that clipping and counterfeiting were even useful in keeping up the money supply. As for the cost of coinage, the mint charges were just abolished by the law of 1666.[86] But in this emergency, how to increase both the means of payment and the revenues? Some brilliant suggestions came from Killingrew (1663, 1690, 1696), a member of Parliament and Paterson (1690), a merchant and financier, who proposed a system in which the sovereign borrowed in the form of bills, which in turn could be used as money.[87] In fact, as Christine Desan says, under this system which implied the establishment of the Bank "the government could expand its fund immediately by lodging public debt with Bank investors and spending their promises-to-pay. When it took those promises back in satisfaction of taxes, it could return them to pay down the debt or, indeed, it could re-spend them and tax them again."[88] Thus, the Bank of England was established by what is now known as the Bank of England Act (1694), whose actual name was "An act for granting to their Majesties several Rates and Duties upon Tunnage of Shipps",[89] i.e., the government was authorised to levy a tax on ships to repay the interest on the loan received from the Bank. This emphasised the fiscal aspect of the law, rather than the fact that it was an issuing bank with limited liability that was to be established to finance the public debt.

[84] See Feavearyear A. E., *The Pound Sterling*, Oxford university press, 1931, pp. 103-105.
[85] Feavearyear A. E., *The Pound Sterling*, op. cit. pp. 113-114.
[86] See Feavearyear A. E., *The Pound Sterling*, op. cit. p. 109.
[87] See Desan C., *Making Money*, op. cit., pp. 295-329.
[88] Desan C., *Making Money*, op.cit. p. 300.
[89] Desan C., *Making Money*, op. cit. p. 304.

The Bank of England Act actually stipulated that the Bank had to lend the government £1.2 million in instalments, with the government not repaying the principal until 1706, but paying annual interest of 8 percent. In turn, the Bank could issue bills or notes up to an amount of 1.2 million pounds. The entire capital was soon subscribed, as the Bank was supported by many who saw an opportunity to enter the new banking business (represented in Parliament by the Wighs), and the loan was passed on mainly in the form of "sealed Bank's bills", as the law permitted. However, only 720,000 pounds were drawn down immediately in the Bank, with the other portion available for other investments. In fact, the Bank lavishly discounted commercial paper and government tallies, so that "the Bank's own specie reserve generally fluctuated between 12.8 and 32 percent in its first decade, falling to a scant 2.7 percent during the short run on the Bank in 1696 [due to the recoinage crisis, ed.]."[90] Moreover, the interest-bearing bills that made up the bulk of the original loan to the government were increasingly being supplanted by interest-free notes. According to Desan, the Bank initially made use of notes following the goldsmith's practice, that is using them as receipts only for private customers, but as soon as 1696 "the Bank was issuing from 30 to 50 percent more notes than the £ 1.2 million authorized by the Bank of England Act."[91] In 1704, Parliament made promissory notes payable to an assignable holder, and it was not until 1833 that they became legal tender. However, "by the end of the 17th century, the Bank was already making out notes to standardised payees, one of its own employees such a teller", meaning that "cash notes" were simply circulating as money.[92] It is clear from this report that the Bank issued fiat money from the beginning, backed by government debt and circulated in the form of paper money that evolved into banknotes.

As for the currency situation, we have already seen that the coinage was in bad condition, moreover, the activity of the Bank had fueled a credit inflation with repercussions on the overall economy, but in the end it was the clipped coins that came into the spotlight, as Feavearyear says:

> While the price of silver and the price of Dutch currency rose only 25 per cent [1694-95, ed.], and commodity prices on the average to about the same extent, the price of guineas [the gold coin, ed.] and of gold went up by 40 per cent. This was partly due to the demand for gold which resulted from the talk of calling down the clipped silver, partly to the demands from the banks for reserves purposes in the face of increased liabilities, and partly to speculation. Most people at the time, however, regarded the clipper as the sole cause, and there is no doubt that the spectacular jump from 25 *s*. 0 *d.* to 30 *s.* 0 *d.* [for the guinea, ed.] in May 1695 turned the earnest attention of the Government towards the condition of the silver coinage.[93]

[90] Desan C., *Making Money*, op. cit. p. 308.
[91] Desan C., *Making Money*, op. cit. p. 311.
[92] See Desan C., *Making Money*, op. cit. pp. 309-311. See also Feavearyear A. E., *The Pound Sterling*, op. cit. p. 118.
[93] Feavearyear A. E., *The Pound Sterling*, op. cit. p. 121.

And Also Kelly says:

> By the beginning of 1695 it had become impossible to exchange a clipped coin for a full-weight piece without payment of a premium. The exchange with Holland fell heavily, and the market price of gold and silver started to rise. Full-weight money almost disappeared from circulation, and the shortage of acceptable coins affected trade throughout the country.[94]

Charles Montague, Chancellor of the Exchequer, had arranged for the appointment of a committee to investigate the monetary crisis, which in March 1695 presented *Fourteen Resolutions* proposing a 10 percent nominal increase in silver coinage to the market price of bullion and the recoinage of hammered money by the mill. At this time Locke, who was strictly in contact with the Whig politicians Somers and Clarke, who strongly opposed devaluation, published his second pamphlet, *Short Observations*, to counter this policy. Ultimately, the *Fourteen Resolutions* were not adopted by Parliament, but in 1695 they resurfaced through the report containing *an Essay for the Amendment of the Silver Coins* by William Lowndes, the Secretary of the Exchequer, who restated the proposal to increase by 25 percent the face value of the silver crown, i.e., from 5 s. to 6 s. 3 d. to keep pace with the rise in the market price of silver.[95] Lowndes argued that the money enhancement would have prevented the outflow of silver because silver coinage would no longer have been undervalued; it would have increased the money supply and restored the exchange rate with Holland, with the added advantage of being able to change the rate again if conditions changed in the future.[96]

The government asked for expert advice before making a decision. Also Locke was consulted and he replied with the *Propositions Sent to the Lords of Justices*, where he clearly explains his metallic view on money by the beginning of the writing:

> Silver is the *instrument* and *measure* of Commerce in all the Civilised and Trading parts of the world.

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[94] Kelly P. H., *Locke on Money,* op.cit. p. 20.

[95] See Kelly P. H., *Locke on Money*, op. cit. p. 25 and Li M. H., *The Great Recoinage of 1696 to 99*, Weidenfeld and Nicolson, 1963, p. 96. Here we need to clarify two things. First, the value of the crown is 5*s*, and the metal content is an ounce of silver, which is worth 5*s* 2*d* according to the still valid Elizabethan standard. So the difference of 2*d* must be attributed to the approximately 8 percent alloy put into an ounce of *sterling silver*, which is the characteristic of the Elizabethan monetary standard, see Li M. H., *The Great Recoinage of 1696 to 99*, p. 47: "The standard of both the milled and hammered coins was the same, which had not been altered since the 43rd year of Queen Elizabeth's reign (1601), i.e. for every pound troy weight of silver three pounds and two shillings sterling were coined, with a fineness of eleven ounces and two pennyweight of fine silver and eighteen pennyweight of alloy, and with an allowance of two pence in weight or in fineness." See also Desan C., *Making Money*, p. 364. Second, I note that Kelly speaks of a devaluation of 20 percent, but as Li says, the money was raised by 25 percent, so the devaluation is 25 percent (I also mentioned above the 10 percent raising of the crown recommended by the *Fourteen Resolutions*, i.e., from 60 to 66 pence, rather than a devaluation of 9 percent as Kelly writes).

[96] Kelly P. H., *Locke on Money,* op. cit. pp. 20-35.

> It serves to both this by its intrinsic value
>
> The *intrinsic value* of silver considered as money is that estimate which for its fitnesse, common consent has placed on silver in makeing it the universal Exchange and Barter for all other commodities. And by that it is the *instrument* of commerce
>
> This *intrinsic value* of silver used in Commerce is measur'd only by its quantity and by that it is the *measure* of commerce. A greater quantity has always a greater intrinsic value, for a greater quantity of it will always purchase or Exchange for a greater quantity of the same commodity. [...]
>
> Hence it follows that an equal quantity of silver is always equal in value to an equal quantity of silver[97]

From these statements it is clear that money by "common consent" is silver. Therefore, silver coins cannot be worth more than bullion, and therefore clipped coins must be recoined at its original content to be both a valid standard of value and a medium of exchange. Moreover, Locke sharply criticised Lowndes' plan in discussing clipping further:

> *Clipping* of money is raising the value without publique authority: the same denomination remaining to the piece which has now lesse intrinsique value i.e. lesse silver than it had before.
>
> Altering the standard by coining pieces under the same denomination lighter or with lesse silver in them , is doeing the same thing by publique authority. The only odds is, that by clipping the loose is not forced on any one, by altering the standard it is.
>
> Altering the standard by raising the Money will get to the publique or bring to the mint to be coins not one ounce of silver: but will make great confusions in accounts, bargains, Trade and all buying and selling whatsoever to no purpose and defraud the King in all his settled revenues, and all other men in their revenues and debts[98]

Hence, raising the money is like clipping a public offence, and William III was quite in agreement with this attitude. One might think that this is a paradox, since the sovereign was used to such manoeuvres in history, as Lowndes also showed in his report. In this case, however, the enhancement of the money should have been voted by Parliament, but the King wanted to keep the money matter as a prerogative of the Crown, so he agreed to keep the same money standard not to involve the Parliament.[99] Among other experts consulted by the Government "the case for maintaining the existing standard was put by Child, Houblon, and Heathcote, and for devaluation by Wren, Newton, and Wallis, a clear division

[97] Locke J., "Propositions Sent to the Lords Justices" (1695), in Kelly P. H., *Locke on Money,* op. cit. vol. II, p. 374.
[98] Locke J., "Propositions Sent to the Lords Justices", in op. cit. p. 376.
[99] See Kelly P. H., *Locke on Money,* op.cit. pp. 20-35.

between financiers and mathematicians."[100] In particular, Newton, who was to become Master of the Mint in 1700, joined Wren in calling for a special authority to manage the currency and for a price control policy.[101] The final act of this debate was the publication of Locke's *Further Considerations Concerning Raising of Money* on December 27, 1695, to publicly reject Lowndes theories and influence Parliament's decision not to alter the money standard. It seems that Locke's position was inspired by Bernardo Davanzati's *Lezione delle Monete*, for it was also published in 1696 as A *Discourse on Coins*, though not by Locke but by John Toland, a member of Locke's strict political entourage.[102]

As we have seen, the enhancement of the crown (i.e. a devaluation) was the most recognised policy until it finally turned into its opposite. Here we will focus on the main supporters of this policy. First, there is William Lowndes, Secretary of the Exchequer, who published the report with an *Essay for the Amendment of the Silver Coins* in September 1695, a few months after his appointment. As we know, he proposed raising the crown by 25 percent and changing its name at the same time, citing several examples from English history, i.e., the several raising of the nominal value of money from Edward I to 1695. In fact, As Desan recalls, "nominalism", was a mediaeval principle that had been reaffirmed in England since *The Case of Mixed Money* (1605), when a debtor in Ireland paid his creditor in lighter money after Queen Elizabeth had debased it. The creditor rejected the payment, but the courts eventually upheld the practice of counting the money according to the face value set by the sovereign.[103] Let us now come back to Lowndes and follow his arguments as presented by Li:[104]

1) The market price of silver had risen to 6 s. 5 d. an ounce, so the crown, the content of which is an ounce of sterling silver, should be raised to 6s. 3 d. to prevent it from being melted down.[105]
2) If the money is not enhanced by 25 percent, no silver will be brought to the mint.
3) A raising of the nominal value of money (i.e., an increase in money supply) is appropriate for the needs of trade.
4) The unclipped coins had already increased in value by at least 25 percent compared to the clipped, so the raising is consistent with the nominal value of all coins.
5) A higher nominal value could be divided into more divisional coins without further subdivisions.

[100] Kelly P. H., *Locke on Money,* op. cit. p. 29.
[101] See Kelly P. H., *Locke on Money,* op. cit. p. 29; see also Li M. H., *The Great Recoinage of 1696 to 99*, op. cit. p. 93: "[...] Wren suggested that the Government should make out a tariff to regulate the denominations of the coins, the denominations being always provisional and to be changed according to market conditions. Hence there would be no need to recoin all the time no matter what the market price of silver might be."
[102] See Kelly P. H., *Locke on Money,* op. cit. pp. 34-35.
[103] Desan C., *Making Money*, op. cit. pp. 268 - 274.
[104] Li M. H., *The Great Recoinage of 1696 to 99*, op. cit. pp. 96-100.
[105] The difference of 2*d* refers to the difference between silver and sterling silver (see note 19 above).

6) The name of the new coins would change, but the unit of account would remain as usual (i.e., pounds, shellings, pennies).
7) The new nominal value would be sufficient to bring the hoarded minted coins into circulation, making the recoinage of clipped coins or even new coins unnecessary, with the greatest relief to government finances.
8) The cost of any minting would be less if the denomination is raised (i.e., due to the seigniorage resulting from the enhancement).[106]
9) The nominal increase, if insufficient, could be made up depending on market price trends.
10) The nominal increase would stop the outflow of silver due to arbitrage.

To the objection that the plan would harm the creditors, Lowndes replied that the creditors would be paid with a devalued currency, but it would have been just as bad, if not worse, if they had been paid with the clipped coins, which were already in circulation when the loan was purchased. And he also responded to the main Locke's objection, i.e., that "an ounce of silver is always equal to an ounce of silver of the same standard" without regard to whether the metal is minted or not. Locke said that “if there was a market price of silver which was higher than the mint price, it was only a fictitious price because it was in terms of clipped coins, so that if the clipped coins were removed or retrieved, the so called market price of silver would come down and be equal to the mint price,”[107] that is, the two values (i.e., the price of the coins and the market value of the silver) will just be equal once the clipped coins are recast. Lowndes, on the contrary, claimed that traders actually compare the market price of silver to the value of the coins in terms of metal content. So, if the value does not correspond to the market value, they hoard the coins, melt them down or exchange them abroad, without paying attention to whether they are clipped or not.

A similar position was also held by Newton. Here we will analyse the report he sent to the government, first published by Li.[108] First of all, Newton agreed with Locke on the metallistic concept of money, so much so that after the Great Recoinage he became a supporter of the policy. You can see this when you read how he begins the report:

> It seems reasonable that an Ounce of Bullion should be Parliament Enacted as the same Value with a Crown-Piece of Milled Money, under a Penalty on every Person who shall Exchange or Sell it for more. For such a Law, I take to be the only sure means to make Milled money constantly of the same Intrinsick & Extrinsic value, as it

[106] On seigniorage see the next section on Louis XIV’s monetary policy. However, in this case the enhancement would not be aimed at making a profit, but merely at adjusting the price of silver to the market price, so that the result would be merely a reduction in the cost of coinage. See also Newton's point 3 below.
[107] Li M. H., *The Great Recoinage of 1696 to 99,* op. cit. p.98.
[108] Newton I., “Isac Newton concerning the amendment of coins”, in Li M. H., *The Great Recoinage of 1696 to 99,* op. cit., appendix III, pp. 217-223.

> ought to be and thereby to prevent the Melting or Exporting it, and to make the Milling of Bullion Practicable without Loss.[109]

So the extrinsic value must correspond to the intrinsic value, as Locke said:

> Men in their bargains contract not for denominations or sounds, but for the intrinsick value; which is the **quantity** of silver by publick Authority warranted to be in pieces of such denominations.[110]

That is, the denomination is only an instrument to facilitate the commercial circulation of the metal:

> The **Coining** of Silver, or making **Money** of it, is the ascertaining of its *quantity* by a public mark, the better to fit it for Commerce.[111]

In this concept there seems to be no difference between Locke and Newton. On the other hand, the difference with the latter and with other devaluationists, especially Barbon, who says that in the circulation of money, as we shall see, only the denomination counts, is quite clear. The differences with Locke, however, will become clear below:

> And in making them [metal content and denomination, ed.] of Equal Value, it seems more reasonable to Alter the extrinsick than the Intrinsick Value of Milled Money, that is, to raise a Crown Piece to the Value of an Ounce of Bullion, wch. At present is at least 6s. 3d. than to Depress Bullion to the present Value of Mill'd Money.[112]

Newton would thus have resorted to the tariff to equalise intrinsic and extrinsic value, while Locke rejected this instrument once and for all, believing that money is chosen by "common consent" and its value is therefore predetermined, so that the market price of silver would have equalised once the causes of the agio, i.e., the clipped money, had been eliminated. Perhaps it depends on a more deductive approach on the one hand and a more inductive approach on the other, the former depending on Locke's philosophical framework and the latter on the experimental attitude that characterised Newton's research in the scientific field. Newton takes into account the forces at work in the market, while Locke believes that the market would follow the principles he assumes, but he fails to predict the consequences, as we shall see. The reasons Newton gives for raising the crown are as follows:

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[109] Newton I., "Isaac Newton concerning the amendment of coins", in op. cit. p. 217.
[110] Locke J., "Further Considerations Concerning Raising the Value of Money" in Kelly P. H., *Locke on Money,* op. cit. vol. II, p. 413.
[111] Locke J., "Further Considerations Concerning Raising the Value of Money" in op. cit., p. 412.
[112] Newton I., "Isac Newton concerning the amendment of coins", in op. cit., p. 217.

1) “This will more Discourage Coiners because the greater is the Value of Milled & Bullion, the less will be the Profit of those who turn them into base money.”[113] Newton is referring here to the profit in melting down milled money to recover the metal in counterfeit low money (in fact, he refers to "coiners," i.e., counterfeiters).
2) “It will make a greater Quantity of Current Money in the Nation, wch. is now wanting.”[114] This is like Lowndes’ point 3 above, i.e., a higher money supply.
3) “It will Lessen the Charge wch. the Nation will be at in Milling all the Unmill’d Money.”[115] This is like Lowndes' point 8 above. Newton explains it with an example: if you have three half-crowns, all together containing an ounce of bullion, the cost of milling is 2 s. 3 d.; if you increase the ounce to 6 s. 3 d., the cost is 1 s. 3 d. (i.e., 1 s. difference corresponds to the nominal value increase per ounce, i.e. the seigniorage).
4) “The Cheapness of Commodities in respect of Bullion invites Foreigners to buy here wch. is Our Advantage, the Dearness invites us to buy abroad wch. is their’s.”[116] Newton acknowledges that the enhancement benefits foreigners through the exchange rate, but this benefit on the balance of trade is undermined by a possible increase in the price level of commodities, as we will see below.
5) Finally, the raising of money is necessary to comply with the proportion between gold and silver abroad “For if gold in proportion to Silver be of much more Value at home than abroad the Bullion & Milled Money will be Exported to buy up Foreign Gold.”[117]

As for the possible losses in raising the money, Newton claims that “the King in receiving Excise, Customs and Taxes, and all Persons in receiving Annuitys Rents and other debts”[118] do not incur any loss because, if it is true that they receive less intrinsic value, it is also true that all these debts are currently paid with clipped money that has just lost 2/5 of its original intrinsic value (same argument of Lowndes). As for the reminting of the hammered coins, Newton proposes to do it gradually, minting successively different types of coins in order to maintain the necessary liquidity on the market in the meantime, i.e. first the half-crowns, which are more susceptible to counterfeiting (in an order corresponding to the different kings on the obverse), then shillings and sixpence and finally the crowns. The cost of milling would be borne entirely by the sovereign for a certain period of time until the various kinds of money were called up and valued by weight. In this way, the one who hoarded some of them would have an incentive to bring them to the mint.

[113] Newton I., “Isac Newton concerning the amendment of coins”, in op. cit., p. 217.
[114] Newton I., “Isac Newton concerning the amendment of coins”, in op. cit., p. 217.
[115] Newton I., “Isac Newton concerning the amendment of coins”, in op. cit., pp. 217-218.
[116] Newton I., “Isac Newton concerning the amendment of coins”, in op. cit., p. 218.
[117] Newton I., “Isac Newton concerning the amendment of coins”, in op. cit., p. 218.
[118] Newton I., “Isac Newton concerning the amendment of coins”, in op. cit., p. 218.

Finally, Newton comes to the problem of price rise. He says that if the price level is stable up to this point, apart from the increase in the price of gold and silver due to clipped money, the same reason begins to drive up the price of other commodities. This is because money is accounted according to its denomination, not by its intrinsic value "For these [the commodities, ed.] are bought & sold not wth. Bullion according to it's Weight and Intrinsick Value, but with Silver Coyn, according to its Stamp and Extrinsic Value, and with Gold, according to it's Price in Silver Coyn."[119] Newton clearly states that the use of money at face value is negative (unless it coincides with intrinsic value, which it does not) because it promotes inflation. Thus, he agrees with Locke and opposes nominalism. Indeed, he says, prices should not rise because "they ought to keep proportion with the Prices of Commodities abroad, and with the Quantity of Current Money in the Nation", then he adds "That the whole value of all the Wares of Shopkeepers may keep a due proportion to the whole value of all the Land, and both together to the whole value of all the Gold & Silver in the Nation" and specifies "[this, ed.] is a thing of difficult consideration",[120] showing his effort to find the laws that govern the whole system. If the problem is that money becomes scarce once clipped coins are milled, while the milled ones continue to be exported abroad, and the solution is to raise the crown, the result could be a proportional increase in commodity prices if left unchecked. Thus, he proposes the temporary establishment (for wartime) of a commission to keep the price at the level of previous years. The reason he fears a possible price increase is that it would ultimately affect the sovereign's ability to borrow. Indeed, if the revenues of the treasury could be maintained by increasing taxes and duties to compensate for the general depreciation of money in terms of loss of purchasing power, nothing can be done for "annuities" and the loss on them would cause a discredit to public funds. For this reason, the government should intervene through the activity of a special commission.

Newton's position is pragmatic, but at the same time follows the scientist's approach, as he is determined to find a balance between economic variables such as the "Prices of Commodities abroad" and the "Quantity of Current Money in the Nation", the "whole value of all the Wares of Shopkeepers" (i.e., inside the nation), the "whole value of all the Land'', and the "whole value of all the Gold & Silver". Although he does not develop these concepts, he actually speaks of "proportions" that reflect natural quantities and their ratio. We can call this particular attitude, which allows Newton to abide by the laws of the market, but also to intervene to depress prices if they should rise disproportionately, "naturalistic".

Another important criticism of Locke came from Sir Richard Temple and Nicolas Barbon, who held a purely nominalist position. In particular, Barbon, in *A Discourse Concerning Coining the New Money Lighter* (1696), criticised Locke's concept of money, saying that people do not consider silver as money, but the face value of coins, as he wrote:

[119] Newton I., "Isac Newton concerning the amendment of coins", in op. cit., p. 220.
[120] Newton I., "Isac Newton concerning the amendment of coins", in op. cit., p. 220.

> If it had been the quantity of silver that Men take, and contracted for, men would have made their Bargains by the Weight of Silver, and not by the tale or money: For money is divided by number, and there would be no occasion for coining.
>
> But Silver being a Commodity for other Uses besides the making of money, and according to the Plenty or Scarcity to supply those Occasions is dearer or cheaper; therefore money was invented, which by Publick Authority sets and fixed a certain value to each piece of money; and it is that which men give and take by tale and number of the pieces, in exchange for all other Commodities without regarding the weight and quantity of silver in each piece.[121]

And again:

> Or else there could be no bargain made upon an equal foot, there being such a certain difference in the quantity of the silver in the several coins, which could never be remedied unless publik authority had fixed the value to their money, by which all those fractions and inequalities in the several coins are even'd.[122]

According to Desan, Barbon's view was consistent with the historical truth about money, for "historically, the quality for which people had been willing to pay for centuries and which the government now subsidized was the quality that distinguished coin from metal - its capacity to mark value, transfer it in payment, and carry it from hand to hand. Money in turn allowed silver to be priced, supporting its sale as bullion". In fact, the reason why silver was traded so much internationally is that it was the substance that constituted money, so "bullion held value as a 'liquidity put', as it were - a material that held heightened value not because it was money, but because it could be *turned into* money in another polity",[123] so that the unit of account (i.e., imaginary money) can be said to be a necessary fulcrum between the two dimensions of money, national and international, to bring them into balance.

Be that as it may, Parliament finally approved the government's plan for recoinage to the old standard, i.e., 5 s. 2 d. per one ounce of silver, and the first decision taken was to limit the possibility of paying the Exchequer for taxes or loans with clipped money at face value, which was finally set for June 24, 1696. On the other hand, it was not possible to bring clipped money at par to the Mint. Therefore, as Feavearyear says, this process was quite advantageous for rich people and extremely troublesome for poor people:

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[121] Barbon N., "A Discourse Concerning Coining the New Money Lighter", 1696, in Li M. H., *The Great Recoinage of 1696 to 99*, op. cit. pp. 106-107.
[122] Barbon N., "A Discourse Concerning Coining the New Money Lighter" (1696), in Desan C., *Making Money*, op. cit. p. 355.
[123] Desan C., *Making Money*, op. cit. p. 354.

> The landowners with land and property tax to pay, the merchant with customs and excises duties to pay, the tax collectors, the bankers, the stock-jobbers, and the well-to-do middle-class people of the towns who could subscribe to loans and annuities - these had not only been able to unload upon the Exchequer any stock of bad money they possessed, but in many cases, no doubt, had made a nice profit by purchasing clipped money at discount from less fortunate persons. The people who were left with it were the wage-earning and poorer classes, who found that the shop-keepers at an early stage refused to take it at par, and who had no chance of getting it into the Exchequer before the time.[124]

As a result, after June and until November, it was possible to bring the coins to the Mint or to the Exchequer at a premium to the mint price, and the cost of this operation was financed by a tax on the inhabitants of the houses in proportion to the number of windows (i.e. the window tax). A total of about 10 million pounds was collected, but the value of the new coins was only 6.8 million pounds, so the shrinkage of the means of payment caused a deep deflation, which was overcome only thanks to the issuance of Exchequer bills, which reached a value of more than 3 million pounds by November 1702, and the loans of the Bank of England, which for the first time had to make paper partially inconvertible to counteract the run on the milled money.[125] However, Kelly writes: “Even in the worst period immediately following the demonetisation of the clipped coins [...], Locke remained convinced that maintaining the standard had alone made possible the avoidance of disaster”, but “such optimism was not shared by the king who, better informed of the extent of the credit crisis, had come to consider that failure to devalue had been a disastrous mistake.”[126]

Be that as it may, the standard of money was maintained and the principle of its immutability (both Feavearyear and Kelly talk about the "sanctity" or ”sacrosanctity”, respectively, of the monetary standard)[127] was definitely confirmed. This revolutionary principle, as some note, has turned money into capital. According to Macpherson, indeed money has the function of capital in Locke, since it enables the landowner who cultivates his land at a profit to set aside and invest the surplus, to buy more land and employ labourers to secure his prosperity and that of the whole nation.[128] In fact Locke writes:

> Since Gold and Silver, being little useful to the life of man in proportion to food, raiment, and carriages, has its *value* only from the consent of men, [...] it is plain, that Men have agreed to a disproportionate and unequal *Possession of the earth,*

[124] Feavearyear A. E., *The Pound Sterling*, op.cit. pp. 128-129.
[125] See Desan C., *Making Money*,op. cit. pp 361-370.
[126] Kelly P. H., *Locke on Money,* op. cit. vol. I, p. 37.
[127] Feavearyear A. E., *The Pound Sterling*, op.cit. p. 136. Kelly P. H., *Locke on Money,* op.cit. vol. I, p. 29. Cfr. Desan, *Making Money*, op.cit. p. 346, 364.
[128] Macpherson C. B., *The Political Theory of Possessive Individualism: Hobbes to Locke*, Clarendon Press, 1969, pp. 203-221. See Desan C., *Making Money*, op.cit. p. 373.

> they having by a tacit and voluntary consent found out a way how a man may fairly possess more land than he himself can use the product of, by receiving in exchange for the overplus fold and silver, which may be hoarded up without injury to any one, these metals not spoiling or decaying in the hands of the possessor.[129]

Following this line of reasoning, Desan says that "the mutual agreement on money," i.e., money fixed at a stable value, removed from the political power of the sovereign (Stephan Eich talks of “depoliticization” of money)[130] and thus from distributive justice, “insulated the disparity in wealth it enabled as a necessary attribute of growth”.[131] Thus, it guarantees above all the creditors, besides a persistent tendency that was confirmed in The Case of the Bankers, where, after the 1691 suit, the 1696 appeal, and the 1700 House of Lords decision, the judiciary finally allowed the "bankers'' (i.e., all those who had not been repaid by the sovereign with the 1672 Stop of the Exchequer, especially bankers) to sue the sovereign for their money.[132] This new approach finally enabled the success of paper money, as Desan says:

> By casting Bank notes as promises of guaranteed material content the Great Recoinage gave them a genealogy like the one that defined coin as an amount of metal. Both were ideally independent of the government and both were tied to an external touchstone for value. In the next century, those defining the gold standard would understand Bank notes as a medium that must be convertible into a fixed amount of metal.[133]

In fact, commodity money was eventually discarded because the system that regulated it was dismantled. The Great Recoinage, by undervaluing silver relative to gold, broke the ideal money system that had effectively created a balance between the value of money on the one hand and the price of precious metals on the other. The result was that the silver penny disappeared from circulation and was replaced by the gold guinea worth 21 s. as the base coin. The process of silver outflow continued for several years, while the government tried to stop it by lowering the guinea to 22 s. 0 d. in 1696 (it had even reached the value of 30 s. in 1695) and further to the value of 21 s. in 1717 to prevent the outflow of silver.[134]

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[129] Locke J., *Second Treatise*, par. 50 in Eich S., *The currency of politics*, Princeton University Press, 2022, p. 63.

[130] See Eich S., “John Locke and the politics of monetary depoliticization”, in *Modern Intellectual History*, Vol. 17, Issue 1, Cambridge University Press, pp. 1-28, March 2020; id., *The currency of politics*, op.cit.. On the same concept, see also De Cecco M., “Gold standard”, T*he New Palgrave: a Dictionary of Economics*, First Edition, 1987.

[131] Desan C., *Making Money*, op.cit. pp 373.

[132] See Desan C., *Making Money*, op. cit. pp. 281 - 294.

[133] Desan C., *Making Money*, op. cit. p. 375.

[134] The guinea was first issued in 1663 at the value of 20 s., but it travelled at a premium from 1693, and appreciated markedly near the end of 1694, see Desan C., *Making Money*, op. cit. P. 297; see also above Feavearyear A. E., *The Pound Sterling*, op. cit. p. 121.

The same Locke recognised that this was a problem and, as a member of the Council of Trade, signed this report to the Lords Justices in September 1698, which stated:

> That the merchants and others, we have consulted thereupon are generally agreed, that the Importation of Gold, occasioned by our over-valuing it in the currency of guineas at 22s is a prejudice to this Kingdom in our Trade; and on occasion that so much Silver as the Value of the Gold so imported is worth, hath been either carried out of England or hindered from coming in; and that we cannot expect any Silver Bullion, from Spain or elsewhere, should be imported and coined here, whilst we put so great an over-value upon Gold; because it is easy for merchants to know the value of both, in all Places where they deal, and exchange their Silver for Gold; and most certain, that they will only import hither to be coined, what makes most for their own advantage.[135]

However, it was up to Newton, who had become Master of the Mint in December 1699, to take the final steps. He issued two reports in 1701 and 1702 recommending a further reduction in the guinea price, but the war against France led to a postponement of the issue, which was not revived until 1717, when Newton was asked for another report, which he wrote recommending a reduction in the guinea price to 21 s. 0 d., which was carried out. Nevertheless, as Feaveryear says, the transition to the gold standard happened without awareness:

> There was, however, no further reduction; indeed a further reduction was never discussed. For about thirty years the heavy issues of gold coins, and the complete disappearance of all full weight silver coins, were quietly accepted , and then, by the middle of the century, it came to be recognised that gold had definitely supplanted silver as the standard.[136]

However, the guinea cannot take over the function of small money, which was previously fulfilled by the silver coins of lesser value. The problem was mainly the payment of workers, and companies began to issue their own paper money. Then country banks were established that issued banknotes, and the Bank of England in particular supplied the economy with a huge amount of banknotes. The problem of minor exchange, addressed by several attempts to issue copper money, which always failed due to distrust and counterfeiting, was finally solved in 1821 with the introduction of silver token coinage, with low metal content, convertible into gold.[137] Indeed, the Coinage Act of 1816 had put an end to bimetallism by making silver coins restricted legal tender tokens (only up to 2 pounds) and suspending the free coinage of silver.[138] The gold standard was confirmed by the

[135] Li M. H., *The Great Recoinage of 1696 to 99,* op. cit. p. 126.
[136] Feavearyear A. E., *The Pound Sterling*, op. cit. p. 142.
[137] See Desan C., *Making Money*, op.cit. pp. 376 - 381.
[138] See Redish A., *Bimetallism, an Economic and Historical Analysis*, Cambridge University Press, 2000, pp. 139, 146.

Resumption Act of 1819, when, after a period of inconvertibility due to the Napoleonic Wars, convertibility to the previous standard was introduced, de facto restoring the gold standard, which was finally institutionalised by the Peel Act of 1844.[139]

The financial revolution was then accomplished. "With funding for long-term debt and introduction of the Exchequer bill, markets for government debt broadened and deepened," Kindleberger observes, "Government stock, along with the shares of the South Sea Company, the Bank of England and the East India Company [...] created a capital market that could gather national savings and make them available to government."[140] The credit market was secured, in particular, by the role of the Bank of England, which issued bills guaranteed by both public debt and the private debt acquired through discount transactions. Thus, a "securitization" of debt was created, in which the seigniorage resulted from the application of the discount rate.[141] This system was based on the permanent shifting of balances and the consolidation of the sovereign debt (i.e., the sovereign's debt was periodically renewed after the ten-year repayment period), which is ultimately the source of "capitalism" for Bloch and the core of the financial revolution for Braudel.[142] The financial revolution was carried out by the Whigs, who represented the new class of creditors, especially the bankers, who had an interest in removing money from the control of the sovereign and making it the pillar of the capital system. The mastermind of the revolution was John Locke, who identified money as a specific quantity and fineness of precious metal according to a pre-political contract that makes this decision irreversible.[143] This type of money, "which may be hoarded up without injury to any one, these metals not spoiling or decaying in the hands of the possessor,"[144] is capital because it is created specifically for investment and not for commercial exchange, as was money in the previous system, whose function was to pay debts and for this purpose could be changed in value through the play of imaginary money. In contrast to Locke, there were some authors who advocated the role of imaginary money. First, there was Lowndes, who represented the early position of government and the tradition of nominalism in England. He represented both the pure nominalists like Barbon, who took a clear chartalist position and claimed money was fiat, and metallism à la Newton, who tracked the market price of precious metals to set the rate of silver money.

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[139] See Kindleberger C. P., *A Financial History of Western Europe*, Routledge, 1984.
[140] Kindleberger C. P., *A Financial History of Western Europe*, op. cit. p. 164.
[141] See Amato M., Fantacci L., *Fine della finanza*, op. cit.
[142] See Bloch M., "Esquisse d'une histoire monétaire de l'Europe", op. cit. p. 77; Braudel F., *Civilisation matérielle, économie et capitalisme* (1979), vol. 2 ("Les jeux de l'échange"), Colin, 2022, pp. 398 - 401.
[143] See Eich S., "John Locke and the politics of monetary depoliticization",op. cit., and Id., *The currency of Politics*, op. cit.
[144] Locke J., *Second Treatise*, par. 50 in Eich S., *The currency of politics*, Princeton University Press, 2022, p. 63 (see above).

4. The system of John Law and the French stabilisation

In this section we will cover the monetary and financial history of France from the last years of Louis XIV to the Mississippi bubble and the final stabilisation of the currency in 1726. This history is interwoven with that of John Law, who was the architect of the financial system that revolutionised France. Beyond the discussion whether the System was a creation of John Law or rather the result of a new ideology developed within Enlightenment in France,[145] we will focus on the character of John Law as a financier and minister, but above all as a subtle monetary theorist. We will start with his monetary reflections and then place his figure in the historical context of France to explain the architecture of the System. Finally, we will look at the then famous debate between Jean-François Melon and Nicolas Dutot on monetary policy. They had both worked with Law, but the debate developed afterwards on the possibility of managing the nominal value of money.[146]

Following Antoin E. Murphy,[147] we will begin with John Law's two earlier works, *Essay on a Land Bank* (1703-4) and *Money and Trade* (1705). In the *Essay*, Law proposes the establishment of a land bank in Scotland. The idea of a land bank is actually not new; it had been put forward several times in England, in particular by Tory exponents who saw their interests threatened by the Whig initiative of the Bank of England, and some projects were even realised, albeit without success. Law's idea, however, was to replace precious metal with land as a more stable kind of money. This argument was also taken up in *Money and Trade*. For Law, silver had lost value because of the massive influx from America, so its value is subject to fluctuations in supply, while land is more stable. Moreover, in the case of Scotland as well as England, it is completely absurd to rely on a commodity supplied by Spain, the enemy. According to Law, silver is "lyable to a change in its value, as other goods, from any change in its quantity, or in the demand for it,"[148] and that in contrast to Locke, who said that the value of silver is fixed by convention; in effect, he is saying, "I cannot conceive how different nations could agree to put an imaginary value upon any thing, expecially upon silver, by which all other goods are valued."[149] Thus, the value of all commodities is determined by supply and demand, especially the value of silver, which was chosen as money because of its special properties that make it suitable for trade. Based on this assumption, we can compare Law's position with Newton's. In fact, on the one hand, as Murphy argues, Law gives "the first presentation of the modern quantity theory in a demand for money / supply of money"[150]; on the other hand, Newton focuses on the

[145] See Orain A., *La politique du merveilleux*, Fayard, 2018. Orain argues that the system was a counter-movement to the system of the old regime of Louis XIV and, on the other hand, to the new tendency towards laissez-faire that was emerging within the physiocracy.
[146] For a general explanation of the monetary policy of the Ancient Regime see section 1.
[147] Murphy A. E., *John Law*, Oxford University Press, 1997.
[148] Law J., *Money and Trade*, R. & A. Foulis, Glasgow, 1750, p. 8.
[149] Law J., *Money and Trade*, op. cit. p. 14.
[150] Murphy A. E., *John Law*, op. cit. p. 52.

relative quantity of different precious metals (i.e., gold and silver), i.e., he takes into consideration the "natural" quantity of money. Nevertheless, Law has a more complex view of money, so much so that Schumpeter classified him as a theoretical chartalist and Cesarano as a theoretical metallist.[151] The former bases his assumption on the fact that Law wrote that "Money is not the Value *for which* Goods are exchanged, but the Value *by which* they are exchanged,"[152] and Murphy agrees with Schumpeter that Law negates the intrinsic value of money;[153] Cesarano focuses instead on the proposal to use land as a substitute for precious metals in use as money.[154] Murphy resolves this contradiction by identifying two periods in Law's thought. But we can probably also try to solve this puzzle by considering that Law had a different scale of money in mind. In fact, in the *Essay* he distinguished two categories of money; first, money fulfilling all the functions of money, which he divided into 1. measure of value 2. means of payment 3. standard for deferred payments. He included land money, banknotes, goldsmith's notes and silver money in this category. All of these types are considered stable, but silver to a lesser extent. Stability, according to Law, is a necessary condition for money to be a measure of value and a standard for deferred payments, which is most important for Law. A second category consists of money that does not have the property of stability and therefore can only perform the function of a means of payment, such as Bank of England shares, East India Company shares, Irish debentures, and gold.[155] Here is a hierarchy of money,[156] based on the stability property of money, as follows:

1. Land money
2. Banknotes
3. Silver
4. Joint-stock-company shares, government debt bonds
5. Gold

Based on the English experience, Law finds that paper money is better accepted in the market than silver. Therefore, he places it second, i.e., banknotes backed by fractional metal reserves held by the Bank of England or goldsmiths. However, he prefers land money, which is nothing more than paper money backed by land, and is at the top of the list because it is more stable. Then we have silver and after that, shares, government bonds and gold, without stability. In sum, Law's goal at this early stage was to provide the economy with the

[151] See Murphy A. E., *John Law*, op. cit. p. 61.
[152] Schumpeter J. A., *History of Economic Analysis*, Taylor Francis, 2006 (1954), p. 306 (emphasis by the ed.).
[153] See Murphy A. E., "John Law and the Scottish Enlightenment," in *A History of Scottish Economic Thought*, ed. Dow A., Dow S., Routledge, 2006.
[154] See Cesarano, F., Law and Galiani on money and monetary systems, in *History of Political Economy*, Summer, 22 (2), 1990.
[155] See Murphy A. E., *John Law*, op. cit. pp. 59- 62.
[156] For a modern concept of a hierarchy of money based on liquidity, see Mehrling P., "The inherent hierarchy of money", in *Social Fairness and Economics: Economic Essays in the Spirit of Duncan Foley*, ed. Taylor L., Rezai A., Michl T., Routledge, 2013.

necessary money supply for macroeconomic purposes such as promoting employment and the balance of trade (Murphy compares Law to Keynes on this point).[157] Indeed, he believed that traditional manoeuvres on the face value of coins were insufficient to provide an adequate money supply. However, he did not condemn such manoeuvres; on the contrary, he foresaw them, suggesting, for example, that the Bank of Scotland should have abated the money to prevent the run on itself, but he criticised them as ineffective in increasing the money supply. In *Money and Trade* chapter III *(Of the different Measurs have been used to Preserve and Increase Money. And of Banks)*, Law says:

> Some Countries have rais'd Money in the Denomination, when others have lower'd it; Some have allay'd it, when others who had allay'd it have rectified it; Some have prohibit the Export of Money under the severest Penalties, when others have by Law allowed it to be exported; Some thinking to add to the Money, have obliged Traders to bring home Bullion, in proportion to the Goods they imported. Most Countries have try'd some or all of these Measures, and others of the same Nature, and have tryed contrary Measures at one time, from what they us'd immediatly before, from the Opinion, that since the Method used had not the effect design'd, a contrary would: Yet is has not been found, that any of them have preserv'd or increased Money; but on the contrair.[158]

So all sorts of manoeuvres regarding silver do not lead to the goal of increasing the money supply, which according to Law, is a necessary condition for the economy of all countries that develop in trade, provided that such a supply does not exceed the demand for money and cause inflation. The solution envisaged is bank money. He praises the banks in Italy, the Bank of Sweden, which is said to have been the first to issue bank money, then the Bank of Amsterdam, the Bank of England, and finally the Bank of Scotland. These banks were established to create a better money than copper (in Sweden) or silver (in Amsterdam), where "merchants who have money in the Bank of Amsterdam, and people of other countries who deal with them, are not lyable to the changes in the money, by its being allay'd or alter'd in the denomination: for, the Bank receives no money but what's of value, and is therefore call'd Bank-money,"[159] or to increase the money supply in the case of the Bank of England, backed by a huge loan to the sovereign. "The sum due by the Government was a security to the people, to make good any losses the Bank might suffer"[160] Law says, and then continues:

> This Bank was safer than the Goldsmiths Notes in use before. It made a great Addition to the Money, having a much greater Sum of Notes out, than Money in Bank. And the Sum lent the King, which was the Fund belong'd to the Subscribers,

[157] See Murphy A. E., *John Law*, op. cit. pp. 87 ff.
[158] Law J., *Money and Trade*, op. cit. pp. 63-64.
[159] Law J., *Money and Trade*, op. cit. pp. 65-66.
[160] Law J., *Money and Trade*, op. cit. p. 68.

> was negotiated at Profit, and had the same Effect in Trade as Money. I don't know how their Notes came to be at discount, whether from the Circumstances of the Nation, or from ill Management.[161]

He understands very well that the loan is an asset for the Bank, which enables it to issue banknotes. Moreover, it is traded on the market like money and even at a profit. He cannot explain why this has not been the case lately, but this does not dissuade him from his opinion that government debt is a good kind of money.[162] However, if the money supply can be increased by bank money, then it can be subtracted from the fluctuations that silver is subject to by replacing silver with land as a bank asset. This is the core idea of Law at this stage. We will see how it develops when applied to the French monetary system, which was based on silver and heavily influenced by manoeuvring on the face value of coins.

According to Guy Rowlands, French coins were rerated at least 43 times between 1689 and 1726.[163] In particular, we consider the period up to the death of Louis XIV in 1715 before moving on to the system of John Law, which, like the previous period, was characterised by monetary manoeuvring, but with different objectives. As noted above, Laws rejected monetary manoeuvres to expand the money supply, believing them to be counterproductive. By Rowland's account, he seems to be right, for these operations contributed to the decline of the precious metal in the country from 18,000 marks of silver to 13,500. Certainly, the reasons for this decline were many and difficult to weigh, for example, much of the precious metal was exported for war payments, considering that much of the army was stationed abroad during the War of the Spanish Succession, but the outflows of precious metal caused by speculation in currency manoeuvres were definitely important. The main reasons for the augmentation of money (i.e., the increase in the face value) during the reign of Louis XIV were financial. The king, who was involved first in the Nine Years' War (1688-1697) and then in the War of the Spanish Succession (1700-1713), was in dire financial straits, so he enhanced the money to get a revenue in the form of seigniorage and devalue the public debt.

However, to understand Louis XIV's monetary policy, we must first define the concept of seigniorage. If we define the "mint price" as the price paid by the mint in units of account for a unit of weight of precious metal of a given fineness, and the "mint equivalent" as the units of account for a unit of weight of the same metal issued as legal tender (i.e., the face value of the coins), the seigniorage is the difference between the latter and the former, and consists of the net profit plus the cost of minting or brassage.[164] For example, if the mint

[161] Law J., *Money and Trade*, op. cit. p. 69.

[162] Based on this utterance, it is possible to integrate the English Exchequer bills to the Irish debentures in point 4 above of Law's hierarchy of money.

[163] For the period 1689-1715 see Rolands G., *The financial decline of a great power*, Oxford University Press, 2012.

[164] See Redish A., *Bimetallism, an Economic and Historical Analysis*, op. cit., p. 27.

buys an ounce of silver at X *livres* and issues coins with that ounce of silver at a total face value of Y *livres*, the seigniorage is Y - X *livres*. This difference can only cover the minting costs or make a profit. In the French system, the mint equivalent was usually higher than the mint price and thus generated the seigniorage, but the policies to which we now refer are extraordinary measures to raise revenue through seigniorage and consisted of a series of diminutions of money (i.e., the reduction of face value and mint price) prior to the final augmentation and partial recoinage (i.e., the coins were re-stamped to enter circulation)[165] that generated the extraordinary seigniorage. The diminutions, announced with a long lead time, served to put money into circulation and make it available for loans to the government. Fearing further diminutions, those with large amounts of money were encouraged to lend. This was the first step of the policy to raise money. When money became scarce in the market, this was the moment for the final step, i.e. the enhancement, which provided for a devaluation of the short-term debt incurred by the government and for a seigniorage that was greater the lower the mint price reached and the higher the new mint equivalent set. Thus, the diminutions served to borrow for the government, whose debts were then devalued, and at the same time lowered the mint price to obtain a higher seigniorage at the time of the enhancement, when the coins were brought to the mint (at the mint price), re-struck, and returned at the mint equivalent (i.e., the Mint retained a portion of the coins, namely, the seigniorage). All coins had to be brought to the Mint within a period of a few months (but this period was usually extended, even to a few years). After that, the old coins were no longer legal tender, and in order to provide an incentive for the delivery of the coins, the Mint offered a slightly higher mint price during this period. The correct determination of the mint price was crucial, because if it was lower than the market price for bullion, the money was hoarded or exported and melted down instead of being brought to the Mint. At the same time, the higher the mint equivalent, the higher the price of the foreign exchange, so the government was subject to external constraints that limited its action or, if it exceeded the limits, made the operation controversial and even counterproductive. As Rowlands reports, however, the augmentation was the "gentler" and more effective way to "tax" the aristocracy and the upper middle class (i.e., the *noblesse de robe* who managed the tax system) by devaluing the public debt they held. In fact, the tax system under Louis XIV spared these classes because it was based on an alliance with them: the main taxes were the *taille*, a direct tax not levied on the nobility and the fonctionnaires, and the indirect taxes, such as the *gabelle*, levied mainly on the merchants and the population. Thus, the usefulness of monetary manoeuvres for fiscal purposes is clearly shown. Nevertheless, towards the end of the 17th century, one can notice a correction with the introduction of the *capitation* and later the *dixième*, which were direct taxes that applied to all.[166] However, John Law got to a different conclusion, as he says:

[165] It was not until 1709 that a complete recoinage was necessary due to the poor condition of the coins.
[166] See Orain A., *La politique du merveilleux*, op.cit. pp. 40 ff.

> Raising the money in France is laying a tax on the people, which is sooner paid, and thought to be less felt than a tax laid on any other way. When the King raises the Louis d'or from 12 livres to 14, they are taken in at the Mint for 13 livres, and given out for 14; so the King gains a livre on the Louis d'or, and this tax comes to 20 or 25 million of livres, sometimes more, according to the quantity of money in the country. But so far from adding to the money, it stops the circulation: A part being kept up till there is occasion to export it to Holland, from whence a return is made by bill, of a sum of livres equal to the same quantity of new Louis d'ors that were exported of old ones, and 8 or 10 per cent more, according as the exchange is on the Dutch side. Others who won't venture to send the money out, keep it till the new money is cried down, so save a 13th part, which the King would have got if they had carried the money to the Mint to be recoined. This tax falls heavy on the poorer sorts of the people.[167]

Thus, according to Law, the augmentation is ultimately a tax on poor people since the upper classes manage to escape it. But there was another controversial policy of Louis XIV, which Law did not leave uncommented, namely the introduction of paper money in the form of Mint bills (or *billet de monnoie*).[168] Originally, these were receipts for coins deposited at the Mint, which could be redeemed within a very short time. Since the 1693 recoinage, they were made convertible within a month and could circulate in limited quantities. In 1701, they were again issued with an interest rate of 4 percent per year, so that they could circulate for more than a month. However, due to the financial emergency, they were issued at a greater ratio to the coins brought into the Mint. In 1704, the interest rate was raised to 8 percent, and the Mint bills became a type of short-term debt that circulated as a long-term substitute for money. In 1705, however, only half of the exchange of the Mint bills took place in specie and the rest in new Mint bills, so that public confidence dwindled and the Mint bills were traded at a discount, even though public offices accepted payments partially with them. In fact, it was clear that the amount of coins issued far exceeded the precious metal coverage. The government attempted to stabilise their value, but the policy was ambivalent and even contrasting, it tried on the one hand to withdraw them, and on the other to extend their validity. In fact, in 1707 they were converted into new Mint bills of 1000 livres each, which bore interest at 7.5 percent and were declared legal tender throughout France. However, they were still traded at a huge discount and the problem was only solved in 1709 when ships arrived in France with gold bullion and species that allowed for a complete recoinage, during which most of the bills were withdrawn, until their final abolition in 1712. John Law, in his proposal for a bank in Turin,[169] criticised the policy of the Mint bills, emphasising three main points: first, the high denomination of the bills, which did not make them perfectly liquid; second, the tendency to force them into trade while refusing full acceptance by the Treasury, which prevented public confidence in the bills;

[167] Law J., *Money and Trade*, op. cit. Pp. 94 - 95.
[168] See Rolands G., *The financial decline of a great power,* op. cit. pp. 110-127.
[169] Murphy A. E., "John Law's Proposal for a Bank of Turin (1712)", *Oeconomia*, xv, May 1991, pp. 3–29.

third, the lack of a sufficient metal reserve to ensure convertibility, which was shown in some cases when even the foreign exchange was exchanged for them instead of species, negatively affecting the exchange rate and, ultimately, again, confidence in the bills.[170]

The opportunity for John Law to reform the monetary and financial system arose soon after the death of Louis XIV in 1715. The state was completely bankrupt after the War of the Spanish Succession (the national debt was at an 80 percent discount),[171] and the regent Philip d'Orléans resorted to extraordinary measures to deal with the situation. The public debt was restructured; first, the long-term debt was converted into annuities (*rentes*) of the Hotel de Ville de Paris and the interest rate was reduced to 4 percent; second, the short-term debt was reduced from 597 to 198 million *livres* and converted into uniform promissory bills (*billets d'état*), the value of which reached 250 million *livres* after the government issued another 52 million *livres*, and which traded at a 50 percent discount.[172] Then, in 1716, the *Banque Générale* (later *Banque Royale*) was founded under the leadership of John Law, who, following the example of the Bank of Amsterdam, proposed to issue banknotes in *écu de banque* with a fixed ratio to specie (i.e., a domestic ratio was introduced between the *écu de banque* and the *livre tournois*, as was done in Amsterdam between the bank guilder and the money proper, thus stabilising the bank's money). Its capital consisted of one-third specie and three-thirds *billets d'état*, i.e., the short-term public debt.[173] In 1717, the *Compagnie des Indes Occidentaux* was founded on the model of the British South Sea Company, founded in 1711, to assume the public debt at a lower interest rate, to be paid from the profits of trade. Nevertheless, the *Compagnie des Indes Occidentaux* assumed the national debt by accepting only *billets d'état* (i.e., the remaining circulating share, which was at a 70 percent discount) for the purchase of its shares, thus converting the short-term national debt into shares remunerated with dividends from the profits of the Louisiana trade.[174] The real "System," however, emerged in 1718-19, when the *Banque Générale* was nationalised and transformed into the *Banque Royale* (December 1718); its assets were converted in the form of *billets d'état* into shares of the "Mississippi Company" (i.e. the Compagnie des Indes, which resulted from the merger of the *Compagnie des Indes Occidentaux* with the *Compagnie des Indes* and the *Compagnie de la Chine* and the *Compagnie d'Afrique*), which are now included in the Bank's assets in place of the *billets d'état*.[175] The merger of the Bank with the Mississippi Company completes the full conversion of the short-term government notes into shares. In addition, the banknotes issued by *Banque Générale* with a 25 percent share of the specie reserve may now be issued without regard to the principle of fractional reserve, if authorised by Royal Council decree, and are no longer guaranteed in *écu de banque*, as was the case with *Banque Générale*, on

[170] See Murphy A. E., *John Law*, op. cit. pp. 117- 120.
[171] See Murphy A. E., *John Law*, op. cit. p. 140.
[172] See Murphy A. E., *John Law*, op. cit. pp. 136 - 137.
[173] See Murphy A. E., *John Law*, op. cit. p. 158.
[174] See Murphy A. E., *John Law*, op. cit. pp. 167 - 169.
[175] See Murphy A. E., *John Law*, op. cit. pp. 186 - 188.

the other hand, it was established that all transactions exceeding 600 livres were to be paid in gold or banknotes.[176] Thus, the 300,000 shares issued so far were used to absorb a large part of the *billets d'état* and stabilise the others, to finance the trading companies within the Mississippi Company, to pay for the rights of the Royal Mint, which was also part of the group. Moreover, monetary discretion allowed an expansionary policy that pushed down the interest rate.[177]

Up to this point, the System was modelled on the Bank of Amsterdam and on British institutions such as the Bank of England and the East India and South Sea Companies. However, since the *écu de banque* ceased to play a role in July 1719 (since the creation of the *Banque Royale*, liabilities were no longer necessarily settled in *écu de banque*), the Bank of England model prevailed over the Bank of Amsterdam model. The System can thus be outlined as follows, comparing its institutions with the British ones, as Murphy does:[178]

tab./fig. 5 **The balance sheet of the Mississippi Company**

<table>
<tr><th colspan="2">Bank of England
Banque Royale</th><th colspan="2">East India and South Sea Company
Compagnie des Indes</th></tr>
<tr><th>Assets</th><th>Liabilities</th><th>Assets</th><th>Liabilities</th></tr>
<tr><td>Gold/silver</td><td>Shares</td><td>Fixed/working capital</td><td>Shares</td></tr>
<tr><td>Government securities</td><td>Deposits/banknotes</td><td>Government securities
Colonial trading privileges</td><td></td></tr>
<tr><th colspan="4">Mississippi Company</th></tr>
<tr><th colspan="2">Assets</th><th colspan="2">Liabilities</th></tr>
<tr><td colspan="2">Gold/silver reserves</td><td colspan="2">Shares</td></tr>
<tr><td colspan="2">Fixed/working capital
Government Securities
Colonial Trading Privileges</td><td colspan="2">Deposits/banknotes</td></tr>
</table>

Source: Murphy A. E., *John Law*, op. cit. p. 111.

[176] See Murphy A. E., *John Law*, op. cit. pp. 186, 193.
[177] See Murphy A. E., *John Law*, op. cit. p. 193.
[178] Murphy A. E., *John Law*, op. cit. p. 111.

The establishment of the Mississippi Company was certainly a marked difference from the British system, as it was a monopoly company that circulated paper money backed by various types of assets. However, the revolutionary step occurred in August 1719, when the Mississippi Company assumed the entire French national debt, prompting the British South Sea Company to imitate it and triggering the speculative bubble of 1720.[179] The plan called for a loan of 1.2 million *livres* at an interest rate of 3 percent to the government to buy all the *rentes* and the remaining *billets d' état*, in addition to the cost of abolishing the existing tax offices and the shares of the tax farmers. This was a fatal blow to the financiers and rentiers who had formed the backbone of the French system.[180] On the other hand, the rentiers would have had the choice of investing in low-interest annuities (i.e., at 3 percent, 1 percentage point less than the *rentes*) or in Mississippi Company stock, which was soaring at the time. In fact, another issue of stock was made in September at 5,000 livres per share.[181] In December, another regulation was issued to enforce the use of banknotes, following the previous year's stipulation that transactions over 600 livres be paid in gold or banknotes. The use of banknotes, accepted at a 5 percent premium for the payment of taxes, became obligatory for transactions over 300 livres, and silver was abolished for transactions over 10 livres; bills of exchange also had to be paid in banknotes. According to Murphy, Law enacted these measures because he knew that the amount of banknotes in circulation was excessive. Therefore, he tried to maintain the value by forcing the use of banknotes contrary to his theoretical principles.[182] On January 4, 1720, he was appointed *Contrôleur général des finances* and the shares peaked at more than 10,000 *livres*. He then tried to increase the robustness of paper money by also repeating manoeuvres on the face value of coins. On January 22, he first raised the value of money, and on January 28, he ordered a diminution by allowing species to be exchanged for banknotes at the old, higher rate, under threat of confiscation of the money hoarded and not brought to the Mint. The goal of the monetary manoeuvres was to displace specie in favour of paper money. However, in 1719, both gold and silver coins were abated. But in March 1720, the January technique was used again, the money was enhanced while the shares were set at 9,000 *livres*, and further diminutions were threatened if the coins were not promptly converted into shares, and indeed a series of diminutions began until gold was demonetised on May 1 and silver on August 1 (except for silver low denomination coins).[183]

On February 22, the *Banque Royale* was formally taken over by the Mississippi Company and the issuance of paper money was made subject to a decree of the Royal Council; on the other hand, the Company bought the King's shares and closed the office in charge of buying

[179] See Murphy A. E., *John Law*, op. cit., p. 194.
[180] See Murphy A. E., *John Law*, op. cit., pp. 194 - 196.
[181] See Murphy A. E., *John Law*, op. cit., pp. 199 - 201.
[182] See Murphy A. E., *John Law*, op. cit., pp. 211 - 2012.
[183] See Murphy A. E., *John Law*, op. cit., pp. 213 - 226.

and selling shares on behalf of the Company, which played a major role in buying shares to preserve their value. But these measures, designed to find a market equilibrium within the System, led to a dramatic decline in the value of the stock. On March 5, Law fixed the value of shares at 9,000 livres and henceforth turned them into money (in line with his theoretical positions). To achieve this, he was forced to reopen the office for the purchase and sale of shares so that the public could be assured of exchanging shares for banknotes, but at the same time, monetary policy spiralled out of control and the amount of banknotes, previously set at 1.2 million livres, rose to 2.7 million livres in May, an increase of 94 percent. On May 21, Law decided to reduce the value of banknotes and shares, after having decreed the diminutions of gold and silver money on March 11 (namely, shares gradually from 9,000 to 5,000 in December and banknotes from 10,000 to 5,000 representing a 44 percent reduction in the money supply and the restoration of the banknote-silver exchange rate of before March 11). However, on May 27, the decree was revoked by Parliament, further worsening the value of the stock. But the policy of Law was countered with a series of decrees that dismantled the System, such as the decree of June 3, which reintroduced the *rentes* to absorb the banknotes, and the final abolition of the latter in October-November.[184]

It is not the purpose of this chapter to examine why the System failed. Our goal is to outline the politics of the System in the context of John Law's economic thought. In particular, the principle that precious metal is not the only kind of money and may be more or less useful depending on the context. It does happen that paper money could circulate more easily, but there seems to be a trade-off between discretion in the supply of paper money and its stability. On the balance sheet of the bank that issues paper money, there must be a balance between assets and liabilities, and the market vouches for this. Perhaps this is the fault of Law, who violated this principle, even though he tried to restore it with the decree of May 21. Shares used as money pose a special problem. In this case, too, the market was prevented from valuing the stock, and what goes out the door comes back in through the window, i.e., if you overvalue the stock, and you do (e.g., in the case of the Mississippi Company stock), you have to maintain it by expanding the paper money, and eventually you end up in inflation.[185] Apart from that, Law has the merit of having shown that a central bank is necessary to issue paper money, and that the latter can be used to provide the necessary liquidity to the system by replenishing the asset side of the bank balance sheet with various securities beyond specie, as Murphy says, “Law understood that, in order to have confidence in a paper currency, people had to understand that it had proper asset backing. Initially this was to be in the form of land under his land bank proposals, but, as his ideas evolved, he understood that the backing could be in the form of assets such as government securities and loans to the private sector. With good asset backing it was not necessary to have metallic money.”[186]

[184] See Murphy A. E., *John Law*, op. cit., pp. 226 - 230, 244 - 271.
[185] See Velde F. R., John Law’s System, in American economic review, May 1, 2007.
[186] Murphy A. E., “John Law and the Scottish Enlightenment,” op. cit. p. 24.

Although the fall of the System gave France a consistently reduced public debt, the Duke of Bourbon under Louis XV revalued the debt in 1724 to pre-System levels,[187] and in 1726 Cardinal Fleury stabilised the currency, which retained that value until the Poincaré Law of 1928 (except for an adjustment in 1785 and the change in the unit of account with the introduction of the franc in 1803).[188] The experience of the System thus had a deflationary and anti-credit backlash, so much so that it was necessary to wait for Napoleon to have a new central bank.

In the wake of these events, a debate on monetary manoeuvres took place between Jean-François Melon and Nicholas Dutot, economists that both collaborated with John Law.[189] In the *Essai politique sur le commerce* (1734), Melon supported the money enhancement, which he says has the merit of solving financial problems while helping the more worthy class, namely debtors, since their failure threatens the entire financial system:

> *Il y a d'ailleurs mille Débiteurs pour un Créancier, parce que celui qui est en même temps créancier d'un particulier & débiteur d'un autre, ne se trouve plus que Débiteur, si celui dont il est créancier devient insolvable; au lieu que si celui qui perd n'est que créancier, toute la perte se termine en lui. Cette chaîne s'étend sur le second, sur le troisième. & C. & c'est de là que - part cette maxime de Droit , qui est encore bien plus maxime d'Etat , qu'il faut toujours favoriser le débiteur.*
>
> [There are also a thousand debtors for one creditor, for he who is at the same time creditor of one and debtor of another is no more than a debtor if the one whose creditor he is becomes insolvent; on the other hand, if the one who loses is only a creditor, the whole loss ends with him. This chain extends to the second, to the third & C. & it is from there that - part of this maxim of the law, which is still more maxim of the state, must always favour the debtor.][190]

This domino effect is indeed typical of financial crises and so Melon justifies the augmentation of money, adding that the ancient Greeks and Romans, who did not know such a technique, were forced to cancel una tantum all debts to solve financial crises. While he is in favour of credit money to expand the money supply to meet the needs of the country, in the spirit of Law, he does not consider it suitable for solving financial problems because it can easily get out of control, like paper money in 1720, or it is too burdensome for the sovereign, like the *billet de monnoie* or other bills at the time of Louis XIV.[191] Voltaire

[187] See Murphy A. E., *John Law*, op. cit. p. 308; Velde F. R., "John Law", in *American Economic Review*, op. cit. p. 278.
[188] See Bloch M., "Esquisse d'une histoire monétaire de l'Europe", op. cit., p. 50.
[189] See Velde F. R., "The Life and Time of Nicholas Dutot", *in Journal of the History of Economic Thought*, Volume 34, Number 1, March 2012.
[190] Melon, J. F., *Essai politique sur le commerce*, 1734, pp. 226 - 227 (editor's translation).
[191] Melon, J. F., *Essai politique sur le commerce*, op. cit. pp. 198 ff.

also joined the debate. He advocated the augmentation because it worked like the ancient jubilees, which took place at regular intervals so that creditors had time to organise themselves while debtors were freed from unbearable burdens.[192] Dutot openly criticised Melon's arguments in his *Réflexions politiques sur les finances* (1738) and countered the policy of augmentation based on exchange-rate arguments. First, he stated that if augmentation causes a proportional increase in the general price level, it is not true, as Melon says, that there are no consequences, because it is precisely the case that the sovereign loses by the decrease in revenues (i.e., the value of taxes does not follow the augmentation), if prices increase less (or not at all) than the nominal value of money, the nation suffers in international trade due to the deterioration of the exchange rate, because foreigners can buy the same national goods with a smaller amount of precious metal as before. Moreover, Melon's argument in favour of debtors is not so wise either, because if they gain and creditors lose in the case of an augmentation, why should the latter continue to lend money? In fact, there would be a decline in circulation. Therefore, according to Dutot, a new tax is better than an augmentation to address the financial problems, and he refers to John Locke to reinforce his point when he says:

> *Il fut l'un de ceux qui contribuèrent le plus à faire comprendre au Parlement qu'il n'y avoit point d'autre moyen de sauver le commerce d'Angleterre, qu'en faisant refondre la Monnoye, sans en hausser le prix aux dépens du Public.*
>
> [He was one of those who did most to make it clear to Parliament that there was no other way to save the trade of England than to recast the money without raising its price at the expense of the public.][193]

Moreover, Dutot criticises seigniorage,[194] and he quotes Law as saying that it subtracts money from commerce, but interestingly he distinguishes between the manoeuvres on the face value of money that introduce a disproportion between species and bullion and those that change the value of both in the same proportion, as he writes:

> *D'ailleurs, s'il n'y avoit point d'augmentation numéraire d'une Espèce plus que L'autre, il n'y auroit aucune disproportion entr'elles, Droit de Seigneuriage par conséquent. C'est donc l'augmentation numéraire, ou l'affoiblissement de l'une plus que de l'autre, qui fait tout le mal, & qui occasionne les plaintes des Peuples , puisque sans cette augmentation numéraire, la disproportion, ou le trop grand Droit de Seigneuriage ne subsisteroient pas.*

[192] Voltaire, *Observations sur MM. Jean Law, Melon et Dutot: sur le commerce, le luxe, les monnaies et les impôts*, in Oeuvres completes, vol. 29, Tourneisen, 1786, pp. 152-153

[193] Dutot N., *Réflexions politiques sur les finances*, The Hague, 1738, p. 169 (editor's translation).

[194] Dutot uses the word *traite* to refer to gross seigniorage, that is, the sum of seigniorage considered as pure profit plus the cost of minting.

> [And if there were no augmentation of one species over the other [i.e., the new one and the old one, or the new coins and bullion], there would be no disproportion between them, and therefore no right of seigniorage. It is, therefore, the augmentation or diminution of one more than the other that does all the harm and causes the complaints of the peoples, for without this kind of augmentation there would not be the disproportion or the too great right of seigniorage.][195]

Thus, the adjustment of the face value of precious metals, which does not lead to seigniorage, is useful when there is a need to balance the value of the species and the value of the paper money, since an augmentation of the coins leads to a reduction in the value of the paper money and vice versa in the case of a diminution of coins. Dutot, who had started with typically metallistic arguments, thus ends up adopting a chartalist stance and, following Law (and here in agreement with Melon), focusing on credit as the appropriate instrument to increase the money supply for macroeconomic goals. He even comes to define coinage as a form of credit when he compares what he calls real wealth (i.e., commodities) with confidence or opinion wealth (i.e., credit) and says about the latter:

> *Les richesses de confiance ou d'opinion ne sont que représentatives comme l'or, l'argent, le bronze, le cuivre, le cuir, les Billets, les coquilles & c. dont on se sert à évaluer ou à mesurer les richesses réelles. Ces richesses représentatives forment le crédit.*
>
> [The riches of trust or opinion are only representative, such as gold, silver, bronze, copper, leather, banknotes, shells, etc., which are used to evaluate or measure actual wealth. These representative riches constitute the credit.][196]

And more…

> *Un Louis d'or, un Écu, &c. sont des Billets, dont l'effigie du Prince est la signature; & comme les choses ne reçoivent leur valeur que des usages ausquels on les employe , il est indifférent de se servir d'un Louis, d'un Écu, d'un Billet de pareille somme, ou même de coquilles, comme sur certaines côtes d'Afrique, pour représenter toutes sortes d'effets, & servir de mesure commune de leur valeur, laquelle valeur dépend toujours de la proportion entre la quantité & la demande.*
>
> [A louis of gold, an ecu, etc., are bills whose signature is the image of the prince. And since things receive their value only from the use that is made of them, it is indifferent whether a louis, an ecu, a bill for such a sum, or even shells, as on some coasts of Africa, are used to represent all kinds of commodities and to serve as a

[195] Dutot N., *Réflexions politiques sur les finances*, op.cit., p. 196 (editor's translation).
[196] Dutot N., *Réflexions politiques sur les finances*, op.cit., p. 228 (editor's translation).

general measure of their value, the value of which always depends on the relation between quantity and demand.][197]

Dutot thus interprets and reaffirms Law's theoretical position on the basis of money demand and supply, envisaging a chartalistic concept of money, and ultimately differing from Melon only with respect to the application of money manoeuvres to the face value of coins, i.e., he is opposed to it in fiscal matters, while Melon is in favour of it, preferring money augmentation rather than printing paper money for fiscal purposes.

5. Conclusion: financial innovations and currents of thought

In this chapter, we first analysed the concept of imaginary money and discovered its potential with respect to monetary policy. We can now conclude that imaginary money was a means of multiplying means of payment at a time when metallic currency was scarce. However, since the 17th century, some small open states, actually republics, suffered from the devaluation of imaginary money that followed the debasement of small coins, which, according to Gresham's law, led to a downward competition between the different mints in the different provinces, including foreign ones. This problem, which affected the exchange rate and the balance of payments, was addressed by stabilising the currency. Imaginary money was used to peg bank money to silver and then stabilise the excess (i.e., unbacked) amount through open market operations that regulated the agio that bank money formed over actual money. The best example of such a system in the 18th century was the Bank of Amsterdam, a public bank that successfully regulated the agio between a corridor of 4 and 5 percent between bank money and actual money. The flexibility guaranteed by the corridor and some discretion in adhering to it made it possible to regulate the money supply to meet the needs of both internal and international markets. Moreover, unencumbered bank money circulated as fiat money after 1683 and was even more liquid than noble money.[198]

While the stabilisation of the currency described above was based on imaginary money and aimed at facilitating international trade, the stabilisation in England was based on ideological, dogmatic and political reasons and on financial reasons rather than economic ones. In fact, we know that the Great Recoinage led to a severe deflationary crisis, so the enhancement of silver money would have been more appropriate to the situation and would have prevented the outflow of silver. However, the "sanctification" of the Elizabethan money rate (assuming a pre-political convention about the value of money) established emerging capitalism as a debt-based system and supported the Bank of England, which was

[197] Dutot N., *Réflexions politiques sur les finances*, op.cit., p. 229 (editor's translation).
[198] See Quinn S., Roberds W., "How Amsterdam got fiat money," in *Journal of Monetary Economics*, n. 66, 2014, p. 2.

established to provide credit to both the sovereign and the market. In fact, since its foundation, the Bank issued fiat money in the form of promissory bills backed by government debt, and especially after the Great Recoinage backed by silver. This system had to guarantee to creditors, represented mainly by the Whigs, that money could safely fulfil the function of a store of value, relying on the theoretical apparatus of John Locke, who convinced Parliament of the goodness of his solution. But the debate on the Great Recoinage showed that there were different currents of thought. An opposing view to Locke was that of Barbon, who interpreted the nominalist tradition, according to which money is taken by tale. Then there was the "naturalism" of Newton, who called for the augmentation of silver coins to match the market price of silver bullion. Ultimately, Lowndes represented all positions that were in opposition to Locke and aimed at avoiding deflation.

Another current of thought emerged in Scotland when John Law began to define his theory of money in 1705, which was later developed further in France. He assumed a distinction between the different types of money, preferring paper money backed by land to precious metal, but ultimately denying the intrinsic value of money, which distinguished him from Newton, although both relied on market law. His concept of fiat money, however, differed from Barbon's nominalism, which saw the source of money's value simply in the decisions of political authority. Law developed a well-structured theory based on the experience of the Bank of Amsterdam and the Bank of England. According to this theory, fiat money is not simply fixed by the arbitrariness of government, but is a currency driven by the demand for money and backed by secure assets that make it worthy of public trust. As Schumpeter says, "this seems to have been the work that gave birth to the idea of managed currency, which was subsequently lost to the large majority of economists until it forced itself upon them after 1919."[199]

John Law's system, both its initial success and its ultimate failure, greatly influenced French economic thought and shaped French financial and monetary history. So much so that French stabilisation can be interpreted both as a reaction to the monetary manoeuvres of the System (and of Louis XIV) and as a reception of Law's stance against money enhancement. This ambiguity is also evident in Dutot, who (unlike Melon) is firmly opposed to money enhancement on fiscal grounds, but advocates the management of paper money and even metallic money when it comes to adjusting the relative value of the various types of money in circulation, thus adopting a clearly chartalist position.

[199] Schumpeter J. A., *History of Economic Analysis*, op. cit. p. 306.

II. The Monetary Debate in Italy in the 18th Century

1. The Italian authors joined the international debate

The Italian monetary history of the eighteenth century is marked by a debate on "monetary disorder", which, as we shall see, was an interplay of factors such as exchange rate devaluation, currency rarefaction and inflation. The debate exploded in the early years of the 1750s, as Franco Venturi thoroughly recounts in a chapter on the "money debate",[200] reviewed in this section. The debate began in Rome in 1750 with Giovannantonio Fabrini, a Tuscan jurist, and Girolamo Belloni, a banker, then developed in Milan, first with Pompeo Neri and Gian Rinaldo Carli and in the 1760s with Pietro Verri and Cesare Beccaria, whom we will discuss at length.[201] In Milan, a collection of monetary works of the past was published in 4 volumes by Filippo Argelati from 1750 to 1759, including for the first time the *Trattato sulle monete* [Treatise on Money] by Gemignano Montanari,[202] written at the end of the 17th century. As we will see, in Venice Girolamo Costantini intervened and in Naples, following the treatise of Carlo Antonio Broggia in 1743, the Abbey Ferdinando Galiani. Venturi's report is mainly geographical and he identifies two centres of debate, Milan in northern Italy and Naples in southern Italy. He also noted that the debate centred around the works of Locke, Dutot, and Melon. As for the former, the Tuscan abbots Giovan Francesco Pagnini and Angelo Tavanti published a translation of John Locke's monetary writings in 1751.[203] As Venturi recalls, the 16-year-old Ferdinando Galiani had also tried to translate it but eventually gave up, while the two Tuscan abbots eventually managed to publish the book with several explanatory notes, most of which came from Dutot, who was then the best-known author to confront Melon on the question of money devaluation. But "why so much passion and loyalty to these difficult and distant Lockean texts?" Venturi asks, and then answers:

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[200] Venturi F., *Settecento riformatore, Da Muratori a Beccaria*, pp. 443-522, Einaudi, 1969.

[201] For Verri and Beccaria see chap. 3.

[202] Argelati F., *De Monetis Italiae variorum illustrium virorum*, op. cit. Montanari G., *Trattato sulle monete*, is in vol.3, 1750.

[203] Pagnini G. F., Tavanti A., *Ragionamenti sopra la moneta, l'interesse del denaro, le finanze e il commercio, scritti e pubblicati in diverse occasioni dal signor Giovanni Locke, tradotti la prima volta dall'inglese con varie annotazioni*, Florence, Andrea Bonducci, 1751. The monetary writings consisted of three pamphlets on interest and coinage, they are: *Some Considerations of the Consequences of the Lowering of Interest, and Raising the Value of the Money* (1691), *Short Observations on a Printed Paper* (1694) and finally, *Further Considerations Concerning the Raising of Money* (1696). Although the latter summarises all the concepts, the others are also important for understanding the debate on recoinage (See Kelly P. H., *Locke on Money,* op. cit., pp. 1-39). Pagnini also added to the book his own dissertation: *Saggio sopra il giusto pregio delle cose, la giusta valuta della moneta e sopra il commercio dei romani*, see Venturi F., *Settecento riformatore,* op. cit., pp. 479-481.

La prospettiva politica dei traduttori e di coloro che lessero e discussero quest'opera ci fornisce una prima risposta. Volevano la stabilità monetaria, rigettavano come dannoso, mostruoso l'esperimento di Law, confutavano Melon, l'ultimo moderato apologeta di una politica di manovra monetaria. Locke finì per apparire loro come il profeta di questa loro volontà di un ritorno alla normalità. L'esempio inglese della fine del Seicento era il solo modello al quale essi potevano rifarsi nella loro ricerca di una via che li portasse fuori dal caos monetario in cui si trovavano. Non la Francia, non certo la Spagna, ma la Gran Bretagna di Guglielmo III e di Locke.

[The political perspective of the translators and those who read and discussed this work gives us a first answer. They wanted monetary stability, they rejected Law's experiment as harmful and monstrous, they refuted Melon, the last moderate advocate of a policy of monetary manoeuvring. Locke finally appeared to them as the prophet of their will to return to normality. The English example of the late seventeenth century was the only model they could refer to in their search for a way out of the monetary mess they found themselves in. Not France, certainly not Spain, but the Britain of William III and Locke.][204]

The core of the debate, then, is the stance against the money alteration, which is seen as the cause of monetary disorder, and revolves around Locke and Dutot, against Melon, who is supported only by Galiani. As for Melon and Dutot, the works that framed the debate were edited by Costantini, who testifies in the introduction to the recent involvement of Italian authors in the monetary question after England and France:

[...] tra gli oggetti spettanti alla Pubblica Economia, uno dei più gravi è fuor di dubbio quello delle MONETE, poiché dalla loro costante uniformità, o dal loro vicendevole cangiamento dipende o la floridezza o la rovina del Commerzio [...] La gravità dell'Argomento chiamò a sé l'attenzione di una delle più commerzianti Nazioni, voglio dire della Inglese…Noi abbiamo veduti allora i più colti e acuti ingegni di quell'isola, tra i quali volle anche fare la sua comparsa il grande metafisico Locke, congegnar le loro veglie e i loro talenti a porre in chiaro una materia di tanto peso. [...] All'esempio di quella industriosa Nazione risvegliossi finalmente anche la Franzia [...] Non tardò molto ad imitar le due illustri mentovate Nazioni anche l'Italia [...]

[...] among the objects of public economics, one of the most serious is undoubtedly that of the CURRENCIES, for on their constant uniformity or on their mutual change depends either the prosperity or the ruin of commerce [...]The gravity of the argument called the attention of one of the most playful nations, I mean the English... We have thus seen how the most cultivated and sagacious minds of that island, which included the great metaphysician Locke, employed their vigilance and talents to clarify a matter of such great weight [...]Following the example of this

[204] Venturi F., *Settecento riformatore,* op. cit., pp. 480-481 (editor's translation).

> industrious nation, France finally awakens [...] It was not long before Italy emulated the two illustrious nations [...][205]

These passages clearly show the flow of thought from England to France to Italy, where, however, it was received like dogma. Pagnini and Tavanti, for example, praise Locke for having "discovered and taught the true way",[206] but at the same time they seem to appreciate the reasons of the opposite side, albeit with some important inaccuracies, probably due to the objective difficulty of being informed about the facts:

> *Dall' un canto il Partito contrario alla Corte sostenne, che stante l'incertezza dell'esito, e degli aggravi della Guerra colla Francia, in cui la Nazione trovavasi già da qualche anno impegnata, non era questa la congiuntura propria di rifondere, conforme si proponeva, tutte, o parte delle specie di Argento; che dall'altra parte quando mai se ne fosse voluta intraprendere la riforma, era onninamente necessario di augumentare la loro valuta fino a quel segno almeno, al quale si supponeva che fosse salita la valuta delle Paste d'Argento, affine di avere in tal guisa la quantità di danaro che era necessaria per il Commercio, di attirar quello dei forestieri, e d'impedire l'estrazione della Moneta del Regno, e l'abuso di tosarla e di fonderla; come pure di supplire per mezzo dell'augumentazione alle Spese considerabili che vi sarebber volute per rifondere, e batter di nuovo tutte le specie tose e consumate, giacchè bisognava ristorarle tutte della quantità di metallo che vi mancava.*
>
> [On the one hand, the opposite party of the court argued that, given the uncertain outcome and the intensification of the war with France, in which the nation had already been involved for several years, this was not the right time to restore, in accordance with the proposal, all or part of the silver species; on the other hand, in carrying out the reform, it was necessary to increase the currency at least to the mark to which the currency of silver bullion should have risen, in order to have in this way the amount of money necessary for trade, to attract the money of foreigners and to prevent the withdrawal of the currency of the kingdom and the abuse of shearing and melting down; as well as to compensate by the augmentation the considerable expenses that you would need to recast and restruck all the cut species and consumed, since it was necessary to return to them the entire amount of metal that was missing.][207]

In the previous chapter we analysed the position of Lowndes and Newton, which are similar, with the difference that Lowndes proposes to postpone the recoinage of clipped coins, while Newton proposes a gradual recoinage in a document that was probably known only to the government that received it, so that Pagnini and Tavanti could not have known it. Be that as it may, both Lowndes and Newton suggested starting with an immediate

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[205] Costantini G., *Delle monete, controversia agitata tra due scrittori oltramontani,i signori Melon e Dutot*, Venezia, Antonio Zatta, 1754, pp. v-vi

[206] *"Avere scoperta ed insegnata la vera strada"* (editor's translation), in Pagnini G. F., Tavanti A., *Ragionamenti sopra la moneta*, op. cit., p. x.

[207] Pagnini G. F., Tavanti A., *Ragionamenti sopra la moneta*, op. cit., p. xiii, xiv (editor's translation).

enhancement of money, both to bring silver into the coinage and to bring the hoarded full-bodied coins onto the market, thus increasing the money supply for the benefit of trade. It appears, however, that the urgency with which Lowndes and his party approached the problem was not perceived by Pagnini and Tavanti, while they seem to have fully understood the need for an appreciation of silver at the market rate to prevent further withdrawal and partially restore silver coinage in the country. The authors continue with Locke's arguments formulated as follows:

> *I. Vi si dimoſtra in primo luogo, come il pregiudizio che avea sofferta la Nazione nei Cambi in tutte le parti del Commercio, e delle Finanze, e quei maggiori danni, che le sovrastavano dal pessimo stato della Moneta, non permettevano d'interporre in questa cura la minima dilazione. II. Che la cura la più ſollecita e più sicura, che la Nazione potesse adoperarvi, erasi d'interdire alle Specie tose e consumate ogni altro corso e valuta, fuori di quella ne dava loro il peso del metallo che vi era rimasto, fin tanto che non fussero state rifatte e battute di nuovo. III. Che l'augumentarne la valuta non solamente non avrebbe recati gli effetti promessi da chi lo proponeva, ma che anzi sarebbe riuscito di danno e pregiudizio intollerabile, pregiudizio intollerabile più di ogni altro ai particolari, al Commercio universale della Nazione, e a tutte quante Entrate della Corona. IV. Finalmente che l'unico ed infallibile metodo da seguirsi per prevenire il trasporto della Moneta del Regno, e per acquistare in oltre quella de Forestieri, erasi quello di vender loro una quantità di merci maggiore, o merci di più alto pregio, di quelle se ne ricevessero e consumassero di fuori.*
>
> [I. It was first observed that the damage done to the nation in all branches of commerce and finance by the [deteriorated] exchange rate, and the still greater damage done to it by the poor condition of the currency, did not permit the slightest delay in this treatment. II. That the weakest and surest remedy which the nation could take was to forbid that clipped and consumed coins should be valued at any other rate than that which they received by the weight of the remaining metal content, until they were recast . III. That the augmentation of money would not only not have had the effect promised by those who proposed it, but that it would have done more harm and intolerable damage than anything else to the citizens, to the general commerce of the nation, and to the whole revenue of the crown . IV. Finally, that the only and infallible method of preventing the transportation of the currency of the kingdom, and, moreover, of purchasing that of strangers, was to sell them a greater quantity of goods, or goods of greater value, than those produced abroad and consumed in the nation.][208]

As for the urgency of a solution to the "poor condition of the currency"," while Lowndes suggested delaying the recoinage of the clipped coins, Newton advocated a more gradual replacement of the coins so as not to deprive the economy of necessary liquidity, and both suggested acting immediately by enhancing the silver money, which would have put the sound coins back on the market. The fear is clearly deflation, exactly what happened after

[208] Pagnini G. F., Tavanti A., *Ragionamenti sopra la moneta*, op. cit., p. xiv, xv (editor's translation).

the Great Recoinage proposed by Locke. The second claim, that clipped coins should have been accepted by weight, is also a deflationary measure that was especially harmful to the population that had not hoarded the full-bodied coins. The third assertion highlights the "intolerable damage" that would have occurred after the revaluation of money, and it is the damage to all creditors, including the state when it collects taxes; the last one, on the other hand, that is, the restoration of the equilibrium of trade through a higher quality and quantity of goods produced, is in this sense only a wish that does nothing, while a revaluation of silver would have devalued the exchange rate, as Newton acknowledged, and would have driven exports. It seems, then, that "intolerable harm" to creditors is the strongest argument that can be made, and it indeed reflects John Locke's political and ideological stance in favour of an inviolable monetary standard. This ideological approach is also evident in the introduction Costantini wrote to the debate between Melon and Dutot, he states:

> *[...] certamente mi persuado, che chiunque sul punto delle Monete fosse stato finora seguace della opinione del Signor Melon, come il fu tra gli altri il Chiarissimo Autore dell' Opera che ha per titolo, DELLE MONETE LIBRI CINQUE, uscita in Napoli nel 1750, muterà sentimento, e soscriverà finalmente alla sana e vera sentenza difesa dał Locke, dal Du Tot, e da molti altri valentuomini e Oltramontani e Italiani.*
>
> [...] has convinced me with certainty that anyone who has followed the opinion of Mr. Melon in relation to the coins, among others, as an outstanding author of the work entitled DELLE MONETE LIBRI CINQUE, published in Naples in 1750, will change his mind and eventually join the solid and true thesis defended by Locke, Du Tot and many other talented men both foreigners and Italians.][209]

Costantini criticises the enhancement of money (*alzamento*) and its advocate in Italy Ferdinando Galiani, dividing the debate into proponents and opponents, Locke being the advocate of the latter. However, we will see that he has a different concept of *alzamento* than Galiani and that he may even agree more with Newton than with Locke, so his position is quite controversial. Ultimately, as you can see from his own quote above, Venturi is also on the side of the "Lockean" authors. When he comes to Galiani, he not only praises his abilities and intelligence, but also dismisses his criticism of the reform movement that had taken place in northern and central Italy as "*stonatura*" [false note],[210] without looking for the authentic reason for Galiani's attitude, which we will try to do in chapter 4.

[209] Costantini G., *Delle monete, controversia agitata tra due scrittori oltramontani*, op. cit., p. viii.
[210] Venturi F., *Settecento riformatore,* op. cit., p. 502.

2. From scholasticism to naturalism

If, according to Desan,[211] "nominalism" was the traditional attitude to money in England at the time of the debate that preceded the Great Recoinage, i.e., the acceptance of money by tale, the situation in Italy was rather confused from a legal point of view (this is exactly the point raised by Fabrini in Rome), but at the level of economic thought "naturalism" prevailed as the main current. It was certainly dominant in the 18th century, as we shall see, but its pattern began long before.

According to Gino Barbieri,[212] nominalism was firmly rooted in feudal society, where money was considered the prerogative of the sovereign. Around the 13th century, before the scholasticism of S. Tommaso, the principle that money was a public good was enforced by Pope Innocent III who, in judging a case brought before him, decreed: "since the business of counterfeit money is the loss and harm of the subjects, the currency cannot, of course, be changed without their consent: for what concerns all must be approved by all."[213] The same path was taken by S. Tommaso, who assumed that the purpose of money was the common good, but following Aristotle, he nevertheless maintained that it could be changed by the sovereign, because "specie is called *numisma*, which comes from *nomos*, the law, because specie is not measured by nature, but by law. It is our power to transform it or to make it useless" and it "will be of price nil if the king or the community decides that it is worthless."[214] As Barbieri recalls, however, we must keep in mind that the 13th century was the time of gold coins, when the Florentine florin was issued in 1252 and others followed suit, creating a currency that was accepted abroad as a medium of exchange and whose soundness was crucial to international trade. It was also the time when Dante Alighieri sent King Philip the Fair to hell along with the counterfeiters for debasing the coins (although we must distinguish between debasing and enhancing coins, the former usually being a secret operation - comparable to counterfeiting - and the latter an official one). This partly explains why things changed in the 14th century even in scholastic thought, first with Buridan and then with Oresme in France, who claimed that money cannot be altered by the sovereign. In particular, Oresme claims that "there must be a certain value and price ratio between gold and silver coins," the ratio "must correspond to the natural ratio between the preciousness of gold and that of silver."[215] Naturalism was born. So the sovereign could simply follow the "natural relation" between the value of the metals. According to Barbieri, however, this principle was formulated more rigorously by the Pole Nicolas Copernico, who in *Monetae*

[211] See chap. I, para. 3.

[212] Barbieri G., "Le dottrine monetarie dal XIII al XVII secolo", in *La moneta nell'economia europea*, Atti della VII settimana di studio, E. Barbagli Bagnoli ed., Le Monnier, 1975.

[213] *"Cum negotium fraudatae monetae concernat damnum, et praeiudicium subditorum, plane absque illorum consensus, non poterit mutari moneta: quia quod omnes tangit ab omnibus debet approbari"* in Barbieri G., "Le dottrine monetarie dal XIII al XVII secolo", op. cit., p. 314, note 11 (editor's translation).

[214] Chaplygina I., Lapidus A., "Economic thought in scholasticism", in G. Faccarello et H. Kurz eds., *Handbook on the History of Economic Analysis*, Cheltenham (UK) / Northampton (USA): Edward Elgar, vol. 2, 2016, p. 29.

[215] Barbieri G.," Le dottrine monetarie dal XIII al XVII secolo", op. cit., p. 328.

cudendae ratio (1516) saw one of the reasons for a nation's decline in the devaluation of money and the resulting inflation, and also stated that bad coins displace good coins, thus establishing what later became known as Gresham's Law. He also calculated the bimetallic ratio between gold and silver to be 1 to 12 and advocated the maintenance of such a standard in his kingdom, except for adjustments that would have been necessary only if the ratio had changed. This policy would have created sound money for international trade.

From this story it is clear that the balance between distributive and commutative justice, typical of scholasticism, is increasingly shifting in favour of the latter, as Marcello de Cecco interestingly notes:

> Scholars in the past were persuaded that money was one, perhaps the most important, of the instruments of distributive justice, designed and used by the state to achieve and maintain political equilibrium. Distributive justice, according to Aristotle, was inherently geometrical through being concerned with the relative positions of men in society. It followed that monetary theory, and policy, should be directed to maintaining these relative positions in a state of long-term socio-political equilibrium. | Most of these developments, of course, took place outside the space of the market. The invention of money was consequently due to the need to have a stable unit of account, to reckon what peoples' respective places in society were - what was due to each according to relative justice. But money was also an instrument of exchange between people belonging to different *gentes* and, therefore, to different political societies. Exchange between people of different *gentes*, strangers to one another, would often take place in the market space. Here, money would be used not at his face value, as it would be in dealings between citizens of the same state, but rather at its intrinsic value [...] In this way money ceased to be an expression of sovereignty - a creature of law - [...] It was thus an instrument of simple commutative justice, in which calculations could be made arithmetically without having to consider the relative position in any society of the individuals taking part in exchange [...][216]

This argument, somewhat opaque at first glance, becomes clearer if we consider Braudel's distinction between market type A and market type B, i.e., a local market regulated publicly according to the principle of distributive justice and a wholesale and international market regulated privately according to the principle of commutative justice. In the former, the currency is low money, i.e., copper and alloy money; in the latter, it is noble money, i.e., gold and silver money. Now, as the international market develops and the need for full-bodied coins of precious metals arises, they are exchanged in this market like commodities at intrinsic value. Within this framework, says de Cecco, the *lex mercatoria* prevails. On the other hand, fiat money is used within the nation, enforced by *jus civilis*.[217] Thus, as we have

[216] De Cecco M., "The Latin Monetary Union revisited once again" (2007), in *From the Athenian Tetradrachm to the Euro*, ed. P.L. Cottrell, G. Notaras, G. Tortella, Routledge, 2018, p. 59.
[217] De Cecco M., "The Latin Monetary Union revisited once again", op.cit., p. 59.

seen, on the one hand a commodity money is created to capture foreign markets (think of the Florentine florin), on the other hand complementary monies circulates within the borders to ensure distributive justice.[218]

However, if we look at this story from the point of view of the 18th century observer, to return to the core of this chapter, there is something that does not convince. Take, for example, the opinion of Pompeo Neri (1706-1776), a professor of public law at the University of Pisa (until 1737), who was first called to Florence by the Grand Duke Francesco Stefano di Lorena (since 1745 also Holy Roman Emperor) as a functionary and reformer in the government of Tuscany (until 1749), then by Maria Teresa (i.e. the Empress and Grand Duchess of Milan) to Milan to lead the reform of the census and to preside over the monetary conference between Milan and Turin, before returning to Florence in 1757.[219]

In the *Appendice alle Osservazioni sopra il prezzo legale delle monete* [Appendix to the Observations on the Legal Price of Coins] of January 17, 1752, published the same year in *De monetis Italiae* by Argelati, Neri clearly defines the roots of his concept of money.[220] He begins by explaining the devaluation process over the centuries as something one could call a major misunderstanding. In fact, by tracing the main stages of the value of the Florentine florin, first issued in 1252 at a *lira* parity, he goes back to the origin of "monetary disorder" and says that if the intrinsic value of the gold florin was stable over the centuries, its nominal value, measured against silver coins, was appreciated. The problem, according to Neri, is to have chosen silver instead of gold as the peg for the *lira,* the ideal money. If the latter had been chosen, the money would have remained stable until today:

> *[...] il fiorino d'oro gigliato quando fu principiato a coniarsi a Firenze si tenne per equivalente a una lira della moneta di argento in quel tempo corrente; e se si fossero tenuti conti a fiorini o sia zecchini e frazioni di zecchini, non ci sarebbe stato nel valore numerario del fiorino in cinque secoli alcuna variazione, giacché il fiorino coniato in origine nel peso di tre denari d'oro purissimo non ha sofferto in questo tempo alcuna notabile diminuzione nella sua sostanza, [...] e i conti di tutta l'Italia riferiti a una moneta incorrotta, come questa, potrebbero esser chiarissimi.*

[218] As for the concepts of arithmetic or geometric calculation for commutative justice or distributive justice and the relative use of noble money or low money, without going into the Aristotelian system of justice, suffice it to say that if you want to ensure commutative justice, you can consider each subject in the game at the same level and calculate what he is entitled to according to market prices, so that you give the corresponding value in commodity money according to arithmetic calculations; if you want to ensure distributive justice, consider the players at different levels, so that you assign to each of them an exponent representing that level and reward him accordingly. To do this, you need imaginary money so that you can value coins differently, according to their type rather than their intrinsic value. So you can pay different people with different kinds of money (complementary), according to their "social value" rather than their "economic value."

[219] See Verga M., "Neri Pompeo", *Dizionario biografico degli italiani*, vol. 78, Treccani, 2013.

[220] Neri P., *Appendice alle Osservazioni* (1752), in Custodi P., *Scrittori classici italiani di economia politica*, Milano, nella stamperia e fonderia di G.G. Destefanis a S. Zeno, parte antica vol. 6, 1804. Both the *Osservazioni* and the *Appendice* were published in Argelati F., *De monetis italiae*, vol. 5, Milan, 1752.

> [...] the *fiorino d'oro gigliato*, when first minted in Florence, was held to be the equivalent of a *lira* of the silver coinage of the time; and if the accounts were kept by *fiorini* or *zecchini* and fractions of *zecchini*, the numerical value of the *fiorino* would not have changed in five centuries, since the *fiorino*, originally minted in the weight of three *denari* of pure gold, has not undergone any appreciable diminution of its substance in that time, [....] and the accounts of all Italy, referring to an unadulterated coin like this, could be very clear.

But, he continues, because the silver coins were debased (i.e. increasingly alloyed) and because they are the measure of the florin, the latter rose from one *lira* to 13 ⅓ *lire*:

> *Ma siccome fu ritenuto nel contrattare e nello scritturare i conti l'antico nome di lira, che in Firenze specialmente è stata sempre moneta immaginaria, e la lira si componeva di un aggregato di monete reali di argento in quel tempo correnti, le quali si principiarono nel tratto successivo in diverse guise a depravare, i venti soldi di questa lira composti di moneta depravata principiarono a non contener più quella quantità d'argento fino, che era corrispettiva a tre denari d'oro che rimasero sempre immobili nel fiorino. Perciò venti soldi depravati non poterono seguitare a equivalere al fiorino, e principiò a richiedersene in equivalenza trenta, trentadue, trentasei, [...] e così successivamente col progresso de' tempi peggiorandosi sempre la moneta, più soldi e più lire della moneta peggiorata vi vollero per conguagliare il fiorino, che stette sempre fermo nel suo primitivo peso;*
>
> [But since the old name *lira*, which was always an imaginary money, especially in Florence, was maintained in haggling and writing bills, and the *lira* consisted of an aggregate of real silver coins, current at the time, which by any means degenerated over time, the twenty *soldi* of this *lira*, which consisted of spoiled money, no longer contained the amount of fine silver equivalent to three *denari* of gold, which still remained in the *fiorino*. Therefore, twenty spoiled *soldi* could no longer correspond to the *fiorino*, and they began to demand thirty, thirty-two, thirty-six as an equivalent, [...] and so later, as time went on, more and more *soldi* and more *lira* of spoiled money were needed to balance the *fiorino*, which still had its original weight;][221]

So the *lira* was devalued because it was made up of silver coins that were increasingly debased "because it was almost universally abused in the mints of Italy to constantly debase the silver coins and the other subordinate coins of low alloy and copper."[222] The main problem therefore concerns silver as well as copper and alloy money, which can still be changed, while gold money remains untouched. Here the link with the tradition of

[221] Neri P., *Appendice alle Osservazioni,* op. cit., pp. 271-273 (editor's translation).

[222] *"Per l'abuso quasiché universalmente praticato nelle zecche d'Italia di depravar sempre le monete di argento e le altre subalterne di bassa lega e di rame"* in Neri P., *Appendice alle Osservazioni,* op. cit., p. 273 (editor's translation).

naturalism is established through the figure of the Florentine merchant and banker Bernardo Davanzati, who in the *Lezione delle monete* (1588) sets out the same problem:

> *Il nostro fiorino valeva sessanta anni fa sette lire, oggi si cambia per dieci; perché in quelle sette tanto stoffo e buono ariento era quanto in queste dieci, sicché le sette odierne non hanno più facoltà di comperare un fiorino intiero, ma delle dieci parti le sette. Le altre tre parti sono svanite, e di tanto scemate le facoltà de' privati e le entrate pubbliche ancora; perché con sette lire oggi non si ripone un fiorino intiero, ma li sette decimi.*
>
> [Our *fiorino* was worth seven *lire* sixty years ago, but today it is exchanged for ten; for there was as much substance and good silver in those seven as in these ten, so that the present seven no longer have the power to buy a whole *fiorino*, but of the ten parts the seven. The other three parts have disappeared, and with them the wealth of private individuals and the public revenues; for with seven *lire* today there is no longer a whole *fiorino*, but seven tenths.][223]

According to Neri, the shift in the nominal value of the florin, as long as the low money is devalued, is due to the "natural distance between gold and silver and between silver and copper."[224] Thus, when the imaginary money is devalued, gold must appreciate to keep the "natural distance" with respect to silver and copper, that is, when the unit of account becomes "lighter" in terms of silver or copper (i.e. corresponds to a lesser weight), then a higher number of the same unit of account is required to measure the same weight of gold. However, in tracing the devaluation of silver from 1531 onward, Neri also notes that part of the appreciation of the florin is legitimised by the change in the ratio between gold and silver: the gold-silver exchange rate in 1531 did not correspond to the "natural proportion" and the *fiorino* traded at a premium until the bimetallic ratio was lowered to 1:12, then the influx of silver from the Americas after its discovery shifted that ratio further to 1:15, increasing the amount of fine silver required to offset gold by about 25 percent. It is clear, then, that the only possible adjustment of the nominal value of the florin is due to the consideration of the "natural law regulating the price of metals,"[225] i.e., the gold-silver parity, which reflects the ratio between the quantity of gold and the quantity of silver in the country or territory referred to (Neri considered Italy). Neri does not explain the mechanism of such a law, but the basic idea is that precious metals are already money before they are minted and the coin is only a certificate for a certain weight and fineness of the metal.[226]

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[223] Neri P., *Appendice alle Osservazioni,* op.cit., p. 274 (editor's translation).

[224] *"Naturale distanza che dev'essere tra l'oro e l'argento e tra l'argento e il rame"* in Neri P., *Appendice alle Osservazioni,* op. cit., p. 273 (editor's translation).

[225] *"legge naturale che regola il prezzo corrispettivo dei metalli",* in Neri P., *Appendice alle Osservazioni,* op. cit., p. 323 (editor's translation).

[226] This concept can be traced back to Nicolas Oresme, see Chaplygina I., Lapidus A., "Economic thought in scholasticism, op. cit.

The problem, according to Neri, is that money often receives an arbitrary price because of a wrong attitude based on a misinterpretation of Roman law by scholastic scholars, whom Neri, losing his usual political correctness, calls "idle" (*oziosi*).[227] He claims that Giulio Paolo, the influential third-century Roman jurist CE, was misquoted when he wrote:

> *Origo emendi, vendendique a permutationibus coepit. Olim enim non ita erat nummus, neque aliud merx, aliud pretium vocabatur; sed unusquisque secundum necessitatem temporum ac rerum utilibus inutilia permutabat, quando plerumque evenit ut quod alteri superest alteri desit. Sed quia non semper nec facile concurrebat, ut cum tu haberes quod ego desiderarem, invicem haberem quod tu accipere velles, electa materia est, cuius publica ac perpetua aestimatio difficultatibus permutationum aequalitate quantitatis subveniret, eaque materia forma publica percussa; usum, dominiumque, non tam ex substantia praebet, quam ex quantitate, nec ultra merx utrumque, sed alterum pretium vocatur.*
>
> The practice of buying and selling developed from barter. For in ancient times there was no such thing as a coin and it was not usual to distinguish between 'goods' and 'price'. Rather, everyone exchanged useless things for useful ones according to the necessities of the time and of his affairs as it happens very often that something, which one person can spare, is needed by another person. But since it did not always and not easily occur that you owned what I would have liked to have and at the same time I owned what you would have liked to get, a material was chosen, which due to its publically attested and permanent value would help to overcome the difficulties of barter through the equality of amounts. This material, which is minted in the form approved by the state, is valuable to the owner because of its amount rather than its substance. And no longer are both objects [of the contract] called 'goods'; instead, one of them is called the price.[228]

According to Neri, this definition of money is quite clear, since it defines money as a substance, but it was misunderstood by the scholastics who, under the influence of Aristotle, interpreted money as an arbitrary concept, which corresponds to the "opinion that the price of money comes from law and not from nature."[229] Here the metallist position of Neri is clearly shown as opposed to the chartalist one of Aristotle and again of the scholastics.[230] Neri bases his thesis on the following points: 1) Paolo says that "to make up

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[227] Neri P., *Appendice alle Osservazioni,* op. cit., p. 337.

[228] Neri P., *Appendice alle Osservazioni,* op. cit., pp. 325-26. The original text is in Justinian's digest (D. 18. 1). The translation is by Rüfner T., "Money in the Roman Law Texts", in Fox D., Ernst W., ed., *Money in the Western Legal Tradition*, Oxford University Press, 2016, p. 98.

[229] *"Opinione che il prezzo della moneta viene dalla legge e non dalla natura"*, in Neri P., *Appendice alle Osservazioni,* op. cit., p. 327 (editor's translation).

[230] Neri actually affirms a conservative interpretation of Julius Paulus against a more progressive one, e.g. Thomas Rüfner writes: "by stressing the importance of the public authority backing the money, and the fact that the value of money does not depend on its substance, Paul came close to a nominalistic conception of money. Interestingly, Paul, who died around 230 AD, lived at a time when repeated debasement turned the Roman silver currency from commodity money into fiduciary money. One may speculate whether his

for the difficulties of the exchange a substance was elected,"[231] that served as a pledge for the desired commodity, which was not available at the time of the exchange, so that "all obligation bills or other promissory bills or credit tokens are not money, since money was invented in such a way that neither debit or credit remains between the contracting parties;"[232] 2) The popular and perpetual valuation of gold, silver and copper is far from the arbitrary valuation of the law,[233] i.e., "popular" refers to the public, not only of one country, but of all countries, i.e., to the natural law, while the term "perpetual" refers to the property of durability of the metals, thus certainly not to arbitrary concepts; 3) finally, when Paolo says that it is not the substance of money but the quantity of money that is the condition for concluding a transaction, he does not mean, as the scholastics interpreted it, that it is the number that counts, but that money, like other commodities (for example wheat) is a substitutable good that can be measured by quantity thanks to its property of uniformity, "because from one pound of gold to two half pounds of gold not the slightest difference is possible."[234] Therefore the money is counted according to the "quantity" of the substance it contains, i.e., the nominal value must represent exactly the intrinsic one. This does not mean, however, that the tariff cannot be changed by law, but it means that when it happens against the law of nature (i.e., the market parity between metals), money reacts and adjusts to compensate for the imbalance as it did the *fiorino* which rose in nominal value while the silver and copper money was debased. Moreover, this process of price increase also affects other commodities:

> *E' giusto che la moneta pubblica non si ricusi, perché questo turba il commercio. E quando sia prescritto di prendere la moneta con una tale numerazione di lire ec., di fatto questa numerazione si osserva, e fin quì le leggi sono letteralmente eseguite. Ma che le lire nuove più leggiere siano equivalenti alle antiche più gravi, questa cosa le leggi non la dicono, e se la dicessero non potrebbero ottenere che fosse creduta. Sicché con l'alleggerimento della lira i prezzi di tutte le cose non dirò che si accrescano, ma stando fermi nel loro essere naturale richiedono in equivalenza maggior numero di lire leggiere e coi prezzi di tutti gli altri generi vanno del pari, anzi più sensibilmente si avanzano a richiedere maggior numero di lire i prezzi delle paste d'oro e di argento e delle monete di tal materia che sono rimaste incorrotte.*

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monetary theory was influenced by the economic realities of his time.", in id., "Money in the Roman Law Texts" ,op. cit., p. 99.

231 *"Per supplire alle difficoltà della permuta fu eletta una materia"*, in Neri P., *Appendice alle Osservazioni,* op. cit., p. 327 (editor's translation).

232 *"Tutte le carte di obbligazione o altri fogli o contrassegni di credito non sono moneta, poiché la moneta è inventata all'effetto che tra i contraenti non rimanga nè debito nè credito",* in Neri P., *Appendice alle Osservazioni,* op. cit., p. 328 (editor's translation).

233 *"L'estimazione popolare e perpetua dell'oro e dell'argento e del rame è una cosa molto lontana dall'estimazione arbitraria della legge",* in Neri P., *Appendice alle Osservazioni,* op. cit., p. 329 (editor's translation).

234 *"Perché da una libbra d'oro a due mezze libbre d'oro non vi è né si considera possibile la minima differenza"*, in Neri P., *Appendice alle Osservazioni,* op. cit., p. 544 (editor's translation).

> [It is right that the public currency should not be recused, because it interferes with commerce. And when it is prescribed to take money with such numbering of the *lire* etc., this numbering is indeed observed, and so far the laws are literally carried out. But that the lighter new *lire* are equivalent to the heavier old ones, the laws do not say that, and if they said it, they could not achieve that it was believed. So, with the lightening of the *lira*, the prices of all things rise, although I do not want to say that they rise, but since they are fixed in their natural essence, they demand more *lire* as an equivalent and this happens in accordance with the prices of all other goods, in fact the prices of gold and silver bullion and coins of this material, which have remained untouched, are more sensitive to the process of price increase.][235]

Neri's naturalism implies that commodities are linked by value relations that come about naturally and are fixed, so that even prices are "fixed in their natural essence" but nominally change accordingly with the "weight" of the unit of account, and even money, which is considered a commodity (i.e., “commodity money”), also "suffers" from the change in the unit of account. Monetary nominalism, i.e., the possibility of fixing the value of money by law, which Neri traces back to the scholastic school, is not permissible in this perspective because it represents an arbitrary change in the natural value of things.

Neri’s *Appendice* is a veritable manifesto of naturalism in the 18th century. The author grounds naturalism in natural law (like Fabrini) and draws inspiration from Roman law, which he considers an interpretation of natural law.[236] It is interesting to derive from Neri's arguments the theory of value that lies behind naturalism, i.e., every commodity (including money) has an absolute value, which depends on the “popular” valuation, and a relative value, which depends on the quantity available, also considered natural to some extent, both of which give the price,[237] which in turn is expressed in a unit of account, imaginary money, so that any change in imaginary money causes a change in all the prices of the system. According to this system, at least theoretically, there is no loss of wealth, as Davanzati thought, if all prices shift proportionally. In fact, Galiani also claims that commodity prices rise “in name and not in reality” when imaginary money is devalued.[238] However, there is a problem in the area of intertemporality, i.e., if creditors receive less precious metal for a given amount of units of account, because the value of precious metal has risen and also prices have risen, they lose purchasing power. This is above all a juridical problem, because the laws aimed at enforcing the old monetary value, established by the tariff, even in case of monetary revaluation (and rising prices): “That the lighter new lire are equal to the heavier old ones, the laws do not say, and if they said it, they could not achieve

[235] Neri P., *Appendice alle Osservazioni,* op. cit., p. 363 (editor’s translation).

[236] However, this point about naturalism in Roman law, explained by Neri in the *Appendice*, is quite controversial, see for example De Cecco M., “Monetary Theory and Roman History”, *The Journal of Economic History* , Dec., 1985, Vol. 45, No. 4, Dec. 1985, pp. 809-822.

[237] In an economic model of supply and demand, the “popular” valuation is demand, which is considered rigid, and the quantity available is supply.

[238] Galiani F., *Della moneta*, op. cit., p. 100.

that it was believed," warns Neri. This means that the creditor who, after the devaluation of the imaginary money, takes the same nominal value established by contract, loses real value (i.e. in terms of precious metal and purchasing power).

At this point, however, it should be clear that one is the enhancement of all money (i.e., the devaluation of imaginary money, what Galiani called a real "*alzamento"*), and the other is the reweighting of the bimetallic ratio (what Galiani called a "change of proportions"), which is perfectly legitimate in a naturalistic framework. As for the former, Neri can reject Galiani's enhancement theory because it represents a case of arbitrary currency manipulation, even if, as Neri says, it is limited to a specific case and limited in time. According to Neri, Galiani supports Melon, the very advocate of arbitrary money, against Dutot, the Abbé de Saint Pierre, Montesquieu, Locke, Davanzati, all authors who opposed arbitrary money. However, "taking into account the restrictions he gives to his zealous defence of Melon, it seems to me that in most of the most important theses he does not say anything different from the general opinion,"[239] so he considers his position only as the exception that confirms the rule. First of all, he reports that Galiani is against the enhancement of money which violates the proper relationship between the whole money and its parts, and that the only enhancement that he allows is for the whole money at the same time. The sovereign's gain comes from the slowness of the price adjustment and when it is completed, the enhancement has lost its effect, i.e. take the unit of account (U), the price of the metal in terms of the unit of account (PM), the price of the goods in terms of the unit of account (PG), so U↓, PM↑, PG↑, but PG does not change automatically like PM, since all obligations (private and public) do not adjust when they are bound by a legal contract, so the purchasing power of the precious metal increases and obligations can be settled with less precious metal than before until all values in the economy adjust.[240] Neri also says that Galiani admits that the enhancement is also a kind of bankruptcy, although better than an official bankruptcy, and comments:

> *Sopra di questo, quantunque io conosca che l'autore merita infinita lode per molte verità che egli ha benissimo espresse nel suo libro, non resto veramente persuaso che l'alzamento arbitrario della moneta sia meno nocivo del fallimento, parendomi i mali dell'alzamento più estesi, più importanti, più casualmente gettati sopra il popolo e specialmente sopra i poveri, come sono tutti i creditori delle proprie fatiche, e più durevoli.*
>
> [Although I know that the author deserves infinite praise for many truths that he has expressed very well in his book, I am not really convinced that the arbitrary enhancement of money is less harmful than bankruptcy. To me the evils of the enhancement seem more extensive, more important, more casually thrown upon

[239] *"Considerando le restrizioni che egli fa a questa sua zelante difesa del Melon, mi pare che nella maggior parte delle proposizioni più importanti non diconvenga dall'opinione comune"* in Neri P., *Appendice alle Osservazioni,* op. cit., p. 367 (editor's translation).
[240] For a more detailed analysis see chap. 5.

the people, and especially upon the poor, who are all creditors of their own toils, and more permanent.][241]

If Neri's position is the defence of creditors, Galiani's position is so varied and extensive that it cannot be treated here and will therefore be dealt with in a separate chapter. However, now that we have discussed Neri's opinion on Galiani's *alzamento*, the question arises of a change in the bimetallic ratio in conformity with the market, which seems quite legitimate in a naturalistic approach. The question now is to what extent and why the eighteenth-century naturalistic approach leaves the money tariff untouched. We will try to answer this question in the following sections.

3. From Newton to Locke. Imaginary money stabilisation

We have seen that naturalism is the common ground on which the Italian authors move, but they are open to Locke's monetary revolution. We now need to examine why and to what extent they actually move towards Locke's point of view and whether they understand the revolution of this point of view. To do so, we compare three approaches to money with relative hypotheses on monetary reform, by Carli and Neri in Milan and by Costantini in Venice, all published in 1751.

3.1 Gian Rinaldo Carli on seigniorage and exchange rates

Gian Rinaldo Carli (1720-1795) was born in Capodistria. After studying law at the University of Pavia and living there and in Tuscany, he eventually came to Milan, where he was to become a great functionary. With *Dell'origine e del commercio delle monete* [On the origin and trade of coins], he opened the money debate in northern Italy in 1751.[242]

[241] Neri P., *Appendice alle Osservazioni,* op. cit., p. 372 (editor's translation).

[242] Carli G. R., *Dell'origine e del commercio delle monete* (Venice, 1751), in Custodi P., *Scrittori classici italiani di economia politica*, Milano, nella stamperia e fonderia di G.G. Destefanis a S. Zeno, parte moderna, vol. 13, 1804. This work was later expanded and published again in three volumes (1754-60): Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia*, partitioned in tomo I, Mantova, 1754; tomo II, Pisa 1757; tomo III, Lucca, 1760. Tomo I is composed by *Dissertazione I: "Dell'origine e del commercio della moneta, e dei disordini che accadono nella arbitrarie alterazione di essa"; Dissertazione II: "Ricerche storiche intorno all'istituzione delle zecche d'italia dalla decadenza dell'impero fino al secolo XVII"; Dissertazione III (parte prima): "Dei vari generi di moneta coniata, e posta in uso in molte zecche d'italia, dalla decadenza dell'impero sino al secolo XVII".* Tomo II is composed by *Dissertazione III (parte seconda): "Dei vari generi di moneta coniata e posta in uso in varie zecche d'italia, giuntovi l'intrinseco valore di essa"; Dissertazione IV: Delle varie monete forestiere, e nazionali, poste in commercio in Italia fino al secolo XVII"; Dissertazione V: "Del commercio, o sia rapporto delle antiche monete d'Italia fra le stesse di tempo in tempo, fino al secolo XVII"; Dissertazione VI: "Delle antiche, e moderne proporzioni dei metalli monetati in Italia".* Tomo III is composed by *Dissertazione VII: "Del valore, e della proporzione dei metalli monetati coi generi in Italia prima della scoperta dell'Indie, col confronto del valore e della proporzione de' tempi nostri"; Dissertazione VIII: "Sulla giusta diminuzione o ragguaglio delle*

Carli articulates his discourse starting from the birth of money to arrive at the analysis of seigniorage. He postulates that money arose as a social convention, where precious metals (i.e., gold and silver) are chosen to give substance to money, and asserts that the sovereign intervened only to guarantee the exact weight and fineness through the coinage in order to facilitate exchange. The only case in which the sovereign could change this convention and introduce other materials, such as copper, bronze, iron, leather, and others, would be if the country was not involved in trade, otherwise it would have to resort to precious metals. He says:

> *Se poi nuova regolazione e nuovo istituto prese qualche privato commercio di ben regolata nazione amante dell'equilibrio e della frugalità, contentandosi del cambio di monete di rame, di bronzo, di ferro, di cuojo o d'altra più vile materia, regolate col proprio particolare suo peso; allora solo questo arbitrio sopra l'uso delle monete i governi si presero, che allontanandosi dal commercio di tutti gli altri, padroni e legislatori sul fatto delle monete si resero [...]. Quindi è che entrati poi questi in commercio con gli altri [...] [dovettero] assoggettarsi non solo a dar corso a que' metalli che prima erano a loro inutili [oro e argento], ma ad accordar ancora su questi quel prezzo e quella misura con cui dall'altre nazioni venivano regolati.*
>
> [Then, when a new regulation and a new institute took over the private commerce of an orderly nation, which loved balance and frugality, content with the exchange of coins of copper, bronze, iron, leather, or other more unworthy substances, regulated by their own particular weight, the governments only adopted this arbitrariness over the use of coins, removed from the commerce of all others, and became masters and legislators over the fact of coins [...]. Thus, these then entered into trade with others [...] [and they had to submit], not only to those metals which were useless to them [gold and silver], but also to give them that price and measure by which other nations were regulated.][243]

As soon as a nation begins to trade with other nations, not only it is forced to adopt the same money, i.e. gold and silver, but also the same trade rules. Therefore, he states that "no trading nation can make arbitrary changes to the coins without being doomed to failure,"[244] meaning exactly that all nations which want to trade with each other must abide by the same rules in the monetary field. We have already pointed out that the separation between "noble money" and "low money" resulted from the establishment of international markets

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antiche monete fino al secolo XVII con le correnti nelle principali città d'italia; in cui si ragiona intorno all'importante argomento delle restituzioni nel caso di minorazioni di peso, o di valore intrinseco nella moneta, per via di dimostrazione e di fatto"; Appendice.

[243] Carli G.R., *Dell'origine e del commercio della moneta*, op.cit. p. 91 (editor's translation).

[244] "*Niuna nazione commerciante possa arbitraria alterazione far sopra le monete senza propria ruina"* in Carli G.R., *Dell'origine e del commercio della moneta*, op. cit. p. 92 (editor's translation).

and the related issuance of gold coins, i.e., from the need for a "universal money"," as Bernardo Davanzati wrote in 1588:

> *Moneta è oro, ariento, o rame coniato dal pubblico a piacimento, fatto dalle genti pregio e misura delle cose per contrattarle agevolmente. [...] s'un principe [...] facesse moneta di ferro, piombo, legno, sughero, cuoio, carta, sale, come già si son fatte, o d'altro, ella non sarebbe fuor del suo stato accettata, come fuor della generalmente accordata materia, nè sarebbe moneta universale, ma una taglia particolare, un contrassegno, o bullettino, o poliza di mano del principe lui obbligante a rendere al presentatore tanta moneta vera, come già s'è usato, quando per mancamento d'essa il ricorrere a simili spedienti è stato salute pubblica.*
>
> [Money is gold, silver, or copper, coined by the public at will to make the value and measure of things easily tradable by the people. [...] when a prince [...] were to make a coin of iron, lead, wood, cork, leather, paper, salt, as they were made, or of anything else, it would not be accepted outside the state, as outside the generally agreed matter, nor would it be a universal money, but a special size, a token or bill, or hand-written paper of the prince, obliging him to return to the giver the same amount of real money, as has already been done when, for lack of it, recourse to similar means has been a matter of public safety.][245]

Although Carli does not cite Davanzati at this point (but later he does),[246] this concept of "universal money" is claimed as a necessary condition for trading nations, since other forms of money were generally used on the domestic market (a parenthesis should be opened for copper, which was used almost exclusively within the borders, with exceptions concerning neighbouring countries. However, copper is extremely important for Carli as it is the unit of account, as we will see in section 4). As international trade grew in importance, the need for a "universal money" naturally grew as well. In fact, Kindleberger says that the concept of "universal money" was first used by Davanzati and then reappeared among proponents of the gold standard in the 19th century.[247] Indeed, it is a concept very close to the money idea of John Locke, who made the same considerations to support a money suitable for international trade. As Desan says of his appointment to the Board of Trade, "for him, exchange was an international matter, and he evidently assumed that money was as well."[248]

We have seen that Carli's first principle for a trading country is not to make "arbitrary changes" in money, but what does that mean exactly? First of all, we must say that

[245] Davanzati B., *Lezioni delle monete* (1588), in Custodi P., *Scrittori classici italiani di economia politica*, Milano, nella stamperia e fonderia di G.G. Destefanis a S. Zeno, parte antica, vol. 2, 1804, pp. 28-29.
[246] Carli G.R., *Dell'origine e del commercio della moneta*, op. cit., pp. 127-128.
[247] See Kindleberger C. P., *A Financial History of Western Europe*, Routledge, 1984, p. 66. The reference is to the International Monetary Conference of Paris in 1867.
[248] Desan C., *Making Money*, op. cit., p. 349.

seigniorage is involved in the discussion here, so the comparison with the English debate is limited, because seigniorage was abolished in England in 1666.[249] Carli makes a distinction between intrinsic and extrinsic value of coins. He says that the former is the value of the metal content and the latter is the value of the coin, which includes the minting costs and is therefore higher than the intrinsic value. We have already explained these concepts by identifying the value of the metal (intrinsic value) with the mint price, i.e., how many units of account are required to buy one unit of weight of the metal, and the value of the coin (extrinsic value) with the mint equivalent, i.e., how many units of account are equivalent to one unit of weight of the metal once it is minted.[250] Since seigniorage is represented by the difference between the two values, Carli explains the process leading to it as follows:

> *Accennato abbiamo di sopra che le zecche, dovendo venir al coperto delle spese occorrenti pel lavoro delle monete, fanno cadere questo aggravio sopra i metalli che vi coniano, e per conseguenza le monete stesse vengono ad avere un valore di più di quel che hanno in se, il qual valore è tutto estrinseco. Ora vuolsi notare che ne' tempi di mezzo, cioè intorno al X sino al XV secolo, i principi, i signori e i vescovi, i quali facoltà avevano di batter soldo, davano la zecca ad impresa o in appalto, convenendo col monetario di un leggiero profitto per ogni marca, cioè per ogni otto once di peso de' metalli posti in lavoro. Questo tributo dagli antichi chiamato era col nome di* Monetagium*, e da' Francesi* Seigneuriage*,* signoraggio *appellossi. [...] | E' da avvertirsi però, che siccome ne' tempi antichi diritto di signoraggio era soltanto il tributo leggiero che ai sovrani davano gli appaltatori, in grazia di cui tanto introdur dovevano di lega cattiva nelle monete quanto il suddetto tributo con gli altri naturali aggravi importava, credendo bene di conservar sempre nelle dette monete lo stesso peso [...]; così coll'andar del tempo l'idea di discreto tributo in quello di esorbitante profitto cangiossi, credendo di guadagnar tanto sulle monete, quanto d'inferior lega poteva introdursi;*
>
> [We have already mentioned that the mints, which have to bear the cost of producing the coins, pass this burden on to the metals which are minted there, so that the coins themselves acquire a higher value than they have in themselves, for this value is purely extrinsic. Now I have noticed that in the Middle Ages, that is, from the 10th to the 15th century, the princes, lords, and bishops who had the power to mint money assigned the minting of coins to companies or subcontractors and agreed with the minters on a small profit for each mark, that is, for each eight ounces in weight of the metals worked. This tribute, called *monetagium* by the ancients and *seigneuriage* by the French, is called *signoraggio*. [...] | It should be noted, however, that the right of seigniorage in ancient times was only a legal tribute that the rulers gave to the contracting parties, in whose favour they had to put as much bad alloy in the coins as the above-mentioned tribute with the other naturally introduced aggravations, since they always had to keep the same weight in

[249] See chap. 1, para. 3.
[250] See chap. 1 para. 4.

> the said coins [....]; thus, in the course of time, the idea of discreet tribute was transformed into that of exorbitant wanton gain, in the belief of earning as much in the coins as the inferior alloy could bring in.][251]

Carli considers the case where the mint is subcontracted and identifies two components of seigniorage, the cost of coinage and a fee to the ruler ("legal tribute"), but the latter increased over time to the point of becoming "exorbitant profit".

However, when it comes to international trade, only the intrinsic value is taken into account and thus the added value between the extrinsic and intrinsic value is lost. Therefore, according to Carli, it would be better if all countries agreed not only on the precious metals that make up the intrinsic value, but also on the extrinsic value, to prevent countries with a negative trade balance from suffering a greater loss when the extrinsic value exceeds the intrinsic value. A similar claim was made by Locke, who wrote: "Perhaps It would have been better for Commerce in general, and more convenient for all their Subjects, if the princes every where, or at least in this part of the world, would at first have agreed on the fineness of the Standard,"[252] since the fineness of the standard determines a certain seigniorage to the extent that the alloy is included.

But let us sketch a theory of the exchange rate for this period. The exchange rate is par when the demand for bills of exchange equals the supply. Otherwise, it fluctuates above or below par within "specie points" where the cost of transporting species abroad becomes cheaper than the price of bills, so that international payments are settled in specie. Thus, a merchant exporting abroad (A) can draw a bill on the foreign importer of his goods (A') who accepts the bill, and then sell the bill to another merchant in his country (B) who is interested in imports from abroad and willing to pay with the same bill, so that the final foreign exporter (B') who is paid with the bill can present it to the drawee (A') there for payment. Ultimately, payments are settled in specie in the respective countries. To summarise, the drawer A sells the bill of exchange to B (cash in the country goes from B to A), who pays B' abroad with the bill of exchange and B' redeems the bill of exchange from the drawee A' abroad (cash abroad goes from A' to B').[253] However, we must wait for Pietro Verri to provide a full explanation of this theory.[254] Carli, on the other hand, discusses how the extrinsic value of coins determines the exchange rate at par and what the consequences of a change in the extrinsic value of coins may be:

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[251] Carli G.R., *Dell'origine e del commercio della moneta*, op. cit., pp. 103-105 (editor's translation).

[252] Locke J., "Further Considerations Concerning Raising the Value of Money" in Kelly P. H., *Locke on Money,* op. cit., vol. II, p. 413).

[253] See Kindleberger C. P., *A Financial History of Western Europe*, op.cit., pp. 39-41; Neal L., "How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648–1815," op. cit., pp. 5-9; Rosselli A., "Early views on monetary policy: The Neapolitan debate on the theory of exchange", in *History of Political Economy*, 32 (1), 2000, pp. 71 - 72.

[254] Verri P., *Meditazioni sulla economia politica* (1771), ed. De Felice R., Bruno Mondadori, 1998, pp. 72 - 73. See also chap. 3.

Imperciocché [La nazione] se accresce le [monete] altrui, sarà pieno lo stato di forastiere monete introdotte a carico della nazione, importando a tutti [in questo caso i possessori di monete straniere] di cambiare le proprie monete quando vi trovano il conto; [...] Se al contrario accresce il prezzo delle proprie, valutandole di più di quel che porta la comune proporzione dei metalli, qual nazione sarà mai che voglia a prezzo sì caro valutare i metalli in altra zecca coniati? Quindi è che i mercatanti di quella nazione saranno obbligati sì nel comperare le altrui, come nel vendere le proprie merci, tanto discapito soffrir al di fuori tanto al di dentro sarà la moneta crescente: onde, estenuati e pregiudicati questi, ogni commercio sarà interrotto.

[As soon as [the nation] increases the [coinage] of others, the nation will be full of coins imported at the expense of the nation, since everyone [in this case the owners of foreign coins] will be ready to exchange his coins if he finds the profit; [...] If, on the contrary, it increases the price of its own by valuing it more than the ordinary proportion of the metal content, what nation will ever want to value metals minted in other mints so dearly? Thus the merchants of that nation will be forced both to buy from others and to sell their goods abroad, they will suffer as much loss as the domestic currency rises: the merchants will be exhausted and weakened, all trade will be interrupted.][255]

Carli essentially means that national coins abroad are valued at their intrinsic value and, conversely, foreign coins should be in the country. Thus, it is the nominal value, which includes the seigniorage, that determines the exchange rate, which can be expressed in terms of the national coin as follows:

$$E^* = (Pa + s) / P^*a \qquad [* \text{ abroad}]$$

Where E^* is the exchange rate (i.e., legal parity abroad), P is the national mint price, a is the intrinsic value of a national coin, s is the seigniorage, P^* is the foreign mint price.[256] When the exchange rate so defined increases, national money is devalued relative to the foreign which becomes more expensive. So if the sovereign increases the price of national money (*"accresce il prezzo delle proprie"*) the exchange rate becomes unfavourable and imports get more expensive. If instead the tariff grants foreign coins the seigniorage, also known as *prezzo di affezione* or *predilezione* (*"se accresce le altrui"*), the above formula becomes:

$$E = (P^*a^* + s^*) \ / (Pa^* + s) \qquad [* \text{ foreign}]$$

In this particular example, where E is the legal parity in the country, foreign money would spread around because it is overvalued, bringing national coins to foreign mints at a profit. It

[255] Carli G.R., *Dell'origine e del commercio della moneta*, op. cit., pp. 98 - 99 (editor's translation).
[256] See Rosselli A., "Early views on monetary policy: The Neapolitan debate on the theory of exchange", op. cit., pp. 75 - 78.

follows that the extrinsic value should differ from the intrinsic value only in the minting costs, which should not exceed 2 percent, as he explains almost thirty years later:

> *Cento once d'argento in Milano si cambiano con once 100 di argento a Parigi [...] Suppongasi che 100 scudi in Francia corrispondano a once 98 d'argento fine, calcolato il 2% di manifattura; e suppongasi che 100 scudi a Milano corrispondano ad once 100 di fine, donandosi da noi la manifattura. E' certo che noi perderessimo nel cambio il 2%, dando 100 di nostri scudi per 98 di Francia. Al contrario facendo noi per eseguire il medesimo esempio di uniformità con la Francia, che 100 scudi equivalgono come colà a once 98, e calcolando l'argento fine nelle monete francesi indipendentemente dalle spese di manifattura, come i francesi fanno con le nostre, il cambio sarà al pari e nessuna perdita avremo.*
>
> [One hundred ounces of silver in Milan are exchanged for 100 ounces of silver in Paris [...] Let us suppose that 100 *scudi* in France are equal to 98 ounces of fine silver, giving 2% of manufacture; and let us suppose that 100 *scudi* in Milan are equal to 100 ounces of pure metal, without restoration of manufacture. It is certain that if we exchanged 100 of our *scudi* for 98 from France, we would lose 2%. On the contrary, if we are made to perform the same example of uniformity with France, which 100 *scudi* there are equal to 98 ounces, and if fine silver is calculated in French coins without regard to the cost of manufacture, as the French do with ours, the exchange will be equal and we shall have no loss.][257]

The ideal international arrangement, then, is a monetary agreement or the establishment of a customary rule (perhaps following the custom of the most influential trading partner, as in the example above) that establishes a common percentage of seigniorage. According to Carli, however, the seigniorage is obtained either by changing the price of money ("*alterazione di prezzo*") or by coining money with an inferior alloy, which he calls an alloy change ("*alterazione di lega*"). In the *Dissertazione VI* he adds that due to the change of alloy, money splits into two types: the noble money *("moneta nobile")*, whose intrinsic value is equal to the nominal value, and the low money *("moneta bassa")*, whose intrinsic value is on average 30 percent below the nominal value. According to Carli, this leads to the formation of a premium on the noble money, when it is exchanged for low money. As a result, the exchange rate with respect to the national money increased, so that the states where there is more low money in circulation are disadvantaged with respect to the states where there is more noble money (e.g. Rome with respect to Venice).[258] This is a very interesting notation, because if the sovereign sets the seigniorage not for noble money but for low money, the "external" exchange rate is nevertheless influenced by the "internal"

[257] Carli G. R., "Osservazioni sulla compilazione della grida" (16 aprile 1778), in Vianello C. A., *La riforma monetaria in Lombardia nella seconda metà del '700*, Università L. Bocconi, Milano, 1939, p. 188.
[258] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione VI, tomo II, chap. 6, pp. 431-438.

exchange rate between low money and noble money, namely by the agio formed on the latter.

Carli draws on some examples from recent Italian history to support his assumptions, such as those of Venice and Modena as positive experiences and Naples and Rome as negative. He also refers to the Great Recoinage in England, where bad money was withdrawn and recoined in 1696, according to Locke's principles. But good silver coins were also recently minted in the Duchy of Modena, and in Venice in 1726, when the government recalled bad German *traeri* which circulated in large quantities in Venice to be exchanged for good money at face value so that holders would not suffer a loss on the exchange, or in 1718, when money was raised to counteract the running out of money and to make up for a mismatch with the small money, which had just increased in the nominal value.[259] The negative cases are both the enhancement of money in the Kingdom of Naples at the end of the 17th century (here Carli refers to Broggia) and in France at the beginning of the 18th century,[260] and the critical situation of Rome, which lacked good money.

As we have already said, the extrinsic value of money should be equal to its intrinsic value, apart from the cost of coinage. Otherwise, there are consequences for the exchange rate that negatively affect the balance of trade or cause a movement of species in Italian states due to arbitrage that follows Gresham's law. While Carli's theory on trade is quite imprecise and ambiguous, the theory of arbitrage is based on an extensive collection of data compiled in tables relied on by several authors writing on monetary affairs, such as Pompeo Neri. The main concept is that coins go where they are worth more so that money changers can make a profit. To this end, they use both the internal and external exchange rates to profit from a "disproportion" (*sproporzione*), that is, a mismatch between the intrinsic and the extrinsic value.[261] Although Carli views positively any change in the price of money to bring it in line with its intrinsic value, he suggests that a recoinage should be undertaken to bring about such an adjustment in Milan. We will analyse his plans in detail in the next chapter on the Milan monetary reform. However, the reason why he proposes recoinage seems to be that it is a more verifiable method, also because of the huge amount of alloyed money that was in circulation and the poor condition of low money coinage, which, as we have seen, led to the formation of a premium on noble money, increasing the extrinsic value, which in turn had an impact on the exchange rate. To sum up, the recoinage was the only way to make the coins clearly recognizable in their intrinsic value and to obtain the correct extrinsic value according to the whole scale of denominations.

[259] Cipolla talks about a reform in 1722 and a successive stabilisation in 1733. Id. *Le avventure della lira*, Il Mulino, 1975, p. 79.
[260] As for the Neapolitan and the French cases see chap. 5.
[261] In the appendix you will find a detailed explanation of Carli's arbitrage.

3.2 Pompeo Neri and the search for an incorruptible standard.

We have already introduced Pompeo Neri and talked about the *Appendice alle Osservazioni sopra il prezzo legale delle monete*, we come now to the study of the main work, the *Osservazioni sopra il prezzo legale delle monete* [Observations on the Legal Price of Coins], which is somewhat older than the *Appendice* (i.e., the former is dated September 31, 1751, and the latter January 17, 1752) and focuses more on the practical aspects of monetary reform and, in particular, on a plan for a monetary union with Turin to be extended to other states. Nevertheless, it offers a crucial contribution to the analysis of Neri's monetary theory. As we have seen in the *Appendice*, Neri asserts that it is not possible to deviate from the proper ratio between metals, and to maintain this concept he quotes Carli when he says that "no trading nation can make arbitrary changes to the coins without being doomed to failure."[262] He also quotes Locke from the Italian translation of Pagnini and Tavanti, namely a passage from *Some Considerations* in which he warns against changing the bimetallic ratio by law, since this would lead to an outflow of silver if the gold:silver ratio is decreased, and of gold if the ratio is increased, since the law is too rigid a system to regulate the bimetallic ratio with accuracy.[263] In Locke's view, it is up to the market to determine the right ratio. However, as we will see, this implies a monometallic system with silver as legal tender at a fixed value and gold fluctuating according to the laws of the market.As for the bimetallic ratio, Neri tried to establish the correct ratio within the monetary union he was working to establish.[264] However, he also proposes Broggia's argument to devalue copper against silver before devaluing gold against silver:

> *Si deve anche aggiungere in risposta che subito che l'argento diviene più raro e più ricercato, non ne viene in conseguenza che si debba scemare il prezzo dell'oro, poiché prima di questo espediente si deve ricorrere all'altro più facile rimedio di avvilire il*

[262] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op.cit., p. 38-39.

[263] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 40. Locke's passage is in Kelly P. H., *Locke on Money,* op. cit., vol. I, p. 323.

[264] Based on Carli's tables, Neri calculated that the Italian gold:silver ratio was slightly more than 1:15 ½ (it "comes close to 15 ⅖" or 15.4), while the ratio established at Turin to be included in the draft monetary agreement was 1:14 ¾ (14.75), while the current ratio in Turin was 1:14 ⅝ (14.625), while Milan Senator Gabriele Verri proposed a parity of 1:14 11/12 (14.916). The reasons given by Venturi for the Piedmontese to demand a higher bimetallic ratio are that "a ratio of 14 ¾ would have suited the interests of Piedmont and would have attracted the *filippi di Milano*, the *piastre di Spagna* and the other silver coins of Italy" (Venturi F., *Settecento riformatore*, op. cit., p. 472). In fact, Turin did not enter the agreement, and it was actually said that they did not do so in order to maintain a higher ratio that attracted silver from abroad, provided that Turin had a positive trade balance and a devaluation of the exchange rate due to money enhancement was not necessary for economic reasons (See Venturi F., *Settecento riformatore*, op.cit., p. 470 - 472; Amato M., *Il Bivio della Moneta*, EGEA, 1999, p. 49). The point of contention, however, is precisely that while Neri is concerned with the Italian bimetallic ratio, Turin officials are more concerned with European relations, and in particular with relations with France, where the bimetallic ratio is about 1:14 ½ (See Amato M., *Il Bivio della Moneta*, op. cit., p. 49; Redish A., *Bimetallism, an Economic and Historical Analysis*, op. cit., p. 73). Turin thus preferred to tackle the reform itself and finally introduced it in 1755, setting the gold-silver rate at 1:14 ⅝ (14.625) (see chap. 4).

rame per fare che una moneta di argento compri più rame di prima e in conseguenza più generi, e solo resta necessario il pensiero di ritoccare la proporzione tra l'oro e l'argento quando quella tra l'argento e il rame fosse condotta al suo giusto livello e non fosse capace di altra novazione, dal che, secondo il solito, quasi tutti i paesi si trovano assai lontani, come dimostra il Broggia.

[It must also be added that as soon as silver becomes rarer and more desirable, it is not the consequence that the price of gold must fall, because before such a remedy, one must resort to the other, simpler remedy of devaluing copper, so that a silver coin buys more copper than before, and consequently more goods, and only the idea of retouching the proportion between gold and silver remains necessary, if that between silver and copper was conducted at its proper level and was no longer adjustable, since according to the usual almost all countries are very far away, as the Broggia shows.][265]

The main problem for Carli and Neri in adapting Locke's model is in fact that they are playing with gold, silver and copper, i.e. with a trimetallic system, (therefore, Neri relies on Broggia to integrate Locke's thought),[266] while Locke does not have to deal with copper, which was not issued in England at that time, and can only focus on the ratio of silver to gold, which he solves with monometallism, as Neri sees:

E sopra tale incostanza [del rapporto oro-argento] Gio. Locke fonda la massima, che per base di un regolamento fisso in materia di monete non debba prendersi altro che l'argento, e che l'oro debba monetarsi e tariffarsi sopra la corrente proporzione per uso delle casse pubbliche [nel pagamento delle tasse] e dei contratti. Ma che non debba riputarsi un disordine degno di punizione se questo medesimo oro riceve dallo spontaneo consenso dei contraenti qualche giornaliero aumento o decremento di prezzo [...]

[And on this inconstancy [of the gold-silver ratio] Locke bases the maxim that nothing but silver should be taken on the basis of a fixed rule for money, and that gold should be monetized and tariffed according to its current proportion for use in public coffers [for tax payment] and contracts. It should not, however, be considered a penal disturbance if the same gold, by the spontaneous consent of the contracting parties, experiences some daily increase or diminution in price [...][267]

These considerations are based on a passage by Locke, which Neri quotes from the Italian translation, and which is written in the original as follows:

Silver therefore, and *Silver* alone, is the Measure of Commerce. Two Metals, as *Gold* and *Silver*, cannot be the Measure of Commerce both together, in any Country:

[265] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 43 (editor's translation).
[266] See chap. 4 on Broggia.
[267] Neri P., *Osservazioni sopra il prezzo legale delle monete,* p. 57 (my translation).

> Because the Measure of Commerce must be perpetually the same, invariable, and keeping the same proportion of value in all its parts. But so only one Metal does, or can do to it it self: So *Silver* is to *Silver*, and *Gold* to *Gold*. An Ounce of *Silver* is always of equal value to an Ounce of *Silver*, and an Ounce of *Gold* to an Ounce of *Gold*; and two Ounces of the one, or the other, of double the value to one Ounce of the same. But *Gold* and *Silver* change their value one to another [...][268]

This passage epitomises the essence of monometallism, and in what follows, which Neri does not quote, Locke also declares that silver is the unit of account (the measure):

> *One Metal* therefore alone can be the Money of Account and Contract, and the Measure of Commerce in any Country. The fittest for this use, of all other, is *Silver*, for many reasons, which need not here be mention'd. It is enough that the World has agreed in it, and made it their *common Money*; and as the Indians rightly call it, *Measure*. All other Metals, *Gold*, as well as Lead, are but Commodities. | *Gold*, Tho' not the Money of the World, and the Measure of Commerce, nor fit to be so, yet may, and ought to be coined, to ascertain its Weight and Fineness; And such Coin may safely have a price as well as a Stamp set upon it by publick Authority; so the value set be under the Market price. For then such pieces Coin'd, will be a Commodity as passable as Silver Money, very little varying in their price: As Guineas which were Coin'd at the value of 20 s. but passed usually for between 21 or 22 shillings, according to the current rate; But not having so high a value put upon them by the Law, no body could be forced to take them to their Loss at 21 s. 6 d. if the price of Gold should happen at any time to be cheaper.[269]

Thus, only silver is money, i.e. it is both a means of payment and a unit of account, while gold is a commodity that is minted only to "ascertain" the weight and fineness of the coin that is to be used as a means of payment. So it does not matter if its value fluctuates, as the determination of the price is ultimately left to the market, even if a gold rate is set by law, as England still has a bimetallic system.[270]

On the other hand, Neri maintains that no one is obliged to accept gold at market value if it deviates from the rate that is supposed to apply "for the use of the public treasury and in contracts,"[271] and concludes that once parity is established between gold and silver, "it is not possible to withdraw, either for the more or for the less."[272] It seems that gold, like

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[268] Locke J., "Further Considerations Concerning Raising the Value of Money" in Kelly P. H., *Locke on Money,* op. cit., vol. II, p. 422.

[269] Locke J., "Further Considerations Concerning Raising the Value of Money" in Kelly P. H., *Locke on Money,* op. cit., vol. II, p. 423. The guinea was issued at 20 s. In 1663, but it travelled at a premium. See Chap. 1, para. 3.

[270] See chap. 1, para. 3, on the transition from the silver to the gold standard and the end of bimetallism.

[271] *"Per l'uso delle casse pubbliche e dei contratti"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 59 (editor's translation).

[272] *"Non sia praticabile il recedere nè per il più, nè per il meno"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 59 (editor's translation).

silver, is a legal tender with a fixed value. However, in Locke's sense, a divergent, mutually agreed gold rate should not be a reason to impose a criminal sanction, he says:

> *[...] che la cognizione di questa proporzione possa servire di fondamento per una tariffa da prezzar l'oro con l'autorità pubblica per uso delle casse pubbliche e dei contratti, ma non già di una legge perpetua e penale per il caso, che lo spontaneo consenso del debitore e del creditore attribuisse alle monete d'oro nel progresso dei tempi qualche valuta diversa.*
>
> [...] that the knowledge of this proportion can serve as a basis for a tariff for the price of gold by public authority for the use of public coffers and contracts, but not for a perpetual and penal law in the event that the spontaneous consent of the debtor and the creditor assigns a different value to the gold coins in the course of time.][273]

However, Neri agrees with Locke that silver must be the standard. As for its value he says that "it cannot be fixed otherwise than by comparing it with gold or copper, or by denominating it with the imaginary money that serves as the measure of real currency in each country."[274] Since parity with gold is determined by the bimetallic ratio, and parity with copper is at the discretion of the government, as he says, referring to the draft monetary agreement with Turin, "each state is free to price its fine silver with as much copper as it sees fit, provided that these coins circulate only in the state that produces them",[275] then it is crucial to establish the parity of the silver ounce with imaginary money (e.g. the Milanese lira in Milan and the Piedmontese lira in Turin). Once we have established this parity, Neri says, "you could still forget this name *lira* and completely abandon it as superfluous",[276] that is, the unit of account will identify itself with the actual money. This process must be carried out in all states that join the planned monetary union, so that the exchange rate is fixed in silver, as Neri explains:

> *Bisogna adunque nell'istesso modo comunicarsi i campioni del valore delle rispettive lire, cioè definirsi reciprocamente questo nome lira, e comunicarsi un'idea chiara e costante di quel grado di valore che si concepisce nella mente e che si vuol denotare sotto il nome di una lira; il che si può fare fissando quante lire in ciaschedun paese secondo l'uso corrente entrano in un'oncia d'argento fino, e deducendo in patto di tener sempre il valore della lira corrispondente a quella quantità di argento fino che*

[273] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op.cit., p. 60 (editor's translation).
[274] *"Non si può prefinire che o paragonandolo con l'oro o col rame o denominandolo con la moneta immaginaria, che serve in ogni paese di misura della moneta effettiva"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 106 (editor's translation).
[275] *"Resti in libertà di ciascheduno stato di prezzare il suo fino argento per quanto rame gli sarà di piacimento, purché tali monete non abbiano corso che nello stato che le fa fabbricare"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 107 (editor's translation).
[276] *"Si potrebbe ancora scordarsi e abbandonare totalmente come superfluo questo nome lira"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 109 (editor's translation).

resterà in oggi prefinita e di non alterarlo, siccome con la comunicazione dei campioni rimane dedotto in patto di non alterare l'importanza dei pesi.

[It is therefore necessary to communicate the standard of the respective *lire* in the same way, that is, to define the name *lira* reciprocally and to give a clear and constant idea of the grade of value to be conceived and designated by the name of a *lira*; this can be done by stating how many *lire* are allotted to an ounce of fine silver in each country according to present custom, and by agreeing in a pact always to maintain the value of the *lira* corresponding to this quantity of fine silver as presently defined and not to change it, just as when communicating the standard it is agreed not to change the measure of the weights.][277]

However, Neri does not rule out the possibility that an adjustment in the nominal value of coins to the value of the metal content, he identifies two possible cases:

In due casi soli l'aumentazione di prezzo non diminuisce la lira corrente, poiché la regola fondamentale nel graduare i prezzi delle monete richiede, come abbiamo detto, che si osservi la proporzione esatta tra l'oro e l'argento e tra l'argento e il rame, e la proporzione dell'istesso metallo tra il tutto e le sue parti comunque divise e suddivise.

[In only two cases does the price increase not lead to a decrease in the current lira, because the basic rule in grading the price of coins requires, as we have already said, the observance of the exact ratio between gold and silver and between silver and copper, as well as the ratio of the metal system between the whole and its parts, as it is divided and subdivided.][278]

The first case is to adjust the ratio between the whole and its parts; the second case is relative to the bimetallic ratio, as Neri says:

Il secondo caso dove l'aumentazione non fa male, è quando la proporzione tra metalli non è bene osservata, poiché allora o bisogna permettere che tenendo fermo l'argento una aumentazione spontanea sotto il nome di aggio *faccia il suo corso naturale nell'oro a seconda degli impulsi del commercio, o bisogna che la legge servendo a questi bisogni del commercio dichiari questa proporzione tra un metallo e l'altro che di fatti si trova vegliante, e accresca il prezzo dell'argento rispetto al rame o quello dell'oro rispetto all'argento.*

[The second case in which the augmentation does no harm is when the ratio between the metals is not well observed. For then, if the silver remains constant, a spontaneous augmentation under the name of *agio* in the gold is allowed to take its natural course, according to the impulses of commerce, or it is necessary that the law serving these needs of commerce should fix the ratio between one metal and

[277] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op.cit., pp. 112-113 (editor's translation).
[278] Neri P., *Osservazioni sopra il prezzo legale delle monete,* p. 169 (my translation).

> the other, which is actually in force, and increase the price of silver in relation to copper or that of gold in relation to silver.][279]

In theory, then, Neri envisages a revaluation of silver money, but in practice he adheres to Locke's view, i.e. he fixes the value of silver and allows gold to fluctuate around the official bimetallic ratio (especially in the context of a monetary union). Thus, a recoinage is favoured to bring the coinage into the correct ratio, and the possible change in the bimetallic ratio on the market should be compensated by the fluctuation of gold rather than by the change in the legal rate of the coins.

At this point, Neri encountered the problem of coinage fees. He says:

> *Per campione della moneta immaginaria sarebbe stato desiderabile, che invece del filippo si fosse presa una moneta forastiera, come avverte Carlo Antonio Broggia, per riferire la lira a una quota costante d'argento fino senza mescolanza delle spese di manifattura che intorbidano i conti della moneta provinciale [nazionale].*
>
> [As a pattern for the imaginary money, it would have been desirable to take a foreign coin instead of the *filippo*, as Carlo Antonio Broggia warns, in order to relate the *lira* to a constant proportion of silver, without mixing the manufacturing costs that cloud the accounts of the national currency.][280]

Neri refers also on the one hand to Bernardo Davanzati and Gasparo Scaruffi,[281] who advocated minting at state expense, and on the other hand again to Locke, since in England from 1666 no more coinage fees were levied at all.[282] According to Neri, it must also be taken into account that money is not only a measure of value or a simple representation of it (in which case one could simply take paper for this purpose), but a pledge, so that its value definitely depends on the metal content, as Davanzati and Locke explain and as it was sanctioned by Roman law according to Neri. But in the draft monetary agreement there is the proposal to allow 2 percent of the minting cost and even half a percent above the intrinsic value for foreign coins, which seems unthinkable to Neri because it is not customary (he refers here to Belloni's *Del Commercio*), it is enough to give the two percent for the national money as a compromise between principle and custom, since "gold and silver reduced in currency must rightly be worth a little more than in bullion, depending on the certificate obtained by the imprint, which frees the contracting parties from the constant inconvenience of weighing and testing."[283] In summary, Neri cannot admit more

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[279] Neri P., *Osservazioni sopra il prezzo legale delle monete,* p. 170 (my translation).
[280] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 113 (editor's translation).
[281] Davanzati G., *Lezione delle monete*, 1588; Scaruffi G., *L'Alitinonfo*, 1582.
[282] See Feavearyear A. E., *The Pound Sterling*, p. 109.
[283] *"L'oro e l'argento ridotto in moneta deve apprezzarsi giustamente qualche cosa più che in pasta, in grazia del certificato che dall'impronta riceve e che libera i contraenti dal continuo incomodo di pesare e saggiare*" in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., pp. 119-120 (editor's translation).

than the pure coinage fees, verified in several conversations with the mint masters of Turin, Milan and Florence; indeed, a value beyond that, is inconceivable, because "Locke has already shown that the coinage neither diminishes nor increases the value of the pure metal."[284]

Now, since the cost of minting is fixed at 2 percent, it is also possible to calculate the exact standard using the *filippo di Milano*. In fact, the *filippo* is worth 7 L. 10 s. or 150 *soldi* and weighs 21 *denari* and 15 11/24 *grani*; the 2 percent is equal to 3 *soldi*, so, Neri calculates, 147 *soldi* is equal to 21 *denari* and 15 11/24 grani, so one ounce is equal to 163 1/1781, and the *lira* di Milano, in turn, is equal to 70 89/123 *grani*.[285] In turn, each state party to the monetary agreement establishes parity with silver in terms of its own *lira;* "and it suffices, that the proportion now based on the truth between the two imaginary monies shall hereafter always remain and be fixed for the mutual enlightenment and quieting of the commerce of the one and the other state".[286] The ratio between the number of units of account equal to an ounce of silver in each nation, as we have noted above, is nothing other than the fixed exchange rate between the states that signed the agreement plus a seigniorage of 2 percent.

In imagining such stabilisation, Neri is inspired by the English case, where the unit of account is tied to silver according to the standard value of the crown. In Milan, he takes the silver *filippo* as the standard, which has been a full-bodied coin since its issue at the beginning of the 17th century, in order to calculate the unit of weight to which the unit of account should be equated. By generalising this reasoning and trying to historicise the process of stabilisation, he believes that the *lira di banco* is the historical model that should be followed to stabilise the currency in all Italian states that would have joined the monetary union.

In fact, the main problem in these countries is the devaluation of imaginary money, which will continue if "the governments do not keep the country's lira, which is the current measure of the value of all things, at an unchanging standard and do not do everything to protect it from the risk of weakening." Such a standard should be precious metal, which was originally chosen as money because of several properties that make it an immutable standard (*campione immutabile*). The first deviation from the standard, according to Neri, was the debasement of the Roman *asse*, which originally corresponded to a *libra* of copper.

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[284] *"E' già dimostrato dal predetto Locke che il conio della zecca non ha la virtù né di togliere né di aggiungere valore al metallo sodo"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 188 (editor's translation).

[285] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 114. For an explanation of the unit of measure see Appendix 1.

[286] *"E basta che la proporzione, che in oggi si stabilisce sul vero tra le due monete immaginarie, sempre in appresso sussista e si tenga ferma per reciproca intelligenza e quiete del commercio dell'uno e dell'altro stato"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 116 (editor's translation).

The reason for this for Neri, as we have seen in the *Appendice*, was that people "obsessed by the identity of the name and the virtue of the coinage, they believed that the substance of the metal was not included in the calculation",[287] forgetting that money, besides the function of measure, must also have that of pledge in order to carry out the exchange. In fact, "with the mere handing over of the measure that measures the value, deprived of the same value", the exchange is not concluded, "as if we did not want to claim that, having promised 100 bottles of wine, we could keep the word by handing over bottles without wine."[288]

In the Middle Ages, Charlemagne tried to reintroduce the monetary standard by minting a *libra* of gold or silver, or perhaps without minting it, but taking it as a sample to measure the actual coins in *lire*, *soldi* e *denari*, Neri explains below:

> *[...] a me pare molto probabile e degno delle grandiose vedute che ebbe Carlo Magno che egli volesse correggere la confusione, che le disgrazie sopravvenute a questa parte di mondo dopo la decadenza del Romano impero fino alle di lui conquiste avevano prodotto nella materia monetaria, e la volesse richiamare a' suoi principi ripigliando l'antico linguaggio e l'antica regola del peso naturale che non fallisce mai; il che poteva ottenersi tanto monetando la libbra di peso, quanto servendosene di campione per valutare le altre monete reali sopra la proporzione che avevano con la libbra intiera , e non altrimenti.*
>
> [It seems to me very probable, and worthy of Charlemagne's grandiose views, that he wished to correct the confusion caused by the misfortunes that had occurred in this part of the world after the fall of the Roman Empire until his conquests, in the matter of money, and he wished to restore his principles by reintroducing the old language and the old rule of natural weight, which never fails; this could be achieved by monetizing the pound of weight, or by using it as a pattern for valuing the other real currencies according to the ratio they bore to the total pound, and not otherwise.][289]

Be that as it may, from then on a continuous process of debasement began, with varying degrees throughout Europe, so that the *lira* was devalued. However, since this happened to different degrees depending on the place, several *lira* emerged, such as in Italy the *lira di grossi* (the larger one), the *lira di piccoli*, the *lira di terzoli*, depending on the coins to which

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[287] *"Invasati dalla identità del nome e dalla virtù del conio hanno creduto che la sostanza del metallo non entrasse il conto"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 143 (editor's translation).

[288] *"Con la pura consegna della misura misurante il valore spogliata del valore istesso"... "come non si volesse sostenere che promessi 100 fiaschi di vino si potesse mantener la parola con la consegna dei fiaschi senza il vino"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 144 (editor's translation).

[289] Neri P., *Osservazioni sopra il prezzo legale delle monete,* p. 147 (editor's translation).

they corresponded.[290] In the end, the *lira di terzoli*, the smaller one, prevailed, as Neri explains:

> *[...] la lira di terzoli che era la minore dette l'esilio a tutte le altre, poiché la moneta piccola è la più comoda a misurare la grande che la grande a misurar la piccola; tanto più che l'interesse dei creditori, che sono quelli che danno norma alle stipulazioni, si assicura più contro le dubbiose interpretazioni e l'incertezza dei futuri eventi, deducendo in patto quando manca il campione la moneta minore.*
>
> [the *lira of terzoli*, which was the smallest, supplanted all the others, since the small currency is most convenient to measure the large than the large to measure the small; all the more so because the interests of the creditors, who give the norm to the provisions, are better safeguarded against doubtful interpretations and the uncertainty of future events, by defining the contract, in the absence of the pattern, in the smaller money.][291]

The huge process of debasement of the coins made the *lira* almost everywhere no more corresponded to actual coins, but "since people designated tradable values by the name *lira*, it remained in use, despite this name, to designate an imaginary currency that was nothing more than a quoted part of the coins actually minted."[292] The continued devaluation of small money devalued the unit of account and made it "imaginary". Nevertheless, it was maintained, but a double mode of accounting emerged: people could choose to denominate the contracts with the actual *lire* of the state in which they were minted or with imaginary *lire*. In both cases, they were subject to debasement, either when the actual *lira* was debased or when the actual coins, whose *lira immaginaria* was a quote, were debased. Neri explains:

> *Se adunque i contraenti si rapportavano alle lire effettive delle città ove realmente si coniavano, correvano il pericolo che i gradi del valore da loro intesi e dedotti in contratto patissero alterazione dal giornaliero peggioramento che si scorgeva nelle lire effettive che si monetavano; e se non si rapportavano alle lire di alcuna città come a campioni troppo variabili, correvano l'istesso e forse maggior pericolo che il contratto fatto a lire immaginarie, cioè a quote di tutte le monete effettive correnti nel paese del contratto, non risentisse dal peggioramento di tutte queste monete o di alcune di esse quell'alterazione nei gradi del valore che è tanto contraria alla buona intelligenza degli atti civili e all'indennità dei contraenti.*

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[290] For this historical part Neri refers to authors such as Pietro Zagatta, anonimo Cremonese, Giuseppe Liruti, Muratori, Marquardo Frequero (id., *Osservazioni,* p. 148 - 149).

[291] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 151 (editor's translation).

[292] *"Essendo gli uomini accostumati a spiegare i gradi contrattabili del valore sotto nome di lire, restò nonostante questo nome in uso per dinotare una moneta immaginaria che non era altro che una parte quotitativa delle monete reali che effettivamente si coniavano"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., pp. 152 (editor's translation).

> [Thus, if the contracting parties referred to the actual *lira* of the cities where they were actually minted, they ran the risk that the denominations they intended and derived in the contract would be altered by the daily deterioration of the actual *lira* made into coins; and if they did not refer to the *lira* of a city because the patterns were too variable, they ran the risk that the contract, which was denominated in imaginary *lira*, i.e., at the rate of all the actual currencies of the country in which the contract was concluded, was not affected by the deterioration of all or some of these currencies, that is, by the change in the levels of value, which is contrary to the reasonableness of the civil laws and the compensation of the contracting parties.][293]

A solution introduced by the merchants was the *lira* or *scudo "di banco"*, that is, a *"moneta immaginaria di banco"* based on a certain weight of silver, whether it was minted or not. So, on the one hand, there was the *lira* or *scudo di banco*, used by merchants, and on the other hand, another type of imaginary money, the *lira* or *scudo "corrente"* [current], used by the man in the street, like the *lira di Milano*, which was subject to an enormous devaluation process. Finally, the *lira di banco* is stable because it is directly linked to a certain weight of precious metal and cannot be subjected to any devaluation process, because the correspondence is ideal, that is, it cannot be adulterated by the characteristics of the physical coins, as is the case with the *lira corrente*. Therefore, according to Neri, there are two kinds of money, one good and one bad, and 100 *lire* of the one cannot correspond to 100 *lire* of the other, because the two units of account are different, one being reduced in relation to the other. Interestingly, Neri brings the case of another unit of measurement, the length of the arm, which has assumed a different length in relation to silk or wool. He states:

> *I predetti due inconvenienti [tosatura e falsificazione] facendo circolare per il paese una moneta simile in apparenza alla buona, ma che infatti contiene minor quantità di metallo di quella che in principio le è stata per legge assegnata, diminuiscono la lira del paese che è una quota delle monete reali, quando non è appoggiata a un altro campione fisso e indipendente e incorruttibile, e la diminuiscono a proporzione che la massa del metallo effettivo è scemata, nell' istesso modo che se si andasse giornalmente corrodendo il braccio che serve di misura alla lunghezza si diminuirebbero tutti i quarti, i sesti e gli ottavi e qualunque altra divisione quotitativa dello stesso braccio; e ne viene in conseguenza, che cento lire di moneta tosata si trovano inferiori di stima a cento lire di moneta antica e buona, come cento sesti del braccio di seta si trovano più corti di cento sesti del braccio di panno.*

> [These two drawbacks [clipping and counterfeiting], by circulating for the country a currency similar to the good one, but which in fact contains less metal than was originally assigned to it by law, diminish the *lira* of the country, which is a part of the real coins, if it is not supported by another fixed, independent and incorruptible standard, and it diminishes in proportion to the fact that the mass of the actual metal has diminished, so that if you were to corrode daily the arm which serves as a measure of length, you would diminish all the quarters, the sixth, and the eighth,

[293] Neri P., *Osservazioni sopra il prezzo legale delle monete,* pp. 152-153 (editor's translation).

> and every other subdivision of the same arm; and so it happens that a hundred *lire* of a clipped currency are worth less than a hundred *lire* of an old and good currency, just as a hundred sixths of the arm of silk are shorter than a hundred sixths of the arm of cloth.][294]

So if you exchange 100 lire of good money for 100 lire of bad money, there is a premium on the former, says Neri. Precisely this premium is the sign that there is bad money in the country and that it should be abolished. So Neri will propose a recoinage, so far more or less for the same reason as Carli. However, Neri's idea of stabilising the lira along the lines of the *lira di banco* did not quite correspond to the actual system of the *lira di banco*, e.g. in Genoa and Venice, where a double unit of account was maintained. This is because Neri did not know first-hand how the system worked in practice, he only knew it from his reading, and so he only adopted what he considered to be the more interesting feature of the *lira di banco*, namely the pegging of money to a silver standard, and left aside the game of a double currency for liquidity purposes, so that the *lira di banco* corresponded to Locke's pound.

3.3 Girolamo Costantini and the imaginary value of coins.

Girolamo Costantini was a lawyer and officer of the Republic of Venice (in 1735 he prepared the first balance sheet of the Republic). As we have already said, he participated in the debate on money in 1751, shortly before Neri *Osservazioni* (he says he wrote it in June 1751, and the censorship approval is dated August 31, while Neri's work is dated September 31) and shortly after the publication of Locke's translation, as he says:

> *Sarei forse stato tentato di avvalermi in molti punti di ragione, e di fatto da me addotti, anco dell'autorità di Giovanni Locke d'Inghilterra, autore di molto credito, se prima di scrivere avessi avuta la cognizione delle di lui opere su di tal materia, tradotte per la prima volta in quell'anno [...]*
>
> I might have been tempted to appeal even to the authority of the English author John Locke on many of the points I have made, if I had had any knowledge of his works on the subject before writing, which were translated for the first time this year [...][295]

Thus, he claims to have seen the book by Pagnini and Tavanti, but without having the time to delve into its contents, so that his adherence to Locke's thinking is rather superficial and based on what is reported by Pagnini and Tavanti in the introduction and also in the work of the same Pagnini. Another important element that we would like to emphasise before we

[294] Neri P., *Osservazioni sopra il prezzo legale delle monete,* p. 160 (editor's translation).

[295] Costantini G., *Delle monete in senso pratico e morale.Ragionamento diviso in sette capitoli, dedicato a quelli, che prender si vorranno la pena di leggerlo* (Venezia, 1751), Fondazione "F.Datini", 2008, p. 104 (editor's translation).

begin to analyse the content is the following statement by Costantini on the subject of money:

> *Per conoscere però più agevolmente la verità di questa materia, e renderla di uno studio facile e intellegibile, gioverà abbandonare la lettura di molti libri, che l'hanno trattata per le vie storiche, speculative, o giuridiche, piuttosto che per quelle della pratica, della ragione, e dell'esperienza, che agli uomini di mondo, per le mani de' quali, o in molto, o in poco, passando, e ripassando le monete, può renderli eruditi.*
>
> [However, in order to more easily recognize the truth of this matter and make it an easy and understandable study, it will be useful to dispense with the reading of many books that have treated it in a historical, speculative or juridical manner, instead of those of practice, reason and experience, which can make men of the world scholars by taking the coins in hand again and again.][296]

Costantini thus differs from both Neri and Carli, who, among other authors, took a scholarly approach. On the contrary, he invokes the *Capi di Piazza*, i.e. the representatives of the merchants, as the best sources to write about the money question in Venice. The framework in which he operates is that of the *lira di banco*, yet he proposes a monetary reform at first glance very similar to that enacted in England, i.e. a recoinage. This shows the fact that the *lira di banco* was in force does not prevent the destabilisation of the system. The *lira di banco* was introduced in the 17th century with a 20 percent agio on the *lira di piccoli* or, to use Neri's words, on the *lira corrente*.[297] In the 18th century, however, a *sopraggio* [excess premium] occurred, so that Costantini reports that the legal rate of the *ducato*, established in 1687, was 6 L. 4 s., while a *corso di piazza* (i.e. popular rate) was allowed from the beginning of the 18th century, so that the *ducato* circulated at 8 *lire* and the *zecchino* at 22 and up, instead of 17 L.[298] According to Costantini, there was a problem of clipped coins (the *ducati*) that led to the agio on the full-bodied coins and, consequently, to an increase in the general price level. For Costantini, then, the current *corso di piazza* of noble money (i.e., the *ducati* and *zecchini*), or, to use Neri's words, the popular rate of these coins, was caused by clipped coins. Costantini also refers to a possible imbalance of the ratio between the silver *ducato* and the gold *zecchino*, probably an undervaluation of the silver that caused the *ducati* to be clipped. So we are in a similar situation to England on the eve of the Great Recoinage, and the solution envisaged by Costantini was a recoinage. At the same time, he remains strongly committed to the Venetian tradition of imaginary-money manoeuvres to rebalance the bimetallic relationship.

Costantini identifies the main cause of monetary problems in the new agio (*sopraggio*). He claims that it is an "ideal value" and "those who believe that the enhancement of the currency by increasing the amount of imaginary *lire* [...] makes them richer, live in a

[296] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 104 (editor's translation).
[297] See chap. 1, para, 2.
[298] See Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 7, and chap. 1, para. 2.

fallacy",[299] so that the word "enhancement" (*alzamento*) has a special meaning for Costantini, namely the artificial creation of the agio on noble money, which is something fictitious and even dangerous. Then Costantini enumerates the causes of the "disproportion" on the money responsible for the agio:

> *Primo, perché alcune Zecche danno tal volta maggior valore alle proprie monete, o con alterarne la lega, ovvero con alzarne il prezzo, oppure lasciandole correre stronzate.* | *Secondo, perché le guerre introducono le monete estere peggiorate, che passano poi per occasione del traffico ad infestare gli Stati confinanti, che non sono attenti a rigettarle, ovvero a prenderle con giusto ragguaglio.* | *Terzo, perché l'avarizia di alcuni trasportano le buone monete nazionali ne' Paesi esteri, e confinanti, da quali estraggono le cattive, alterate di prezzo, trasgredendo le leggi de' propri Sovrani [...]*
>
> [First, because some mints sometimes give their coins a higher value, or by changing the alloy, or by raising the price, or by running them clipped. | Second, because wars bring in the deteriorated foreign currencies, which then move through trade to neighbouring states that do not take care to reject them or take them at the proper value. | Thirdly, because the greed of some carries the good national coins into foreign countries and neighbouring states, from which they extract the bad coins, altered in price, thus violating the laws of their own sovereigns [...][300]

The disproportion, then, concerns the exchange of coins characterised by a different ratio of intrinsic value and nominal value, for example, two coins that have the same number but a different intrinsic value. This disproportion causes the agio to arise on the more valuable coin. We could even modify Gresham's law and say that bad money causes the formation of the agio on the good coin, instead of saying that it displaces the good coin (in reality, they are the two sides of the same coin, or the agio occurs, or the valuable money flies away). Costantini attributes the cause of bad money partly to the improper behaviour of mints and war, which spread bad money across borders, and partly to arbitrage, which follows Gresham's "true" law. For Costantini, the problem in Venice depends mainly on foreign money. Venice, in fact, was invaded by foreign armies during the War of the Spanish Succession (1701 - 1714), which led to a proliferation of such currencies. The problem of foreign low currency and its valuation is also known in other Italian states and especially in Milan. We will therefore return to it both in the next section and in the next chapter.

In any case, Costantini claims that the imaginary money of Venice, i.e. the *lira di banco* "never suffered because the ideal coin of Venice could not suffer any damage",[301] which, as

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[299] *"Vivono ingannati quelli, che credono, che l'alzamento della valuta , facendo crescere, come si è detto, la quantità delle lire immaginarie, renda più ricchi i loro peculi"* in Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 3 (editor's translation).

[300] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 3 (editor's translation).

[301] *"Non ha però mai patito, perché patir non poteva male alcuno la moneta ideale di Venezia"* in Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 8 (editor's translation).

we know, is linked to the unit of weight of the precious metal. Costantini even highlights the advantages it offers to trade:

> *Ella serve di comodo, e benefizio al commerzio: perché ritenendo sempre in se stessa la bontà, peso, e valore del ducato effettivo, o proporzionalmente dello Zecchino Veneto, che sono le due Spezie di monete nobili, che entrano, ed escono a comodo universalmente dalla cassa, che forma il fondo del Banco [...], sono certi li mercanti di non restar delusi nelle misure, che anno preso nelli loro respettivi negozi, e cambi.*
>
> [It is useful and a blessing to commerce: for since it is always of the same grade, weight, and value as the actual duchy proper, or proportionately as the Venetian sequin, which are the two kinds of noble coins that go in and out of the treasury that forms the fund of the Bank [...], merchants are sure not to be disappointed by the measures that they take in their respective transactions and exchanges.][302]

In fact, according to Costantini, the "first means applied lately for the administration of the coinage (*regolazione delle monete*)"[303] is "the revival of the old *Banco* laws" to settle the national bills and the main international transactions ("the payments of the most important goods from the East and the West")[304] over 300 *ducati* with bank money (*partita di Banco*). The problem remains, however, with other transactions, especially those conducted through noble money (especially in the province), where the agio reflects the "imaginary" value of the coins. Costantini distinguishes between the intrinsic and extrinsic value of coins, comprehending the mint cost in the former (a rather original view to isolate the mint cost with respect to seigniorage) and attributing to the latter the source of the "disproportion" in the value of coins, i.e., the arbitrary value assigned to coins either by the mints or by the money changers (*trafficanti*). But he contends that this extrinsic value can be advantageous when assigned to national money to give it a "political value", that is, to give it a higher value over foreign money, and he brings the example of the Venetian gold sequin, which is worth more than the Florentine florin (*gigliato*) and the Hungarian florin (*ongaro)*. One reason given also by Carli and Neri is that the Venetian sequin is characterised by a higher fineness, but there is another reason, namely, that if national gold is worth more than foreign gold, first, foreign bullion will be attracted to the national mint, and second, there will be no incentive to convert the Venetian sequin into a *gigliato* or *ongaro*. Neither Neri nor Carli could agree with the latter reason, since they argued for an international agreement on the extrinsic value of coins. On the contrary, Costantini is quite clear on this point, he is against any agreement, even on the bimetallic ratio, although he is in favour of respecting the correct value in the ratio between gold and silver, he says:

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[302] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 8 (editor's translation).

[303] *"Il primo espediente applicato in questi ultimi tempi per la regolazione delle monete", "fu la ravvivazione delle antiche leggi del Banco"*, in Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 9 (editor's translation).

[304] *"Li pagamenti delli capi principali delle merci del Levante e del Ponente"* in Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 9 (editor's translation).

> *Se come la Francia e L'Inghilterra fosse l'Italia, dipendente da un solo Governo, questa proposizione* [the necessity of an agreement among the Italian mints] *sarebbe verissima; ma essendovi tante Zecche, che tanto diverse monete anno stampate, e potranno, volendo, stampare in avvenire con lega, e valore ad libitum, in conformità delle loro particolari massime, relative a loro particolari commerzi, ed interessi, come mai poter convenire in questa general figurata proporzione [oro-argento]?*
>
> [If Italy, like France and England, were dependent on a single government, this proposition [the necessity of an agreement among the Italian mints] would be very true; but since there are so many mints, that so many different coins have been printed, and they can, if they wish, print in the future with alloy and value ad libitum, according to their particular rules, related to their particular trade and interests, how could they ever agree on this generally provided ratio [gold to silver]?[305]

Here Costantini responds to the rumours from Milan about a possible monetary agreement and warns about the different needs that each Italian state has, which is why Venice will always reject such proposals from Milan, as this passage from a Venetian ambassador in Milan about the Milanese proposal of a monetary union on the occasion of the monetary reform of 1778 shows:

> *Fattosi nella Repubblica stessa maturo riflesso alle continue variazioni alle quali va soggetta in tutti gli Stati la materia monetaria, variazione in cui non sarebbe forse possibile di tutto prevedere e regolare in una stabile e ferma Convenzione, trova essa non adattabile alle proprie circostanze il contraere impegni relativi a questa materia, nella quale il frequente bisogno di alterare, a seconda delle emergenze, ciò che si fosse una volta stabilito potrebbe facilmente dare occasione a considerabili difficoltà e reciproci imbarazzi.*
>
> [Taking into account the Republic the constant fluctuations to which monetary affairs are subject in all states, a change that could not perhaps be foreseen and regulated in a stable and firm agreement that cannot adapt to its own circumstances to make commitments in this matter, in which the frequent need to change what has once been established, depending on emergencies, could easily lead to considerable difficulties and mutual embarrassments.][306]

These are exactly the reasons Costantini gives. Venice does not want to lose the monetary policy. On the other hand, as we have already noted in the first chapter, Venice was also trapped in a conservative position and international isolation that will lead to its downfall.

However, one of the causes of the downfall is the inability to carry out the monetary reform that Costantini actually considers necessary. In fact, he warns against the constant

[305] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 67 (editor's translation).
[306] Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, vol I, Università degli studi di Genova, 1984, p. 54 (editor's translation).

devaluation of the current *lira*, which affects creditors on the one hand and the workers on the other. He says about the creditors:

> *[...] tutti quelli, che possedono entrate d'affitti, e censi, ed altre simili rendite, che vanno pagate a contanti, anno il continuo danno, perché perdono tanto delle loro entrate effettive, quanto è l'accrescimento delle monete.*
>
> [All who have income from rents, censuses, and other similar rents [land rents] that must be paid in cash are always in the red, because they lose as much of their actual income as the increase [in nominal value] of the coins.][307]

This is the same problem raised by Neri and Fabrini, the creditors lose if the contract is concluded in *lire*, as it happened:

> *Il proprietario di uno stabile, che esigeva d'affitto, di livello, o di censo privato, prima dell'alterazione delle monete, annui ducati 100 effettivi, viene ad esigere a cagion dell'alterazione ducati settantasette e mezzo [...]*
>
> [The owner of a building, who before the change of the coins demanded a rent of 100 effective *ducati* per year, now demands seventy and a half *ducati* because of the change of *ducati.*][308]

Costantini estimates a devaluation of 22.5 percent, which in turn causes a corresponding inflation or even more, which primarily affects the workers:

> *Il danno che move la compassione maggiore, si è quello, che risentono li poveri artisti, ed i rustici [...] Agli uni, ed agli altri, non essendo certamente, in proporzione dell'alzamento del valore delle monete, stato alzato il prezzo delle mercedi, ed all'incontro essendosi aumentate in proporzione delle monete li prezzi di tutte le vittuarie [...] e se a peso de' benestanti sono cresciuti li prezzi di tutte le robe, anno però l'accrescimento del valor delle monete nobili, che ad essi passano più che agli altri per le mani: non così alli poveri artisti, ed alli rustici, che per ordinario essendo pagati delle loro minute mercedi in veglioni, che non furono capaci di accrescimento, come le monete nobili, hanno risentito, e fino al tempo della regolazione saranno per risentire per detto motivo un danno maggiore di quello de' benestanti.*
>
> [The damage that most arouses pity is that suffered by the poor artisans and peasants [...] Since the former and the latter have certainly not benefited from an increase in their rewards (*mercedi*) in proportion to the increase in the value of the coins, but on the contrary the prices of all foodstuffs have increased in proportion to the coins [...] and if, to the disadvantage of the wealthy, the prices of all things have increased, they have also increased the value of the noble coins, which fall more into their hands than into those of the others: not so the poor artisans and the peasants, who are usually paid for their tiny wages in low money (*veglioni*), which could not

[307] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 33 (editor's translation).
[308] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 33 (editor's translation)

withstand an increase like the noble coins, and for this reason have suffered and will suffer a greater loss than the wealthy until the monetary reform (*regolazione*).][309]

The mechanism of transfer from devaluation to inflation that Costantini has in mind is that 100 *ducati di banco* = L. 620 (i.e. 100 x 6 L. 4 s.) = 77.5 *ducati effettivi* (i.e. 620: L. 8), the difference 100-77.5= 22.5 representing the inflation percentage.[310] However, this reasoning is flawed, because if you bought a good at a price of L. 620 with 100 *ducati* before devaluation, and now pay the same 100 *ducati* for the same good, its price must now be L. 800 (i.e., 100 x L. 8). The difference of 180 ducati is the 29 percent increase and represents both the agio (the so-called *sopraggio*) and the inflation rate, as it is shown in the following table:

tab./fig. 6 **The causality agio → inflation**

Unit of account	**Unit of weight (and value)**	**Total value**
Lira	Ounce of silver	Price of the commodity
+ 29% agio	=	+ 29% inflation

If 29% more *lire* is required to buy an ounce of silver, a proportional price increase is necessary. So why does Costantini make this error? Because he considers the loss that the creditor of 100 *ducati* at 620 L. makes in the realisation of his credit when the price of 100 *ducati* has risen to 800 L., i.e. a loss of 22.5%, as can be seen in the following table:

tab./fig. 7 **The devaluation of the unit of account**

1 ducato = 6 L. 4 s.	Units of account	1 ducato = 8 L.
100 ducati	= 620 L. =	77.5 ducati

However, the 22.5 percent figure represents the depreciation of the *lira* (i.e., how many fewer units of weight of silver equal the unit of account), which is not the same as the agio (i.e., how many more units of account equal the unit of weight of silver). While you have to account for the agio when estimating inflation (according to the theory of the day), you

[309] Costantini G., *Delle monete in senso pratico e morale*, op. cit., pp. 35 - 36 (editor's translation).
[310] This is Costantini's calculation, in fact the increase is a higher percentage if based on the original 75 ducati.

have to account for the depreciation when estimating the weight of the unit of account in terms of precious metal. Thus, while in today's fiat money system the devaluation of money is equated with inflation or with the devaluation of the exchange rate, in the imaginary money system devaluation is rooted in intrinsic value and is neither identical with inflation nor with the devaluation of the exchange rate, both of which depend on the agio, which is equivalent to "money enhancement" (Costantini, in fact, calls it precisely *alzamento*). In fact, the difference between the money enhancement considered by Galiani and the one considered by Costantini is formal rather than substantial: the former is decreed by the ruler, the latter arises on the market. Be that as it may, while the transmission from the money enhancement to the exchange rate is immediate under the same definition of the exchange rate, this is not the case for the transmission to prices, even if both Costantini and Neri consider it "natural". We will see two different transmission mechanisms in the next chapter, when we look at inflation in Milan, and in chapter 5, when we look at Galiani's theory. To make a long story short: In the first case, inflation is caused by the agio, namely by the merchants who absorb this cost wholesale (when they exchange the low money for the noble money needed in this market) and add it to the goods at retail; in the second case, the agio devalues the exchange rate and inflation is imported.

Costantini thus considers the agio an imaginary value that depends on the extrinsic value of the coins, leading to devaluation and inflation. Therefore, he proposes a reform (*regolazione*) characterised by the following measures (*remedi*): first, the prohibition of foreign clipped coins; second, the prohibition of foreign low money; third, the "temporary diminution in the value of foreign money altered either in alloy or in nominal value before it is prohibited within a certain period of time"[311]; and finally, the replacement of the prohibited coins with national coins. In addition, the price of silver should be raised due to the reduction of the gold-silver ratio:

> *Ma perché non si dovrebbe mai neppure intermettere lo stampo de' ducati, siccome non s'intermette quello de' zecchini, forza sarebbe comprar le paste d'argento; e se coll'attual prezzo di lire dodeci soldi otto corso di Piazza ottener non si potessero, converrebbe alzarlo fino al segno della sicura sua attrazione [...]*
>
> As we should not stop the issue of ducats, as we do not stop that of sequins, we should buy silver bullion; and if we cannot get it at the present price of 12 L. 8 s. (current rate), we should increase it to the sign of its sure attraction [...][312]

And as a result, the silver money should be enhanced:

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311 *"Diminuzione provvisionale delle monete forestiere alterate di lega, e di valore, chiamandole in prefisso termine al taglio, quindi allo sbando assoluto"* in Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 42 (editor's translation).

312 Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 46 (editor's translation).

Alzato però qualor fosse il prezzo dell'argento, siccome mantener si dovrebbe inalterabile la lega del ducato, nè farsi mai alcun'altra moneta nuova, divenir si dovrebbe al rialzo dell'attual valore del ducato, cioè in vece delle lire sei soldi quattro, esser dovrebbe esser accresciuto per quel tanto unicamente, che fosse l'importare dell'accrescimento del valor delle paste, ed in proporzione parimenti salir dovrebbe il legittimo prezzo dello zecchino, monete per così dire antissignane, dietro alla di cui proporzione averebbero le altre forestiere a restar dalla legge apprezzate per il loro legittimo valore alla parte.

[However, whether the price of silver has increased, as the alloy of the *ducato* shall remain unchanged, nor shall any other new currency ever be created, it shall increase the present value of the *ducato*, i.e., instead of 6 L. 4 s. it shall be increased just by as much as the value of bullion had increased, and in the same proportion shall increase the legitimate price of the *zecchino*, coins, so to speak basilar, according to which the other foreigners shall be valued by law for their legitimate value *alla parte* [in *lire di banco*].][313]

Costantini speaks here of a *"rialzo"*, not of an *"alzamento"*, a term he uses only for the formation of the agios. However, he is not really planning a change in the bimetallic ratio, for he says that the *zecchino* should also be proportionally increased in value, and with it the foreign coins, probably committing another error. Be that as it may, once bad money is taken out of circulation, especially foreign money, and low money is regulated, as we will see in the next section, the agio on the national noble money would disappear, with the following advantages:

Il primo di restituire a' privati le antiche loro rendite nella sostanziale quantità, in cui erano prima dell'accrescimento delle valute [...] | *Secondo resterebbero essi privati sottratti dal danno, che risentono nel pagamento delle pubbliche gravezze, e dazi: e calar dovendo in proporzione della moneta li prezzi di tutti li generi necessari al vitto , e vestito [...], conseguirebbero il terzo benefizio, di mantenere con minor dispendio le loro famiglie. [...]* | *Quarto. Il commerzio si aumenterebbe maggiormente, mentre più copioso sarebbe il concorso delle merci, per la sicurezza, che avrebbero li forestieri di non restar pregiudicati dalli sopraggi della moneta, e perché incasserebbero maggior quantità di monete reali [...], e perciò si aumenterebbero li consumi di tutti li generi, che riguarderanno il solo vero intrinseco valore della moneta, cui sarebbe stato levato l'ideale de' sopraggi medesimi; e da ciò deriverebbe, che li negozianti prenderebbero maggior coraggio in arrischiare li loro capitali, non più col commerzio delle monete, che troveranno intercluso, ma in quello, che è di sua natura legittimo, e vero commerzio; [...]* | *Quinto. Inesplicabile poi sarà il benefizio de' poveri artisti, e de' rustici, che ferme, ed inalterate essendo le loro mercedi, troveranno almeno con esse il modo di poter più agevolmente mantenersi. [...]* | *Sesto. Non sarà spregevole anco l'utile dello stampo delle Zecche, che averebbero il modo di poter continuamente stampare monete d'oro, e d'argento, cosicché dal tenuo dritto di*

[313] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 47 (editor's translation).

signoraggio, mediante la moltiplicazione degli stampi, sarebbero per ritrarre rendita molto maggiore dell'attuale. [...]

[1] The first, to return to private individuals their old income in the considerable amount in which it was before the increase of the currencies [...] | [2] The second, they would remain exempt from the damage they suffer from the payment of public burdens and taxes: [3] and by lowering the prices of all kinds necessary for food and clothing in relation to the currency [...], they would achieve the third advantage of maintaining their families with less cost. [...] | [4] The fourth. Trade would increase more, while competition of goods would be more abundant, because foreigners would be guaranteed that they would not be affected by the premium of the currency, and because they would redeem more quantities of real coins [...]It would therefore increase the consumption of all kinds, which would affect the only true intrinsic value of the currency, to which the ideal of the agios itself would be cancelled; and it would follow that the merchants would have more courage to risk their capital, no longer with the trade of coins that they will find intercepted, but in what is of its legitimate nature and genuine trade; [...] | [5] The fifth. Inexplicable then will be the benefit for the poor artisans and the peasants, since their pay remains unchanged, at least they will find a way to entertain themselves more easily. [...] | [6] The sixth. There will not be even the profit of the stamp of the mints to be despised, which would have the possibility of constantly minting gold coins and silver, so that they would obtain from the weak right of seigniorage, by the increase of coinage, a much greater profit than the present. [...][314]

Let us deal with these points. The first (1) concerns the restoration of the creditor's rights. The second and third points concern the decrease in tax payments and commodity prices, respectively, as a result of the abolition of the agio. In particular (2), since the payment of taxes is due with *ducati di banco* (i.e. at 6 L. 4 s. each), if the payment is made with *ducati effettivi*, there is a loss equal to the agio, which disappears when the agio disappears. As for prices (3), Costantini replied to the one who questioned the possibility of lowering prices after the monetary reform, that "the monetary reform must be accompanied by the introduction of maximum prices for foodstuffs", such as "flour, bread, wine, oil, fats, etc.",[315] which would then lead the farmers to lower in turn the prices of the other products. Moreover, he reports what the *capi di piazza* said about the reform in 1687, namely "that as soon as the imaginary was taken out of the coinage, the prices of goods and of all foodstuffs fell, because they consisted of the imaginary value of money",[316] and concludes:

[314] Costantini G., *Delle monete in senso pratico e morale*, op. cit., pp. 53-54 (editor's translation).

[315] *"Non va disgiunta mai la regolazione delle monete da quella dei calamieri delle vittuarie", "farine, pane, vino, sale, oglio, grassine, ed altro"* in Costantini G., *Delle monete in senso pratico e morale*, op. cit., pp. 88-89 (editor's translation).

[316] *"Che tolta al contante l'idea, s'abbassarono i prezzi delle mercanzie, e di tutti li commestibili, perché tutto era composto col valor ideale della moneta"* in Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 97 (editor's translation).

> *In somma, se non può negarsi, che tutte le cose dietro la moneta cercano la parità, e si livellano, convien confessare, che ogni obbietto, che in tal materia può esser fatto, sarà pieno di vento, e privo di vera e soda ragione: e che può ben darsi nei primi giorni qualche titubanza, ma che fra poco tutte le cose troveranno il suo punto di parità e di quiete, come anno riferito gli fp. fp.Capi di Piazza, d'esser seguito nella regolazione 1687.*
>
> [To sum up, while it cannot be denied that all things behind the currency are striving for equality and convergence, all the objections raised in this matter are completely out of the air and lack any real and solid foundation: and that there may be some hesitation in the first days, but that soon all things will find their point of equilibrium and tranquilly, just as the Capi di Piazza reported that they followed the reform of 1687.][317]

Thus, from the perspective of naturalism, the world is in a static equilibrium, and any change that is considered artificial should be eliminated to restore the equilibrium. Thus, once the agio is eliminated, prices will return to the original (natural) level. The fourth advantage (4) of the reform is that the abolition of the agio eliminates the transaction costs that hinder trade, also because we should remember that transactions with foreigners were not entirely carried out through bank money. Thus, trade will flourish again and once there is no longer any reason for arbitrage between coins, traders will abandon this business and invest in commodity trade. The fifth advantage (5) is that the wages of agricultural and manufacturing workers are protected by the decline in the general price level, since there is no policy of adjusting wages to inflation (Costantini actually uses the word "*mercede*" to refer to a reward, which may also be food or other items, but is nevertheless constant over time). Finally (6), after the reform, the mint will work more to produce healthy coins and the seigniorage will increase.

To summarise, on the one hand Costantini advocates the use of bank money (*partita di banco*) in important transactions, which always guarantees the correct "intrinsic value"; on the other hand, he calls for a monetary reform that would restore the original relationship between *lira di banco* and current *lira*, as established in 1687. The reform would completely ban foreign money that does not meet the necessary characteristics, in order to create, through the national mint, new full-weight *ducati* and *zecchini*, as well as regulated *veglioni*.

****

Before we turn to the regulation of low money, which we will do in the next section, let us summarise the main points of the above comparison between the authors. First, it is noteworthy that these authors are not complaining about the recent manoeuvres on noble money, with the exception of the monetary revaluation in Naples at the end of the 17th century mentioned by Carli. So the problem they refer to is the premium on noble money,

[317] Costantini G., *Delle monete in senso pratico e morale*, op. cit., pp. 89-90 (editor's translation).

regardless of which approach they use to explain it. It is interesting to note, however, that the change in the rate of the noble money is due to the agio caused by various phenomena such as the circulation of clipped coins, the change of the bimetallic ratio, changes of the low money and also by the movement outside the limits of certain currencies. The formation of agios on the market against the law is tolerated and even legitimised by a theory of money based on natural law, so that in this context we could even modify Gresham's law by saying that bad money causes the formation of agios on good money. The market value of coins is at odds with their legal value, leading to a monetary disorder that can be remedied by eliminating the causes. The solution for the authors is a recoinage, but it seems that in a context where imaginary money is traditionally well regulated, as in Venice with the *ducato di banco*, it is also used to solve the problems of the currency by adjusting the rates of the coins when necessary, even if a gradual recoinage is required. Costantini's solution is indeed more similar to Newton's than to Locke's, although he waves the Lockean flag, while Carli and Neri seem more convinced of the Lockean idea of a fixed monetary standard. Last but not least, the demand for international coordination may have played a role in Neri's and Carli's vision, which was probably dictated by the fact that Milan was a small state dependent on international trade and needed stable trade relations with neighbouring states,[318] while in Venice the preservation of an independent political role was more important.

4. Complementary money

In the previous section we saw that the "monetary disorder" is caused by a "disproportion" between the ratio of the face values of the coins and the ratio of the intrinsic values of the coins. The correct "proportion" is determined by the bimetallic ratio when coins of different metals are involved and should correspond to both the intrinsic and extrinsic value. For example, if the bimetallic ratio of gold to silver is 1:14, one ounce of gold coins should have the same face value as 14 ounces of silver coins, provided this ratio is also maintained between all coin denominations. As Neri says, coinage should be regulated according to two basic rules: 1. "in proportion between gold, silver, and copper," 2. "in each metal in proportion between the whole and its parts, however divided and subdivided"; the first

[318] In fact, at that time there was no idea of the direction or origin of the main trade flows and the idea of a monetary union seems to have been based on political rather than economic considerations, not least the idea of an Italian nation. On Carli's patriotic spirit, which is particularly evident in the article *La patria degli italiani* [The Home of the Italians, ed.], published in 1765, see Marcelli U., "La questione monetaria studiata da Gian Rinaldo Carli", in *Archivio Storico Italiano* , Vol. 113, No. 1 (405), Casa Editrice Leo S. Olschki s.r.l., 1955, pp. 45-72.

"depends on a fact regulated by the force of commerce and independent of legislative power", the second "is a matter of simple calculation".[319]

When it comes to copper, however, there are some specific characteristics that make it special. In particular, Neri says that copper is the measure of silver and gold: "Gold is priced by silver, and copper prices silver and gold, and is therefore called *fundamental money* by Broggia",[320] therefore its debasement beyond the correct ratio between the metals implies an increase in the nominal value of silver and gold through the devaluation of imaginary money, as he explains:

> *Ogni moneta è quota dell'altra, [...], e anche la moneta di rame è quota della moneta d'argento, e tutte le monete reali sono quote della moneta immaginaria che serve da misura universale; e le quote messe assieme non possono mai essere né maggiori né minori del loro tutto [...]. Quando dunque non sia osservata questa proporzione e la zecca dia a tali monete di rame o di bassa lega un valore impositizio e falso, questo valore viene subito ad influire nella lira del paese, la quale diventando più piccola […], viene a rendere la misura delle monete buone bisognosa di più lire di prima per adequarsi.*
>
> [Each coin is a part of the other, [...] and even the copper money is a part of the silver money, and all real money are parts of the imaginary money which serves as a universal measure; and the parts taken together can never be larger or smaller than their whole [...]. Therefore, if this ratio is not respected and the mint gives such copper or low-alloyed coins an imposed and false value, this value immediately affects the *lira* of the country, which thus becomes smaller [...], so that the measure of good coins increases by more *lire* than before.][321]

The above argument is thus based on the concept of "fundamental money", which Carlo Antonio Broggia set out in 1743 in the *Trattato delle monete* [Treaty on Money].[322] Broggia believes that copper money is crucial because it "gives prices and does not take prices" (*"apprezza e non è apprezzata"*), so it is like "the roots of a plant" which, although they are "the lowest" and "least respected", are "the most important".[323] In fact, Broggia believes that copper should be considered a unit of account everywhere, as the Romans did. He also says that the Romans did not need imaginary money because they reckoned with copper, while the states later began to reckon with silver, but as this became increasingly debased

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[319] *"Nella proporzione tra l'oro e l'argento e il rame", "e nella proporzione in ciaschedun metallo fra il tutto e le sue parti comunque divise e suddivise", il primo "dipende da un fatto regolato dalla forza del commercio e indipendente dalla potestà legislativa", il secondo "è un affare di puro e semplice calcolo"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 224-225 (editor's translation).

[320] *"L'oro è prezzato dall'argento, e il rame prezza l'argento e l'oro, e perciò si chiama dal Broggia* moneta fondamentale*"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit.*,* p. 179.

[321] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., pp.183-184 (editor's translation).

[322] Broggia C. A., "Trattato delle monete" (1743), in Custodi, SCIEP, parte antica, voll. 4-5, 1804, pp. 321-336 (vol. 4), pp. 99-114 (vol. 5). See also chap. 4.

[323] Broggia C. A., "Trattato delle monete" , op. Cit., vol. 5, pp. 99-100.

due to its scarcity, the need arose for ideal money as a stable unit of account. The ideal money, according to Broggia, can be of two types: one is the *lira di banco*, which is tied to silver (but he also sees in this type, for example, the Austrian thaler, which somewhere is an imaginary money and it is tied to silver), the other is the imaginary money with a fixed base of copper, i.e. the unit of account corresponds to a fixed weight of copper in a certain number of coins, so that the value of the silver could be changed by changing the base of copper.[324] In the case of a silver shortage, for example, there are two solutions, one bad and one good. The first is to debase the silver coins, the other is to increase their value by reducing that of the copper coins that form their price, both of which Broggia calls "reduction" (*riduzione*). However, only the second choice is positive, because the intrinsic value of the coins must not be changed, otherwise "on observing that money decreases in weight or size, people instinctively increase the price of all things".[325]

Broggia's argumentation probably also influenced Carli, who, although he did not quote Broggia, started from the same premises. In fact, he says that copper has the specific function of a "measure for other metals", as we can see in the following passage:

> *La moneta è un pezzo di metallo, o d'oro o d'argento o di rame; e in grazia del suo peso, se è d'oro vale tante monete d'argento in ragione della comune proporzion de' metalli; s'è d'argento ne vale tante di rame. Il rame dunque è considerato come misura degli altri metalli e per conseguenza di niun valore proprio, se non in riguardo a quelle cose delle quali forma il prezzo*.
>
> [The coin is a piece of metal, either of gold or of silver or of copper. If it is of gold, it is worth many silver coins because of its weight, because the metals are in common proportion; if it is of silver, it is worth many copper coins. Copper is therefore considered a measure of other metals and consequently has no value of its own except in relation to the things whose price it forms.][326]

This definition of copper, i.e. that it is the measure of the other metals and that its value is only given by "the things whose price it forms", i.e. by its purchasing power, is actually a definition of fiat money that could easily apply to today's paper money and which neither Carli nor Neri and Broggia recognised. So when we speak of low money made of copper, but also of alloy money, which was called eroded money (*moneta erosa*) in Milan and billion money in Turin (*biglione*) and Venice (*veglione*), it is quite clear that we are dealing with fiat money, so that the intrinsic value of the coins is freely selectable (apart from secondary aspects such as the possibility of coin counterfeiting). The implication of this fact was

[324] See Broggia C. A., "Trattato delle monete" , op. Cit., vol. 4, pp. 104-105..

[325] "...osservano la moneta diminuita o sia scemata di peso e ridotta di minor mole sono mossi per natura ad alzare il prezzo delle robe tutte", Broggia C. A., "Trattato delle monete" , op. cit., vol. 4, p. 329 (editor's translation).

[326] Carli G.R., *Dell'origine e del commercio della moneta*, op. cit., p. 93 (editor's translation).

understood by Gemignano Montanari at the end of the previous century, who wrote in the *Trattato sul valore delle monete* [Treaty on the value of money]:

> *Le monete basse della propria zecca non siano mai battute in più quantità del bisogno dello stato per gli usi di spese minute, e sino a questo segno si può dar loro che valuta piace al principe senza riguardo alla bontà; che se egli ne battesse troppa quantità farebbono alzare le monete maggiori in valuta, come fanno negli stati ducali di Lombardia.*
>
> [The low coins of one's mint must never be minted in a larger quantity than the state needs for the use of the small issues. Up to this limit they may be given the value that pleases the prince without regard to grade; if he minted too many, they would increase the value of the large coins, as is the case in the ducal states of Lombardy.][327]

This passage, which testifies, among other things, that the phenomenon of the premium on noble money was also present in Milan in the previous century, is also quoted by Carlo Maria Cipolla, who considers Montanari the first to make the better attempt to define a rule to solve *"il grosso problema della moneta piccola"* [the big problem of small money].[328] According to Cipolla, however, the standard formula, first used in England in 1821 and still in use today, is as follows:

> *Emettere, per conto del governo, moneta spicciola con un valore intrinseco inferiore al valore nominale; limitare la quantità della stessa moneta in circolazione; garantire la convertibilità con l'unità monetaria di base. Si può eventualmente anche aggiungere la norma per cui la moneta divisionale non possa costituire moneta legale nei pagamenti al di sopra di una certa cifra, ma eminenti economisti non ritengono quest'ultimo elemento essenziale alla ricetta.*
>
> [To issue, in the name of the government, small coins whose intrinsic value is less than their face value; to limit the amount of currency in circulation; to guarantee convertibility with the base currency. One could also add the rule that the divisional currency cannot be legal tender above a certain value, but noted economists do not consider the latter essential to the prescription.][329]

Montanari acknowledges the first two points (and the discretionary last one): Once small money is limited in quantity (i.e., the second point), the sovereign could decide to give a

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[327] See Neri P., *Osservazioni sopra il prezzo legale delle monete*, op. cit., p. 213 (editor's translation).
The quotation is from Montanari G., *Trattato sul valore delle monete* (second half of the 17th century), cap. III, in Argelati F., *De monetis Italiae*, part. III, 1750.

[328] Cipolla C. M., *Moneta e civiltà mediterranea*, op. cit., pp. 41 - 43.

[329] Cipolla C. M., *Moneta e civiltà mediterranea*, op. cit., p. 43. See also Redish A., *Bimetallism, an Economic and Historical Analysis*, op. cit., and Sargent T. J., Velde F. R., *The big problem of small change*, Princeton University Press, 2002, who emphasise the importance of technological improvements in preventing counterfeiting.

nominal value higher than the intrinsic value (i.e., the first point, not necessary but possible). Costantini clearly uses both (and the last), saying:

> *La rigorosa proporzione, che è necessaria alle monete nobili d'oro, e d'argento [...], non è tale per li veglioni, attesoché stando rinserrati nello Stato per gli usi del minuto traffico, non possono fomentare l'alterazione delle monete nobili, e perciò possono senza alcun dubbio trar li Sovrani da questo stampo un'utilità maggiore di signoraggio; qual ha però il suo confine, mentre non possono stampare quantità maggiore di quella, che può servire agli usi del minuto traffico antedetto, altrimenti la soprabbondanza sconcerterebbe il buon ordine delle monete nobili, non essendo per tal fine stato permesso in passato, potersene spendere nello Stato Veneto ne' grossi pagamenti per più di dieci per cento; siccome non devono esserne stampati in minore quantità del bisogno di detto minuto traffico, altrimenti la penuria di questi introdurrebbe li veglioni forestieri, con che invece di approfittare le nazionali, s'avvantaggierebbero col detto stampo de' veglioni le Zecche forestiere.*
>
> [The strict ratio necessary for the noble coins of gold and silver [...], is not so for the *veglioni*, which, circulating only in the state for the use of the minute traffic, cannot promote the change of the noble coins, and therefore the sovereigns can undoubtedly extract from this coinage a greater benefit of seigniorage; which, however, has its limits, while they cannot issue a greater quantity than that which can serve the purposes of the previous minute traffic, otherwise the excess would disturb the good order of the noble coins, since for this purpose it was not permitted in the past to issue large payments for more than ten percent in the State of Veneto; As they are not allowed to be issued in smaller quantities than are necessary for such a minute exchange, because the lack of them would otherwise introduce the foreign coins, so that the foreign mints would profit by the seigniorage of the *veglioni* instead of the national ones.][330]

These words sound like Montanari, and probably Costantini had read him, but he does not quote him. Be that as it may, he treats the question of small money with more competence and ease than the Milanese authors, inspired by the monetary experience in Venice rather than by speculation. He outlines a theory of complementary money for petty trade, which should be issued in the proper amount for the needs of petty trade, not too much because it causes the agio on noble money, and not too little because it causes the importation of foreign low money, with an opportunity loss to the mint in the form of seigniorage that could have been obtained by issuing *veglioni*. He proposes to reinstate the 10 percent cap on the use of *veglioni* in large commerce to limit their use in small commerce. He is not afraid to consider lowering the value of *veglioni* in conjunction with the *Regolazione delle Monete* to achieve a reduction in the face value of the entire mintage. He also has no problem in proposing a debasement of the *veglioni* in order to finance a new mintage with the cut copper, so that the new coins can be better recognised in value by the population:

[330] Costantini G., *Delle monete in senso pratico e morale*, op. cit., p. 17 (editor's translation).

Li soldoni, e bezzoni poi parimenti veneti non dovrebbero aver più corso alcuno in sacchetti, benché giusti; ed in caso di persistenza, potrebbero esser reboati senza fonderli, vale a dire col levarvi l'antico impronto col martello, e resi più sottili, per tanto che non restino deformi, se ne potrebbe levar quella sola quantità, che esser potesse sufficiente a supplire alla spesa di un nuovo impronto, per poi chiamare al concambio li soldoni vecchi, con altrettanti soldoni, e bezzoni reboati. Tutto ciò niente per altro, che per dare un rimedio all'infermità cagionata al corpo politico dall'ignoranza, e dall'interesse delle genti, persino col mal uso delle inferiori monete.

[The *soldoni* and *bezzoni* [types of *veglioni*] then equally Venetian should no longer run into bags, although they were counted correctly; and in case of persistence they could be hammered without melting them, that is, with the removal of the old stamp by the hammer, and made thinner so that they do not remain deformed, it could be removed only the amount [of metal content] that could be sufficient to pay the cost of a new stamp, and then call the old *soldoni* to exchange with the new hammered *soldoni* and *bezzoni*. All this for nothing other than to remedy the weakness caused to the political body by ignorance and by the interest of the people, even with the abuse of the lower currencies.][331]

Costantini calls for a sound coinage for small trade, that is, in this case, a variety of coins that can be well recognized by the population, so that they can not be cheated of the value of the coins and so that the practice of counted bags of coins is abolished. In fact, this practice confirms the general uncertainty about the value of the coins with negative effects on the internal exchange rate against the noble money.

Pompeo Neri's approach is different in theory, but converges in practice. Namely, Neri supports the theory of proportionality between precious metals. However, after studying the process of debasement of coins, he recognises that small money has become a sort of fiat money, and quoting Montanari, just published by Argelati in Milan, recognised that it is the supply of small money that determines its value. He then moves from a theoretical to a more practical perspective, as exemplified especially in the correspondence with the governor of Milan on the plan for monetary reform in Milan in 1754.[332]

In the *Osservazioni*, Neri sees that low money spreads because of the high demand for the use of small trade, and because the mint, in order to increase the quantity, lowers the intrinsic value of the coins and thus devalues the imaginary money. In particular, Neri reports that the mint in Milan was granted the right to mint copper coins in order to cover the costs of minting silver coins.[333] He criticises this by saying that it is "better to close the mint than to produce at a loss", as happens when there are no mines in the state and the balance of trade is negative, thus anticipating the argument of Verri and the young

[331] Costantini G., *Delle monete in senso pratico e morale*, op. cit., pp. 18-19 (editor's translation).
[332] See chap. 3, para, 2 and Appendix 5.
[333] See chap. 3, para. 1.2.

Beccaria.[334] If the sovereign feels that he must mint at a loss in the interest of good government, "it is always better to bear this disadvantage, like all other expenses of good government, at the expense of the country, than to resort to the above ruinous means of profiting by the copper and low-alloyed coins."[335]

In summary, Neri acknowledges that the mismanagement of small money is the cause of the devaluation of imaginary money, so he envisions a stabilisation of imaginary money along the theoretical lines of the *lira di banco* (i.e., a pure concept of correspondence of imaginary money with a standard weight of silver). However, he knows that the "tariff established in the concordats [for a monetary union] cannot prevent the emergence in each country of a popular price higher than the legal price," since a current *lira* different from the *lira di banco* could emerge, raising the price of sound money above the legal price. The low money must therefore be regulated, but here Neri is at the crossroads between a complete recoinage to reintegrate the metal content of the low money and the more agile manoeuvre of quantity reduction. However, since it is not possible to set a standard for low money in the monetary agreement between states, since it is chosen at their own discretion, and, on the other hand, low money has already acquired the status of fiat money due to the high devaluation, unless a recoinage occurs, which would be difficult to finance, the solution would lie in the principle of supply limitation mentioned by Montanari. Neri explains:[336]

> *Bisognerebbe che questa [la moneta bassa] non solo non abbondasse ma fosse tenuta dentro i limiti della positiva penuria, e questa penuria congiunta col giornaliero bisogno sarebbe quella che sosterrebbe il detto valore impositizio [legale, ed.], nell'istesso modo che l'esuberanza [la forte domanda, ed.] del credito sostiene alle volte il valore dei biglietti e altre rappresentazioni o simulacri della moneta.*
>
> [It would be necessary that this [the low currency] should not only not be abundant, but should be kept within the limits of positive scarcity, and this scarcity, in connection with daily needs, would be that which sustains the legal value, just as the abundance [strong demand, ed.] of credit sometimes sustains the value of notes and other representations or simulacra of money.][337]

Here Neri introduces other forms of money to compare with low money, or rather, not proper money, but "representations" or "simulacra" of money, such as notes and tokens ("*carta, gettoni e altri contrassegni*"). He does not elaborate on the question of the origin and use of these means of payment, but he claims that they are not money, since they are

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[334] See chap. 3, para. 4.

[335] *"...in tal caso è sempre meglio che questo scapito sia sofferto come tutte le altre spese di buon governo a carico del paese, piuttosto che ricorrere al predetto rovinoso espediente di lucrare sopra le monete di rame e di bassa lega"*, Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 190 (editor's translation).

[336] *"...la tariffa stabilita nei concordati non può impedire che in ciascheduno stato non sorga e non s'avanzi un prezzo popolare superiore al prezzo legale"*, Neri P., *Osservazioni sopra il prezzo legale delle monete,* op.cit., pp. 223-224 (editor's translation).

[337] Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., pp. 192-193 (editor's translation).

not a pledge but a credit, "which necessarily requires the establishment of a government and judicial order, like all other obligations before material delivery, and a political force that obligates the one who gives the token the true and real value in response to any request from the creditor."[338] Now it can happen to this creditor that "being indebted to strangers, these cards of pure representation, these simulacra of coins, go up in smoke and are valued at nothing but the pure and material value of the metal. Secondly, it often happens that the government rejects such coins when paying public taxes. And it also often happens that they are rejected in the usual payments among merchants and especially in bills of exchange."[339] The only exception, according to Neri, is when there is a shortage of these means of payment, because it is precisely this shortage that guarantees their circulation.

To sum up, we can say that Neri finally recognises the nature of small money as fiat money, even if he would prefer full-bodied coins even in copper, but he leans towards the second-best solution, essentially because of financial problems that make recoinage unfeasible, as he says, since "the circumstances of the country do not allow us to keep it [copper] in proportion to the so-called most valuable metals, we must at least turn to the idea of limiting its quantity".[340] Finally Neri equates low money with fiduciary money, insofar as it is not a pledge but a mere loan that would have to be enforced by the government to be settled unless the debtor sues. The condition for both low money and fiduciary money to be liquid is their counterpart in the demand for money, which Neri would ensure by keeping low money at the limit of scarcity. However, if we consider Neri's proposal for monetary union, in which he abstracts from financial constraints, he couples both measures, i.e. the recoinage at full value of the coins and the limitation of the quantity, and under these conditions he even prescribes limited convertibility for small money.[341]

We have seen, then, that the question of small money is crucial to the system and can hardly be treated with the naturalistic principle of proportionality between metals, since small money is de facto defined as fiat money, the quantity of which is limited to the needs of petty trade. According to Cipolla, "all these statements were correct in principle, but they

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[338] *"Che richiede per necessità come tutte le altre obbligazioni preventive alla consegna materiale lo stabilimento di un governo e di un ordine giudiziario, e di una forza politica che costringa il datore della tessera ad effettuare la consegna del valor vero e reale a ogni richiesta del creditore"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 185 (editor's translation).

[339] *"Avendo egli debiti con forestieri, queste tessere di pura rappresentazione, questi simulacri di monete si sciolgono in fumo e non gli sono valutati per niente oltre al puro e materiale valore del metallo. In secondo luogo spesse volte accade che il governo rifiuta simili monete nel pagamento dei pubblici tributi. E altresì spesso accade che son rifiutate nei pagamenti soliti a farsi tra i mercanti e specialmente nelle lettere di cambio"* jn Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 186 (editor's translation).

[340] "...*le circostanze del paese non permettono a tenerlo in proporzione coi detti metalli più preziosi, bisogna almeno voltarsi al pensiero di restringerne la quantità*" in Neri P., *Ragionamento del presidente Neri,* AS Torino, Archivio Balbo Junior, vol. 11 carte Bogino, para. 56. The text is also published in Gianelli G., *Studi sulle dottrine monetarie del settecento*, Università degli Studi di Genova, appendix pp. 106 - 123. See Appendix 5 for the details.

[341] See chap. 3, para. 2 Neri's points 5,7,8.

had no practical use"[342] because they offered no way to control the quantity of small money, which could have been done simply by ensuring convertibility with the base currency, he says:

> *Ai teorici e pratici del tempo, sfuggì il fatto che la quantità di moneta spicciola circolante si sarebbe automaticamente regolata se lo stato avesse fatto due cose: avesse assunto direttamente la gestione della zecca e avesse garantito la convertibilità dei pezzi divisionali con le monete intere. Nel giudicare peraltro il fatto che le autorità del tempo mancarono di garantire la convertibilità fra un tipo di moneta e l'altro, dobbiamo osservare che un ostacolo alla adozione di tale principio proveniva da una circostanza che non era certo nei desideri dei governi e cioè dalla loro limitata sovranità monetaria. Era un fatto universale e normale che [...] all'interno di uno stato affluissero e circolassero* legalmente *monete* grosse *di altri stati. Era un fatto che capitava spesso che all'interno di uno stato affluissero e circolassero - non altrettanto legalmente - monete* piccole *di altri stati. In simili circostanze alle autorità monetarie era impossibile garantire la convertibilità delle monete.*
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> [The theorists and practitioners of that time missed the fact that the amount of coins in circulation would automatically adjust if the state did two things: it directly took over the administration of the mint and guaranteed the convertibility of the fractions with the whole coins. However, in assessing the failure of the authorities of the time to guarantee convertibility between one type of currency and another, we must note that one obstacle to the adoption of this principle resulted from a circumstance that was certainly not in the mind of governments, namely their limited monetary sovereignty. It was a universal and normal fact that [...] within a state *large* coins from other states flowed and circulated *legally*. It was a fact that it often happened that *small* coins from other states flowed and circulated - not so legally - within a state. Under these circumstances, it was impossible for monetary authorities to guarantee the convertibility of currencies.][343]

For Cipolla, then, the whole discussion of low money runs into the void until the standard rule is discovered in England in 1821, especially because the supply cannot be controlled for the lack of monetary sovereignty.[344]

However, as regards the proposal to make small coins convertible with coins of a higher denomination, so that the quantity in circulation would be automatically regulated, we must note that this is a treatment of divisional money that is not applicable in our context. Indeed, as you may have gathered from Cipolla's first quote, he assumes that small coins

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[342] "*Tutte queste enunciazioni erano fondamentalmente giuste, ma non avevano alcuna utilità pratica*" in Cipolla C. M., *Moneta e civiltà mediterranea*, op. cit., p. 40 (editor's translation).
[343] Cipolla C. M., *Moneta e civiltà mediterranea*, op. cit., pp. 44 - 45 (editor's translation).
[344] See also Sargent T. J., Velde F. R., *The big problem of small change*, Princeton University Press, 2002, who go in the same direction and also emphasise the technological limits of coinage.

were divisional and subsidiary money in the 18th century.[345] However, as we have already seen in Costantini's report and will see again in the next chapter on the monetary reform in Milan, they could not be considered as such in Italy, because they were the money dedicated to small trade, the money used to pay wages, i.e. complementary money, and could not be managed as simple small change.[346] Complementary money is in fact characterised by non-convertibility, which according to Massimo Rostagno is the main feature of the pre-Napoleonic financial system:

> [...] what sets the pre-Napoleonic system far apart from any later multi-, monometallic, or even fiat-currency arrangements, is the absence of any (banking) institution legally obliged to credit the bearer of small change for any sum, on a *pro-rata* basis, in term of the monetary unit. In other words, the bottom-up conversion was made possible, in the nineteenth century type of bimetallic regime, *at no more and no less than the lawful terms*, by requiring the "bank" to draw up the bearer's deposit held with it, and to stand ready to pay out the entire accumulated balance in full-bodied coins. This was not the case before Napoleon. | In short, before Napoleon [...] to climb up the scale, you had to resort to money changers.[347]

If you go to money changers, Rostagno continues, you may have to pay a premium to exchange low money (or, as he calls it, black money) for noble money. The agio has a special function in such a system, he says:

> Black money and the absence of *pro-rata* convertibility (the asymmetry of the scale of values along which all media of exchange were quoted in terms of the unit of account) freed precious resources that otherwise would have been frozen in barren petty exchanges.[348]

Rather, we can say that low money always guarantees the currency for petty trade, since it is endogenous money (i.e., at the discretion of the sovereign, or fiat money), while noble money is exogenous, since it depends on the balance of payments. An autonomous (and endogenous) currency for petty trade prevents possible deflationary pressures on the economy due to a negative balance of trade. At the same time, the premium on noble money prevents Gresham's law from displacing precious money through arbitrage (or at least it acts as a kind of protection).

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[345] See Cipolla C. M., *Moneta e civiltà mediterranea*, op. cit., p. 45.

[346] For an overview of complementary money see Amato M., Fantacci L., "Complementary currency", in *Handbook of the History of Money and Currency*, op. cit., pp. 501-522. On the particularity of the Italian case, see Redish, A., *Bimetallism, an Economic and Historical Analysis*, op. cit., who reports that copper coinage was suspended in France in the period from 1665 to 1770 (p. 133) and that it is of very little use for the monetary history of England (pp. 119-122).

[347] Rostagno M. V., "The Ancien Régime and the classics", in *Monetary standards and exchange rates*, Marcuzzo M. C., Officer L. H., Rosselli A., Routledge, 1997, p. 183 (editor's translation; the italics is in the original text).

[348] Rostagno M. V., "The Ancien Régime and the classics", op. cit., p. 201 (editor's translation; the italics is in the original text).

Another example of complementary money may be bank money. If we consider for example the case of Venice, the bank money (*partita di banco*) has been made legal tender in international trade and in higher transactions within the borders. Because being stabilised in terms of precious metal, it stabilises the external exchange rate, so it is a kind of complementary money for international trade and wholesale trade above a certain level (300 *ducati*), while noble money is used for transactions below this level. In fact, it was not perfectly convertible with current money, because there was an agio that fluctuated, even if the objective of the *Banco* was to stabilise the agio at the conventional 20 percent over current money. In fact, the government suspended the convertibility of the *partita* and circulated it as fiat money with a variable premium for a long period (below the conventional 20 percent) because the government had increased the ratio between the *partita* and the noble money deposits. Once parity was restored at a 20 percent agio, the *partita* was made convertible again. However, the *Banco Giro* in Venice did not play the role of the Bank of Amsterdam, which managed fiat money through open market operations where it exchanged unconvertible bank money (i.e., fiat money) for noble money to stabilise the agio within a range of 4 - 5 percent and even beyond in order to provide flexibility to the domestic economy. Amsterdam, in fact, knew how to manage the agio to deal with either the exchange rate or the money supply. Venice, on the other hand, turned periods of convergence into periods of disorder.[349]

5. Conclusion: complementarity and homogenisation

The monetary debate in Italy in the mid 18th century was dominated by "naturalism", which assumes an intrinsic value of goods determined by nature. According to this current of thought, the process from which value arises is quite similar to the law of the market, but supply is given by quantities considered to be determined by nature, and demand is given by the qualities of goods, considered to be a gift of nature corresponding to the needs of human nature. The assumption that naturalists follow the law of the market would therefore not be correct, but it is a useful approximation. Following such an approximation, the law of the market is seen as guaranteed by natural law, which is superior to the law of sovereigns. On the other hand, the Lockean idea of money as a pre-political convention (which is exactly the opposite of a political convention, since the former fixes the value of money while the latter changes it) is helpful in creating an immutable standard of value that acts as a guarantee of orderly economic life (i.e., more ideologically and politically, as a guarantee for creditors). However, this idea can only be implemented through monometallism, which is very far away from Italian monetary tradition.

[349] See chap. 1, para. 2.

In fact, the homogenisation of money pursued by Locke (i.e., money is silver) destroys the ancient monetary system, which is characterised by different kinds of money that are often complementary.[350] Complementarity is well illustrated by the fact that there are different exchange rates in the monetary system, as Galiani noted by listing them in a group of four, between types of money that are not perfectly convertible: 1. the internal exchange rate between coins of different metals; 2. the exchange rate between current money and bank money or other types of paper money; 3. the external exchange rate between foreign and national coins; 4. the exchange rate between current money or bank money and international bills of exchange (commonly referred to as *cambio*), which fluctuates between the so-called species points. In each of the above cases, although not always related to money complementarity, the premium can be interpreted as an exchange rate above or, conversely, below par. Take, for example, the exchange rate of gold to silver. If it is at par, it reflects the legal tariff, say 1:14, if it is above par (e.g. 1:13), there is a premium on silver, if it is below par (e.g. 1:15), there is a premium on gold, but if the government is willing and also able to enforce the legal rate, this is the case for Gresham's law, which crowds out higher value money. The complete abolition of agios is only possible with the homogenisation of money envisaged by Locke. However, this means a loss of flexibility in the supply of money.

In England, the wave of deflation triggered by the Great Recoinage was finally compensated for by the Bank of England issuing banknotes according to the fractional reserve principle, although this could not prevent the shortage of money on the small market for long. Instead, different policies prevailed in the republics. Agios were controlled within a certain range to ensure flexibility between complementary currencies. However, unlike Amsterdam, Genoa and Venice failed to control the agio within a certain range. This was partly because, as Cipolla notes, there was no complete control over the money supply, allowing foreign money of any kind to circulate within the borders, albeit illegally. In Milan, the solution to the "monetary disorder" was to abolish the agio, following the example of Locke. Pompeo Neri and Gianrinaldo Carli therefore pursued a "monetarist" – non-financial – theory of stabilisation. However, they worked in a trimetallic system, so Locke's solution could not be fully applied. Neri imagined stabilising the imaginary money by pegging it to silver as it functions in the republics' bank money. Rejecting imaginary money, Carli wanted to fix and "freeze" the monetary system once and for all, imagining a recoinage that would allow the ancient (and correct) parity to be restored between coins made of different metals or of different denominations. Girolamo Costantini in Venice did not need a complete reorganisation of the monetary system as it was well implemented around the pivot of imaginary money, but the problem was the surplus of low money, and he called for regulation which, as we have seen, was not achieved. The main issues that Carli, Neri and Costantini addressed were the guarantee for creditors, the fight against inflation and the stabilisation of the exchange rate, which were threatened by the spread of devalued low

[350] See chap. 1 para. 1.

money. They saw all the evil in the *alzamento* policy envisaged by Ferdinando Galiani in Naples, which was actually a threat to the rights of the creditor. Their objectives, in fact, will be achieved by the gold standard, which ultimately emerged from the Great Recoinage in England, albeit at the price already mentioned. However, the situation in northern Italy was different, as we will see in the next chapter, particularly in relation to the monetary reform in Milan.

III. The School of Milan and monetary reform

PART I - From the legacy of Neri to the criticism of Verri and Beccaria

1. Overview of Milan's situation in the 18th century

The situation in 18th century Milan was quite turbulent due to several wars and relative foreign occupations. At the beginning of the century, with the War of the Spanish Succession, Milan passed from Spanish to Austrian control. Thereafter, during the Wars of Polish and Austrian Succession, Milan was conquered by the Savoy (1733-1736) and the Bourbons (1745-1748), respectively, until the Habsburgs regained control with the Peace of Aquisgrana in 1748. In this section we will consider the socio-economic structure, the monetary situation and the financial structure.

1.1 The socio-economic structure

The State of Milan in the second half of the 18th century consisted of the territories of Milan, Pavia, Cremona, Lodi, Como and Casalmaggiore and had a population of about one million and 100,000 people, and with the Duchy of Mantua (about 200,000 people) formed the "Austrian Lombardy." The economy was mainly agricultural and in the countryside there was a powerful class of landowners, while in the city the richest citizens were great merchants, bankers, professionals and officials. It can be said that economic power was in the hands of the noble class rather than the just emerging bourgeoisie. In particular, there was a burgeoning silk and cotton industry. Wealthy merchants imported fine textiles and manufactured goods, while large landowners exported corn, wheat, rice, and silk.[351] However, as Pietro Verri noted in *Considerazioni sul Commercio nello Stato di Milano* [Considerations on Trade in the State of Milan] in 1752, the balance of trade was negative and remained so throughout the period. If we follow Bruno Caizzi, we can use Verri's surveys for the years 1752 and 1762, Carli's for 1766 and Scorza's for 1778.[352] Verri's 1752 trade balance shows a deficit of nearly 10 million lira; the main imported goods were wool, cotton, metals, manufactured goods such as soap, livestock, salt, and wine. In 1762, the

[351] See Capra C., "Il Settecento", in Capra C., Sella D., *Il Ducato di Milano dal 1535 al 1796*, UTET, 1984.
[352] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo,* Banca Commerciale Italiana, Milano 1968, pp. 48-55; 213-267.

deficit was about 1.5 million lira and imports were strong in all sectors. The products that Milan exported were silk, wheat, butter and cheese, and linen. Carli's trade balance was broken down by trade region and showed a total deficit of about 600,000 lira. The deficit was mainly with France and other countries outside Italy, comprising the Austrian Empire, while in Italy Piedmont was a net importer from Milan and the other states were more or less equal, with the exception of Genoa, which had a surplus. Scorza recorded a large deficit of 13 million lire in 1778, mainly in wool, wine, meat, livestock, etc., while exports consisted mainly of silk, linen and cheese (Scorza explains these negative figures by the fact that in 1778 silk production was exceptionally low, although it was still exported, and the announced currency reform, which banned most foreign money, urged owners to spend it on goods).[353] Apart from this, it is generally believed that the reform of the census based on the 1760 land register allowed a rationalisation of the tax burden and thus boosted agricultural production, as landowners had an incentive to cultivate their land and make it productive. Thus, on the one hand, agricultural exports increased; on the other hand, the development of trade in luxury goods in the city of Milan was heavily dependent on imports, which, as we have just seen, exceeded exports.[354] As for the evolution of prices, with the exception of the fifteen years after 1750, when they fell, they continued to rise until 1780 (two years after monetary reform) and then stabilised. It seems that the cause of the price evolution was partly due to the demand, especially for wheat also from abroad, and partly to the devaluation of money, which lasted until the monetary reform of 1778.[355]

As for the social structure, let us consider first the countryside and then the city.[356] In the countryside, the population consisted mainly of tenant farmers who paid the landowner in kind. It is reported that the levies charged during the year depending on the price fluctuation, the peasants struggled to make a living. In the second half of the 18th century, the landowner often leased the land for money to middlemen, who pressured the farmer all the more to make their profit. The farmer also employed workers, who were divided into permanent employees, day labourers (i.e. they were employed for a year but were paid for the days they actually worked) and temporary workers. They all worked all day for their survival and, apart from the permanent employees, had no fixed abode. The latter in particular were among the many vagabonds who populated the countryside, moving from one farmstead to another. The general character of the peddler, which Braudel describes as the lower level (and forerunner) of the merchant class,[357] can also be seen in this mass.

In the city, low classes made up a large part of the population. If we take the city of Milan in Vianello's demographic description, just to get a picture of the social structure, around 1768

[353] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo,* op. cit., pp. 236-237.
[354] See also De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860*, Banca Commerciale Italiana, Milano 1974.
[355] See De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860*, op. cit.
[356] See Capra C., "Il Settecento", op. cit., pp. 567-573.
[357] Braudel F., *Civilisation matérielle, économie et capitalisme*, vol. 2, "Les jeux de l'échange", Armand Colin, 2022, ebook p. 51.

there were about 600 rentiers, 300 rich merchants, bankers, tax farmers, 2700 wealthy merchants, shopkeepers, intermediaries, 650 lawyers, doctors, notaries, accountants, engineers, 625 officers and civil servants, 1450 clerks and professionals (mainly in the field of taxation), 2600 small shopkeepers, 23.300 workers, day labourers, shop boys, 10,575 servants, 2500 vagabonds, 2200 farmers.[358] Most of the inhabitants were therefore workers, and Capra estimates their average annual wage after 1778 at 350-400 *lire*, of which about 260 was spent on bread and the rest on other necessities such as rice, legumes, salt, oil, wine, meat, wood for heating and cooking and the rent for the house, with nothing left over for clothing and other goods. This seems to be a standard of living for survival, from which one can fall into complete poverty through unemployment or illness. From this it is easy to deduce that the entire economy is driven by the consumption of a minority of citizens and the rest of the transactions are geared towards pure subsistence.[359] It must be said, however, that a purely monetary view of the economy is limited due to the heavy use of alternative means of payment such as food, and if we add the presence of charities, the picture is perhaps less dramatic, even if it is still characterised by a mass of people with a precarious living situation.[360]

1.2 The monetary disorder

Let us now look at the problem of the so-called "monetary disorder" in Milan. The main problem was the debasement of copper money and "eroded money" (i.e. alloyed money), which reverted to the so-called *moneta di grida*, i.e. the noble money of gold and silver accepted for the payment of taxes. The Milanese tax system was characterised in particular by the following taxes: the land tax on land and real estate, which was reformed in 1760 with the new land register (*catasto*), the personal tax on every adult male on the land, the "commercial" (*mercimoniale*) tax on the turnover of merchants and the tax on the *case forensi*, then there were indirect taxes such as the *gabelle*, i.e. levies on state monopoly goods.[361] As we have already said, the *moneta di grida* was necessary for the payment of taxes and was legal tender, therefore it received a premium in exchange for the low money, as we will explain later, which was not a legal tender and was not convertible. In fact, there was no obligation to accept it at the tariff (i.e. the legal rate), so it was exchanged at an abusive rate. Low money, which consisted of the *quattrini* (i.e. copper money) and the

[358] Capra C., "Il Settecento", pp. 579-580, op.cit.
[359] Capra C., "Il Settecento", pp. 580-581,op.cit.
[360] See Mocarelli L., "What Is Wrong with the History of Wages: Or the Divide in Economic History - A Reappraisal Suggested by Eighteenth-Century Milan", in J. Hatcher, J. Stephenson eds., *Seven Centuries of Unreal Wages. The Unreliable Data, Sources and Methods that have been used for Measuring Standards of Living in the Past* (pp. 95-116). London : Palgrave Macmillan, 2018.
[361] See Capra C., "Alcuni aspetti del riordinamento tributario in Lombardia nell'età teresiana", in *La Fiscalité et ses implications sociales en Italie et en France aux XVIIe et XVIIIe siècles,* Actes du colloque de Florence (5-6 décembre 1978), Publications de l'École française de Rome, 46,1980, pp. 3-16.

parpaiole (i.e. eroded money), was authorised for the payment of the *gabelle*, while foreign eroded money was prohibited by several *grida* [decrees], but was nevertheless used. The following table by Carli gives you an overview of the Milanese currencies:[362]

tab./fig. 8 **The Milanese coinage**

Money	Metal	Value	
Quattrino	copper	*3 denari* *(4 quattrini = 1 soldo)*	3 d.
Parpaiola	alloy	*2 soldi* and a half or *10 quattrini*	2 s. 6 d.
Doppia parpaiola	alloy	*5 soldi* or *20 quattrini*	5 s.
Mezza lira	silver	*10 soldi* or *4 parpaiole* or *40 quattrini*	10 s.
Lira	silver	*20 soldi*	20 s. = 1 L.
Filippo	silver	*Lire 7* and a half	7 L. 10 s. (7.10)
Ducatone	silver	*Lire 8, soldi 12*	8 L. 12 s. (8.12)
Doppia	gold	*Lire 25, soldi 5*	25 L. 5 s. (25.5)

Source: Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione V, tomo II, 1757, op. cit., pp.368-375.

In this table, silver and gold money are legal tender, but there are some nuances, because the only money authorised for the payment of taxes was limited to the full-weight *moneta di grida*, namely the silver *filippi*, the gold *doppie* and the gold *zecchini*. The latter are not listed in the table because they were foreign money (i.e. the Florentine florin and the Venetian sequin), but were nevertheless authorised for internal circulation and the payment of taxes at the tariff of L. 14 s. 10 due to their full weight and good fineness. For the payment of *gabelle* (i.e. indirect taxes, e.g. on salt, tobacco and powder), on the other hand, the *lire*, the *mezze lire* and, from 1657, even the *parpaiole* were permitted. Other foreign currencies were also admitted to circulation at the tariff, so that exchange between all admitted currencies was possible at the tariff. It is noteworthy that the tariff given in the

[362] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione V, tomo II, 1757, op. cit., pp.368-375 (note: There is an error on p. 368, which gives the value of the *quattrino* as 4 instead of 3 *denari*).

above table has not been changed by the Austrian government since at least 1751, despite the abusive rate of the coins (changes were only made for foreign coins), whereas in the past the tariff was changed under the pressure of the same abusive rate, e.g. the *filippo* was assigned a value of L. 5 at the beginning of the 17th century.[363]

As we have already said, the noble money was not exchanged at the tariff due to the debasement of the low money, which we will discuss later, so that the exchange was made with money changers who charged a premium on the noble money, which led to an abusive rate. This process is seen by Aldo De Maddalena on the one hand as the "cause and effect" of the scarcity of noble money and on the other hand as a cause of inflation and falling real wages, especially in the last twenty years of the first half of the century, as he says below:

> *Se, dunque, l'alterazione dei corsi delle monete, causa ed effetto ad un tempo della rarefazione di circolante pregiato, scoraggia ancor più la svogliata e sparuta classe degli imprenditori milanesi, è sui prestatori d'opera, già esposti agli scompensi che si manifestano sul mercato del lavoro, che più pesantemente ricadono le conseguenze dell'inflazione di cattiva moneta. La stabilità delle retribuzioni nominali, percepite nella pressoché totalità dei casi in moneta "piccola", in moneta cioè che va progressivamente deprezzandosi, comporta una graduale flessione della capacità d'acquisto delle classi meno abbienti; e il salario reale risulta tanto più insidiato, in quanto proprio i prezzi di quei beni che soddisfano le esigenze alimentari di primaria importanza denunciano un trend di fondo più nettamente orientato verso quote elevate. Né si dimentichi che, proprio in quella congiuntura inflazionistica, si fa ancora più gravoso l'assolvimento dei doveri fiscali, poiché il già rammentato obbligo di versare nelle casse dello Stato monete "buone" (cioè monete "forti", non erose, di giusto titolo e peso) costringe i contribuenti a convertire al corso di mercato i pezzi di "bassa lega" di cui dispongono. Perdite tanto più rilevanti per i contribuenti, in quanto le circostanze favoriscono l'incetta e il commercio delle monete di "grida" (cioè delle monete "buone") da parte degli speculatori, i quali giungono ad esigere nel cambio aggi che oscillano tra il 10 e il 20 per cento delle quotazioni correnti. Di ciò fanno fede, oltre alle annotazioni di osservatori contemporanei, le stesse rilevazioni contabili: nei libri di cassa della Fabbrica del Duomo, dell'Ospedale Maggiore e degli altri enti assistenziali milanesi, durante questo ventennio, e specialmente tra il 1746 e il 1750, si incontrano sovente registrazioni relative a rimborsi di somme al cassiere per danni patiti nell'acquisto di monete "di grida".*
>
> [If, therefore, the change in the price of coins, which is at the same time the cause and effect of the scarcity of valuable circulation, further discourages the listless and meagre class of Milanese entrepreneurs, it is the workers, already exposed to the disturbances manifesting themselves in the labour market, who feel even more keenly the consequences of the bad money inflation. The stability of nominal wages, which in almost all cases are paid in "small" currency, that is, in a currency that is

[363] See Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* in Custodi P., SCIEP, Milano, parte moderna, vol. 12, 1804, p. 207; para. 4.

> gradually depreciating in value, means a gradual decline in the purchasing power of the poorer strata of the population; and real wages are all the more threatened by the fact that the prices of those goods that cover the most important food needs are showing a more marked tendency to higher rates. We should also not forget that it is precisely in this inflationary phase that the fulfilment of fiscal obligations becomes even more burdensome, since the aforementioned obligation to give "good" coins (i.e., "strong" currencies, not eroded, with just title and weight) to the Treasury forces taxpayers to exchange the "low-alloy" pieces they hold at the market rate. The losses are all the greater for taxpayers because circumstances favour hoarding and trading in *"monete di grida"* (i.e., "good" currencies) by speculators who arrive at demanding a premium at a rate between 10 and 20 percent of current prices. Besides the notes of contemporary observers, this is also confirmed by the same accounting records: In the cash books of the Fabbrica del Duomo, the Ospedale Maggiore, and the other Milanese charities, during these twenty years and especially between 1746 and 1750, we frequently come across records that refer to repayments to the cashier for damages incurred in the purchase of *"monete di grida."*][364]

The workers' small money was thus not accepted for the payment of taxes, so they had to exchange it for good money, i.e. silver or gold coins, which carried a huge premium (i.e. 10 to 20 percent) at the money changers. However, this is not the only cause for the formation of the premium, because the merchants in retail trade exchanged goods for low money on the one hand, and on the other hand they bought wholesale with noble money, so that the abundance of low money in circulation was a pressure factor for the scarce noble money. This abundance of low money was also caused by the circulation of foreign low money, which also exerted pressure on the noble money, even for speculative purposes where there were arbitrage opportunities.[365] On the other hand, the burden of this system lay almost entirely on the shoulders of the workers, as Francesco Carpani, a member of the *Consiglio dell'economia*, wrote in the early 1770s with regard to the use of foreign low money to pay wages, thus confirming De Maddalena's analysis for the later period as well:

> *Si fa nella Piazza del Duomo di Milano e in altre parti della città impunemente il più scandaloso contratto che non è permesso né dalle leggi ecclesiastiche che civili, dalli cambiavalute. Il povero salariato mercenario quando è obbligato a pagare alle Casse Regie e pubbliche, non avendo presentemente che monete forestiere, parpajole di Genova, blozeri svizzeri, marchetti veneti, cambia 24 soldi di queste con 20 soldi di moneta milanese. | Da questo scandaloso contratto derivano tre gravi pregiudizi al povero giornaliero: primo non è mai sicuro dell'intrinseco valore della moneta, colla quale è pagato; secondo non è mai sicuro del peso del soldo di pane, poiché il prestinaro nel convenire la Meta col Vicario di Provvisione deduce la perdita della*

[364] De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860,* op. cit., p. 125 (editor's translation).

[365] See also the interpretation of Rostagno M. V., "The Ancien Régime and the classics", op. cit., who considers the agio on noble money as protection against the displacement of precious metal by the use of low money.

> *moneta, onde alle volte non si danno che once tre, quando il* calmiere del soldo del pane *comincia dalle once otto; terzo, dovendo comprare sale, che si vende a once 28 la libra* [i.e., *lira*, ed.] *alle gabelle, queste lo rivendevano in passato a once 24 e presentemente a once ventidue e anche venti.*
>
> [In the *Piazza del Duomo* in Milan, and in other parts of the city, the most scandalous contracts are made with impunity by the money changers, which are not permitted by either ecclesiastical or civil law. The poor mercenary, who has to pay to the royal and public coffers because he has no money except foreign coins, *parpajole* from Genoa, Swiss *blozeri*, Venetian *marchetti*, exchanges 24 *soldi* of these coins for 20 *soldi* of Milanese money. | This scandalous contract has three serious disadvantages for the poor day labourer: first, he is never sure of the intrinsic value of the currency with which he is paid; second, he is never sure of the weight of the *soldo di pane* [i.e., the amount of bread that can be bought with one shilling, ed.], because the baker deducts the loss of the money when he agrees the ceiling with the *Vicario di Provvisione* [i.e., the official in charge of supplies in Milan, ed.], which is why he sometimes gives away only three ounces when the ceiling price of the *soldo di pane* [i.e., the official one, ed.] starts at eight ounces; and third, since he has to buy salt, which sells at 28 ounces per *lira* to the *gabelle* [i.e., salt retailers, ed.] , they have sold it in the past at 24 ounces and at present at twenty-two ounces and even at twenty ounces.][366]

From the above (i.e. the examples of the baker and the *gabelle*, but also the reimbursement of the treasurer for the "damage" in providing the *monete di grida* in De Maddalena's narrative, but the phenomenon is also known to the government at least since 1749, if not earlier[367]) it is clear that the specific mechanism linking monetary disorder to inflation seems to be that the premium, paid for the exchange of low money into the *moneta di grida* is a price that is passed through the supply chain, so that, as in any inflationary mechanism, the final consumer and the worker is the one who cannot cover the higher costs until he manages to obtain a higher wage.[368] So the premium on the *moneta di grida* seems to be a guide for the market to realign prices, also because the rents were linked to the *moneta di grida*.[369] This would explain why eroded and copper money, but generally all the token money, can cause an increase in the price level. Indeed, the same thing happened in England before the Great Recoinage, when clipped money was seen as explaining the agio on full-bodied coins on the one hand and higher prices on the other. In Girolamo Costantini's report, which we saw in the previous chapter, the same phenomenon can also be observed in Venice. On this point, we will see that the interpretation of the authors of

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[366] Carpani F., "Discorso sopra le monete di Milano", in Vianello C. A., *La riforma monetaria in Lombardia nella seconda metà del '700*, Università L. Bocconi, Milano, 1939, p. 221 (editor's translation).

[367] See the *grida* of 1749 below.

[368] It is interesting to note that in a regime with administered prices, the inflationary process is due to the reduction of the quantity offered at a fixed price, e.g. the *soldo* for bread was reduced from eight ounces to three and the *lira* for salt from 28 ounces to even 21.

[369] See De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860,* op. cit.

the Milanese school is unanimous. We can recall here, for example, Carli's assertion that the abolition of the premium on the *zecchino* would lead to a "reduction of any kind proportional to the proper price of the *zecchino*," and he reports that "in Pavia, every time the renewal of the *grida* took place, the prices of the genera were lowered and the weight of the bread increased, and the same was assured by the Vicar of Providence in his consultation with the government, which may also take place in Milan [after the monetary reform]."[370]

The devaluation of imaginary money, as we saw in the last chapter, was analysed in detail by Carli and Neri. They attributed it, in principle, to the coinage of low money, whose face value was higher than its intrinsic value, but in practice Neri then focused on the excessive quantity. This applies, on the one hand, to copper money such as the *quattrini* and, on the other, to eroded money such as the *parpaiole*. In particular, Carli, referring to Milan, traces the origin of the problem to 1603, when the *quattrino* was first minted in Milan. At the beginning, the stroke was 91 per one mark of copper, and then more and more, until in modern times it was 150 and even more.[371] This trend was largely due to the mint subcontracting to coinage companies that issued more *quattrini* than the proper metal ratio would have allowed, and in larger quantities than necessary, as noted by State Chancellor Kaunitz in 1776:

> *Se la differenza fra le monete di grida e d'abuso non è stata mai fissa, ma arbitraria e sempre progressiva, ne fu però in ogni tempo attribuita l'origine principalmente a due motivi. |I. Alla troppa mancanza di valore intrinseco nella moneta di rame nazionale, battuta però sotto l'autorità dei passati governi, i quali gelosi da una parte di conservare nel filippo di Milano lo stesso valor intrinseco, non ostante le alterazioni seguite nell'argento; e non volendo dall'altra che la regia camera supplisse al di più dell'intrinseco contenuto nei filippi, permettevano per una specie di compenso agli appaltatori della zecca di monetare altrettanto rame: permissione, che oltre al dare al pubblico una moneta di qualità assai cattiva e debole, ne rendeva il quantitativo eccedente di molto il bisogno della nazione nelle piccole contrattazioni.*
>
> [Although the difference between the *"moneta di grida"* and the abusive one was never fixed, but arbitrary and always progressive, it was attributed at all times mainly to two reasons. | I. To the too great lack of intrinsic value in the national copper coinage, which, however, was struck under the authority of past governments, who, on the one hand, were jealous of maintaining the same intrinsic value in the *filippo* of Milan, despite the changes that followed in the silver; and, on

[370] *"Ribasso di tutti i generi proporzionalmente al prezzo giusto dello zecchino…in Pavia, ogni qualvolta accadde rinnovazione di Grida, si ribassarono i prezzi de' generi e si crebbe il pane di peso, e questa medesima cosa ha pure assicurato il Vicario di provvisione con sua consulta al Governo che possa succedere anche in Milano*," in Carli G.R., "Piano ragionato per la rifusione della moneta nello stato di Milano" (1766), in Vianello C. A., *La riforma monetaria in Lombardia nella seconda metà del '700,* 1939, Università L. Bocconi, Milano, 1939, p. 85.

[371] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione VI, tomo II, op. cit., p. 369.

> the other hand, not wanting the royal chamber to compensate more of the intrinsic content in the *filippi*, they allowed the contractors of the mint a kind of compensation to mint as much copper: this permission not only resulted in giving the public a very poor and weak currency, but also in the quantity far exceeding the needs of the nation in small negotiations.][372]

It can be said that this practice, which led to the privatisation of seigniorage, was partly sanctioned by the government and partly due to the cunning of the mint masters when the government turned a blind eye, as can be seen from Carli's account of a contract with the mint master Giuseppe Triepi in 1710.[373] The government set a fee to be paid to the mint master for each silver and copper mark minted. However, only the fee for the copper was paid. On the other hand, the mint minted more than the fixed 105 *quattrini* per mark (i.e. 140 according to Carli) in order to compensate for the unpaid fee for the silver coin (and probably to get even more), especially as there was a large deficit in the public budget at the time, for which the government tried by all means to curb expenditure.[374]

So the first reason why the low money lost value was that the government allowed the mint to issue more *quattrini* per mark, debasing the coin and increasing the quantity of coins. The reduction in the metal content and the increase in the quantity of coins are thus related, which explains why the authors of the time consider both phenomena to be the cause of the devaluation. The second reason Kaunitz gives for the monetary disorder is the influx of low money from abroad (which again is a problem of both the quality of the coins and the quantity), which is already referred to in the *grida* of August 15, 1749, which took this money out of circulation. The decree explicitly acknowledged that it would have harmed the day labourers, who were the greater holders of this money, while the merchants could only compensate for this by accepting this type of money at the higher prices of goods, and laid down special conditions for the release of the forbidden money only for the former, who could exchange it at the current face value at state expense, while the latter were excluded from this operation:

> *Riflettendo però Noi, che li poveri operarj soliti vivere alla giornata colle personali loro fatiche sono quelli, che probabilmente ritengono la maggiore quantità delle più basse Monete Erose, e di Rame delle Zecche circonvicine, dimodoché il danno del bando principalmente ricadrebbe sopra quella parte più minuta del Popolo, e più innocente per essersi trovata in necessità di riceverle in buona fede in prezzo delle loro opere, e picciolo Commercio per provvedere alle loro indigenze nel lungo tratto , per cui è durato per le circostanze della Guerra l'abuso [...] sarà permesso a detti operarj, e basso popolo* [the exchange of the banned coins, ed.] *al corso che finora hanno avuto, a spese, e per conto della Regia camera, con altre Specie Erose*

[372] Kaunitz W. A., "Relazione conclusiva a sua maestà (11 ottobre 1776)", in Custodi P., *Scrittori classici italiani di economia politica* (SCIEP), Milano: nella stamperia e fonderia di G.G. De Stefanis a S. Zeno, parte moderna, vol. 14, 1804, p. 136 (editor's translation).
[373] See Appendix 3.
[374] See Capra C., *La Lombardia austriaca nell'età delle riforme*, UTET, 1987, pp.16-19.

Provinciali approvate [...] | *Si dichiara però essere eccettuato da questa facilità ogni altro Ordine di Persone, e specialmente li Mercanti soliti negoziare tanto all'ingrosso, che al minuto in qualunque genere di Traffico, poiché atteso la cognizione, che tengono delle Monete, giustamente presumersi, che siensi indennizzati del minor valore delle Specie sul prezzo della Mercanzia* [...]

[However, considering that the poor workers who make a living from daily personal labour probably are the ones who are likely to possess the greatest quantity of the lowest quality eroded coins and copper coins from the surrounding mints, the ban would primarily hurt this smaller and more innocent part of the people, because they had to accept them in good faith as a price for their works and the leaf trade, in order to cover their misery caused by the abuses of war, [. ..] said workers and common people could exchange [the banned coins, ed.] above the current rate at the expense and on behalf of the royal chamber with other permitted eroded species of the province [...] |It is declared, however, that all other classes of persons are exempt from this possibility, especially merchants who deal in any kind of trade, both wholesale and retail, on account of the knowledge they have of coins, it is assumed that they compensate the lesser value of the species on the price of the goods [...][375]

However, Kaunitz continued, this cause of the abusive price of the coins is "the frequent introduction of foreign copper coins and eroded coins into the state, interrupted by the publication of various prohibitory edicts, but later reintroduced because of non-compliance with these edicts".[376] In fact, after the decree of 1749, there was another in 1754, and then a stricter one in 1762, but the strictness of the law could do nothing against the forces of the market, both as regards the price of coins and the use of foreign money, both eroded and copper.

At this point, we can better define the problem of the monetary disorder. We have seen in the previous chapter that it can be theoretically defined as the inconsistency of the ratio between the face value and the metal content of different coins of either the same metal or different metals. In particular, in the latter case, the problem is a misalignment with the bimetallic ratio in the market. A particular problem, or a problem within the problem, is low money, which on the one hand is increasingly debased and on the other hand circulates in excessive quantities, especially due to the circulation of foreign low money within the borders, which seems to be the main cause of devaluation both in Milan and in Venice. On the other hand, noble money is scarce, and the cause is seen in arbitrage, which displaces full-bodied silver and gold coins. However, as we have seen, the state of Milan was quite continuously in trade deficit, so that noble money migrated to pay the deficit, as Verri warns

[375] Quadrio Curzio A., Scazzieri R., ed., *Sul disordine delle monete a Milano nel Settecento*, Electa, 1986, p. 145; ASMI, Finanze p.a., c. 820 (editor's translation).

[376] *"Introduzione che quasi sempre si è fatta di monete estere di rame ed erose nello stato, la quale fu bensì interrotta colla pubblicazione di vari editti proibitivi, ma successivamente rimessa per la inosservanza dei medesimi"* in Kaunitz W. A., "Relazione conclusiva a sua maestà (11 ottobre 1776)", op. cit., p. 137.

from the 1760s onwards. Nonetheless, arbitrage played a role in the displacement of noble money, as Carli analysed. However, the formation of the agio on noble money when exchanged for low money acts as a "protection" of the same noble money and prevents it from migrating completely. The agio, however, which is added to retail prices, causes inflation and attacks workers' real wages from two sides, firstly because workers are paid in low money, often foreign, but need *moneta di grida* to pay taxes and they have to bear the cost of the agio at the money changers, and secondly because the prices of food and other basic necessities rise. This is obviously a problem of social sustainability in a state where a large part of the population are workers, including temporary workers or even vagabonds. For the latter classes of the population in particular, the problem is not so much to obtain noble money, but simply to obtain the *moneta di grida* to pay the administered prices of goods sold under the state monopoly regime, such as the *lira*, the *mezza lira* or the *parpaiola*, as Carli testifies in 1778 with the example of salt and explains why it is often not available at the administered price:

> *La ragione è perché il prezzo del sale è a moneta di grida, e i quattrini non sono ammessi per moneta di grida, ma di moneta di grida, oltre alle lire, e mezze lire, che non sono molte, non ci sono che pochissime parpaiole, come si disse, e perciò con queste è impossibile di supplire ai bisogni della Nazione. L'unico mezzo è dunque quello di venire a contratto, e però invece di quattrini 48* [i.e., official price of one pound of salt in town, ed.] *o 42* [i.e., official price of one pound of salt in the country, ed.]*, converrà che si diano quattrini da 54 a 56, e in campagna 48 a 49 e così si otterrà la libbra di sale. Noi dunque abbiamo la lira di grida e non abbiamo il soldo di grida, e per legge si lascia libero, e si autorizza il contratto, che si fa nel pagamento di tributi con gli Esattori, alle gabelle* [i.e., where salt is sold, ed.]*, con i Postari* [i.e., small stores that also collect taxes, ed.] *ecc. Per formare con i quattrini o con la moneta erosa forastiera questo soldo, questa vigesima parte della lira, tanto necessaria alla piccola contrattazione, che manca.*
>
> [The reason is that the price of salt is fixed in the *moneta di grida* and the *quattrini* are not admitted as *moneta di grida*. But as for the *moneta di grida*, apart from the *lire* and the *mezze lire*, which are not very numerous, there are very few *parpaiole*, as we have already said, and therefore it is impossible to cover the people's needs with them. So the only remedy is to negotiate, but instead of *quattrini* 48 [i.e. the official price for a pound in the city, ed.] o 42 [i.e. the official price for a pound in the countryside, ed.], it would mean giving *quattrini* from 54 to 56, and in the countryside 48 to 49 to get the pound of salt. So we have the *lire di grida* and we do not have the *soldi di grida*, and by law we leave free, and we approve the contract you make when you give levies to the tax collectors, the *gabelle* [ie, where salt is sold, ed.], the *postari* [i.e., small stores that also collect taxes, ed.], etc., with

quattrini or with the eroded foreign coin to make this *soldo*, this twentieth part of the *lira*, so necessary for small transactions, that it is missing.][377]

Carli thus proposes a *"soldo di grida"* of 5 *quattrini* (i.e. instead of 4, because of the devaluation) to break this "fatal barrier of collectors, cashiers, postari and money changers who, under a thousand incessant harassments and annoyances, negotiate those coins with the same genuine mint stamp and have always left the people in the dark about the fair value of those coins that they held in their hands with their own sweat and substance to pay taxes or buy the species of the state monopoly".[378] Driven by the frustration of the still unimplemented reform, Carli comes to legitimise the abusive rate of money exchange, renaming it "*corso corrente*" [current rate], and he refers to the examples of Venice and Genoa where the *corso corrente* is legal. However, he opposes the activity of the money changers and demands that the public authority should fix the rates of the *corso corrente* in relation to the *corso di grida*:

Anche in Venezia il ducato d'argento in corrente vale L. 8 e in camera L. 6.4 e lo zecchino in corrente L. 22 e in camera L. 17. V'è pure altro valore che si chiama di banco, come a Genova e come altrove.

[Also in Venice the silver *ducato* is worth L. 8 as *corrente* and L. 6.4 in *camera* and the *zecchino* L. 22 as *corrente* and L. 17 in *camera*. There are also other values called *di banco*, as in Genoa and elsewhere.][379]

In fact, Carli does not delves into the *lira di banco* system, he simply maintains that in Milan there is a *corso di grida*, based on the correct proportions between metals, and a *corso corrente* or *abusivo*, devalued for the debasement of the *quattrino*, which is the cause of monetary disorder and must be regulated:

Noi pure abbiamo almeno due valori uno detto di grida e l'altro detto corrente o abusivo: il primo è definito bene, nè io ardirei proporre alcuna alterazione di esso, perché L. 14.10 nazionali formano giustamente con lo zecchino la proporzione che deve essere: ma il secondo manca di definizione giusta, e legale, e perciò sembra indispensabile che si faccia.

[also we have at least two values, one *di grida* and one that is called current or abusive: the first is well defined, nor would I dare to propose a change, because 14.10 national *lire* rightly form with the *zecchino* the relationship that must be: but

[377] Carli G. R., "Considerazioni preventive alla grida del 1778", in Vianello C. A., *La riforma monetaria in Lombardia nella seconda metà del '700,* op. cit., p. 167 (editor's translation).

[378] *"Fatale barriera di esattori, cassieri, postari e cambiavalute, che ponendo a contratto le monete col medesimo reale impronto di zecca, in mezzo a mille incessanti vessazioni e molestie, resero sempre il popolo nell'incertezza del giusto valore di quelle monete che a prezzo de' propri sudori, e sostanze, si ritrovava ad avere nelle mani, per pagare i tributi, o per acquistare i generi di privativa"* in Carli G. R., "Considerazioni preventive alla grida del 1778", op. cit. p. 170 (editor's translation).

[379] Carli G. R., "Considerazioni preventive alla grida del 1778", in Vianello C. A., *La riforma monetaria in Lombardia*, 1939, p. 168 (editor's translation).

> the second lacks a fair definition , and legal, and therefore it seems essential that this be done.][380]

Carli, as we have said, wants to fix the *corso corrente* by decreeing that one *soldo "di grida"* equals 5 *quattrini* (i.e. instead of 4) and proposes to confiscate the copper coins that the government receives as tax payments in order to reduce the amount in circulation. At the same time, he proposed to reduce all *"mete"* by 25 per cent. Carli's aim is to limit the abusive rate to 5 *quattrini* per *soldo* and to try to maintain this ceiling by partially withdrawing copper. He also wants to reduce inflation by lowering administered prices.

A final question to be examined is with what kind of money the labourers were paid and at what rate, the legal or the abusive. In fact, says Carli in 1766:

> *Imperciocché esso popolo riceve con una mano per prezzo dei suoi sudori e delle sue fatiche lo zecchino in ragione di lir. 15.17 ½ ed anche lir. 16, e dall'altra per pagare le tasse, le gabelle, gli aggravi, lo deve dare in ragione di lir. 14.10; per conseguenza vi perde prima nel riceverlo e poi nel darlo. | I giornalieri, i lavoratori, i servienti guadagnando anni sono in ragione di soldi 20 il giorno (allorché lo zecchino correva per lir. 14.10), in capo al mese erano pagati con zecchini 2 lir. 1; ma correndo ora lo zecchino suddetto per lir. 16 ed a tal prezzo essendo obbligati a riceverlo, non hanno di guadagno in un mese che lir. 30, cioè lir. 2 meno di due zecchini; cosicché la loro giornata non è più di soldi 20, ma di soldi 18.1.6.*
>
> [Therefore the people take the zecchino with one hand for the price of their sweat and hard work for lire 15.17 ½ and also 16, and on the other hand they have to give it for 14.10 *lire* to pay the taxes and duties; so they lose first in receiving and then in giving. | The day labourers, the workers, the servants, who for years earned 20 *soldi* a day (when the *zecchino* ran for 14.10 *lire*), received, considering the month, 2 *zecchini* and 1 *lira*; but now the above-mentioned *zecchino* runs for 16 *lire*, and since they have to receive it at this price, they do not receive more than 30 *lire* in a month, that is, 2 less than two *zecchini*, so that their daily wage is no longer 20 *soldi*, but 18.1.6][381]

Thus, were workers paid daily or monthly and, more importantly, in what form? We have seen that most of the workers were day labourers, but they were paid monthly according to the actual days worked. However, there were also casual workers who were paid daily. Anyway, it seems that they were generally paid with low money, as we have already seen. Kaunitz in his report to the sovereign confirms when he says that "the tribute to Your Majesty continued to be paid in *moneta di grida*, but these became scarcer day by day, the agio became dramatic: and the peasants, such a useful class of population, and other

[380] Carli G. R., "Considerazioni preventive alla grida del 1778", p. 169 (editor's translation).
[381] Carli G. R., "Osservazioni preventive al piano intorno alle monete di Milano", in Custodi, SCIEP, parte moderna, vol. 14, 1804 (1766), p. 36 (editor's translation).

subjects most in need, were forced to submit to the caprice of the most sordid usurers".[382] Carli, on the other hand, referring to civil servants, reports that they were paid monthly, indicating another type of problem, although of the same nature, namely that they were paid in *zecchini*, but at the higher abusive price and that they had to pay taxes at the legal price, which according to his calculation means 10 percent loss. He adds that the increase in the price level is causing further damage to these people and estimates the total drop at 20 percent. However, Carli corrected this view, because in the same year he writes:

> *L'abuso del valore delle monete porta un considerabile eccesso che non torna in profitto né della Camera né della Nazione imperciocché paga la Nazione i carichi in moneta di grida, cioè in ragione di L. 14 s. 10 per zecchino e la Camera paga alla misura medesima. Ma questa moneta di grida passata in mano degli stipendiati e dei militari cresce di prezzo; cosicché lire 14 s. 10 divengono L. 15 s. 15 ed anche più; allorché S. M. ebbe la clemenza di assegnare gli stipendi in lire, non è supponibile che pensasse di concedere più di soldi venti per lira, sicché tutto il di più divien un abuso.*
>
> [The abuse of the value of the coins results in a considerable surplus, which benefits neither the chamber nor the nation, because the nation pays the burdens in *moneta di grida*, i.e., at the rate of L. 14 s. 10 per coin, and the chamber pays to the same extent. But this *moneta di grida* has passed into the hands of the employees and the military increases in price, so that from 14 s. 10 *lire* becomes 15 s. 15 *lire* and still more become; when Your Majesty had the grace to grant salaries in *lire*, he is said not to have thought of granting more than twenty *soldi* per *lira*, so that it becomes all the more an abuse.][383]

Carli thus asserts here that in the case of those who receive a stipend, i.e. civil servants, both taxes and wages are paid according to the tariff and even suggests:

> *Il primo de' ripieghi adunque sarebbe quello di comandare che la Camera seguitasse a ricevere la moneta al valore di grida, e che pagasse gli stipendiati a valore corrente abusivo, tenendosi in cassa a parte la somma che produrrà la differenza di questi valori [...]*
>
> [The first remedy would be to order that the chamber continue to receive the currency at the value of the *grida* and that the employees be paid at the current value abusive, leaving the sum resulting from the difference of these values in the Treasury [...][384]

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[382] *"... i tributi a V. M. si continuavano a pagare in monete di grida, ma queste diventando di giorno in giorno più scarse, l'aggio cresceva a dismisura: e i contadini, classe di gente così utile, ed altri sudditi i più bisognosi erano costretti ad abbandonarsi alla discrezione dei più sordidi usurai"* in Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 152 (editor's translation).

[383] Carli G. R., "Piano ragionato per la refusione" (1766), in Vianello C. A., *La riforma monetaria in Lombardia nella seconda metà del '700,* p. 89 (editor's translation).

[384] Carli G. R., "Piano ragionato per la refusione," p. 89 (editor's translation).

Precisely what he preemptively reports in the *Osservazioni* becomes here a strategy for obtaining seigniorage, which he proposes to use for recoinage.

To summarise, in the cases mentioned by Carli, e.g. public employees such as the military, civil servants, officers (i.e. those paid by the *Camera*), wages are paid according to the tariff, while in other cases this is not certain, and this uncertainty also applies to the payment of taxes, which are generally paid according to the tariff, but possibly also according to the current money rate. This chaotic situation was the source of profits for some and losses for others, and Carli had the *Camera* on the latter. As for the money with which wages were paid, we can say that it depended on the type of work, whether in low or noble money, i.e. the rule is payment in low money for the majority of labour, while Carli refers mainly to public employees and perhaps some permanent private employees. However, Kaunitz again gives us a clarification when he says, on the one hand, that "various subordinates of finance, such as the *presentini*, the guards, etc., are paid in abusive currency" and, on the other, when he refers to a particular case in which some "*regi officiali*" [royal officials] were paid in abusive money "although their money was allotted in *moneta di grida*", showing that even among public employees there was differentiation according to the level of work.[385]

1.3 The financial structure

In the first half of the century, the state of Milan had a constant financial deficit due to military expenditure during the wars that ravaged its territory. However, the financial problem of war financing was a feature of Spanish rule from the 16th century onwards. The solution was found in public debt, resorting first to private bankers, then to a public bank, the *Banco S. Ambrogio*, founded in 1593 by Antonio Zerbi.[386] The idea of Zerbi, who, like John Law, had a financial background acquired through visits to various cities such as Barcelona, Valencia, Naples, Palermo, Venice and Genoa and the financial institutions there, was to found a bank modelled on the *Banco S. Giorgio* in Genoa. The bank was to consist of two parts, a *cartulario*, i.e. a deposit system that would settle the giro via a document like a check, and a credit system vis-à-vis the city of Milan. The latter would issue *luoghi*, i.e. securities committing to a 3-month loan, and *multiplici*, i.e. securities committing to a 5-year loan with compound interest (the securities were in fact offered as company shares to circumvent the usury prohibition and they implied, at least theoretically, a participation in the company's losses). In fact, only the *cartulario* was initially set up because the private bankers resisted the other part of the bank. However, the *cartulario*, which was supposed to facilitate credit transactions between merchants, did not catch on due to the particular

[385] See Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., pp. 153-154 (editor's translation).

[386] See Cova A., "Banchieri e banche nell'Europa moderna e contemporanea: Giovanni Antonio Zerbi e John Law", in Ciclo di conferenze e seminari *L'Uomo e il denaro*, Associazione per lo Sviluppo degli Studi di Banca e Borsa, Università Cattolica del Sacro Cuore , Milano 9 febbraio 2009, quaderno n. 34; id., *Banco di S. Ambrogio nell'economia milanese dei secoli XVII e XVIII*, Giuffrè, 1972.

structure of economic transactions in Milan, i.e. credit transactions were complementary to buying and selling, so they were regulated by the merchants through bills of exchange, so that they did not need a financial intermediary. According to Cova, "this practice was of such solidity that it lasted at least until the nineteenth century and explains, among other things, the delayed formation of a minimally coherent organisation of ordinary credit banks even in an economy like Lombardy, which in many respects was on a par with the other major regional economies in Europe."[387]

In the charter of 1601, the *Banco S. Ambrogio* also defined the lending part of the bank, which issued the *luoghi* and the *multiplici*, and determined the rules for the board of directors, which was made up of ten *Governatori*, most of whom were institutional representatives of the Milanese government. The government eventually was attracted by the possibility of granting loans at a lower interest rate and receiving a 50% share of the bank's profits. On the other hand, it guaranteed the creditors by pledging public property. However, during the wars that devastated the country, the *Banco S. Ambrogio* fell into over-indebtedness, which would have made it impossible for it to continue lending to the government. The interest on the *Banco*'s loans was reduced to 2 percent and the relative capitals were reduced to 60 percent.[388] However, under pressure from the Milanese patricians who had a stake in the capital of the *Banco S. Ambrogio*, the government allocated a large part of the tax revenues to the bank to cover the interest payments. In order to meet the government's financial needs, other banks were founded that dealt exclusively with raising funds for the government by issuing *luoghi*; they were called *monti*, while the *banchi* functioned as private credit institutions. The most important of these were the *Monte S. Carlo* (1637), the *Monte S. Francesco* (1648) and the *Monte S. Teresa* (1753), the latter of which was a pillar of Habsburg policy in Milan, as we shall see in the next section.[389]

2. The reforms of Maria Theresa of Austria and the monetary plans of Neri

After the death of Charles VI in 1740, Maria Theresa became Queen of Austria in accordance with the Pragmatic Sanction, but the aggression of Frederick II of Hohenzollern triggered the

[387] *"Questa prassi era di una tale solidità da durare nel tempo almeno sino all'Ottocento e spiega, tra l'altro, il ritardato formarsi di un'organizzazione minimamente consistente di banche di credito ordinario anche nell'ambito di un'economia, come quella lombarda, per molti aspetti al livello delle altre grandi aree economiche regionali esistenti in Europa"* in Cova A., "Banchieri e banche nell'Europa moderna e contemporanea: Giovanni Antonio Zerbi e John Law", op. cit., pp. 27-28 (editor's translation).

[388] See Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, Banca Commerciale Italiana, Milano 1968, p. 155.

[389] See Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., pp. 149 - 213.

War of the Austrian Succession, which lasted until the Peace of Aquisgrana in 1748, which recognised the Pragmatic Sanction and the election of Francesco Lorena, Maria Theresa's husband, as Emperor. As far as Milan was concerned, Maria Theresa implemented a reform plan based on the plans of Gianluca Pallavicini, who had been plenipotentiary in Milan since 1745, while the governor was von Harrach and the Grand Chancellor Beltrame Cristiani. in 1750, Pallavicini himself became governor with the support of the Grand Chancellor Cristiani. Although the two personalities competed for the attention of the court, they worked together on the reforms. Pallavicini was particularly successful, first as plenipotentiary in the reorganisation of the bureaucracy in Milan, then as governor in the establishment of the *Ferma generale* and *Monte S. Teresa*, while he was unable to push through the reorganisation of the census, which was only achieved a few years after the end of his term of office in 1753.[390] As for Cristiani, he established a relationship with Carlo Emanuele III's minister Bogino in Turin, as the Savoys and Austria were allies during the war (and were also invaded by Spain), which enabled them to stay in contact and develop a friendly relationship that was also important in politics. The two maintained an intense correspondence, in which Cristiani informed Bogino above all about the works published in Milan, such as the monetary works of Pompeo Neri and Argelati. In fact, at this time there were negotiations between Milan and Turin on questions of border regulation, the administration of security and justice in the peripheral areas and monetary issues.[391] As we have seen, Pompeo Neri was a very important figure in dealing with the monetary issue, as he was the president of the conference between Milan and Turin that was responsible for the monetary agreement. He also worked on the reform of the land register, which came into force in 1757. He then returned to Tuscany, where he continued to work in the government of the Grand Duchy.

The *Ferma generale* was founded in 1750 by an agreement with a partnership led by the merchant and banker Antonio Greppi. The aim of this institution was to centralise the collection of taxes, which in previous centuries had been distributed among various centres of interest, depriving the government of any autonomy in the financial sector. The contract was renewed twice until Maria Theresa decided in 1770 that it was time to administer taxes directly. On the other hand, *Monte S. Teresa* was founded in 1753 with the aim of recovering tax revenues from the other *monti* and other creditors. The *Monte S. Theresa* thus had the task of both managing the public debt at state expense, thanks to an annual inflow of 1,442,772 L. from tax revenues, especially on wine and salt, granted by the *Ferma generale*, and buying back the debt at a discounted nominal value (in fact, the reduction of the interest rate on the debt even to 2 percent practised in the past led to a reduction of the nominal value to 60 percent or even less). However, the latter operation began in 1764 thanks to an annual inflow of L. 607,541 from the government as a repayment fund ("*coda di redenzione*"). Initially, *Monte S. Teresa* negotiated with the creditors of *Monte S. Carlo*

[390] See Capra C., *La Lombardia austriaca nell'età delle riforme*, op. cit.
[391] See Ricuperati G., *Lo stato sabaudo nel settecento*, UTET, 2001.

and the *"assentisti di assegno"*, i.e. the creditors for 11.35 million *lire*, who accepted a discount of 40 percent, so that this amount was covered until the end of 1769. *Monte S. Teresa* was then allowed to accept deposits at a rate of 3.5 percent. In 1770 *Monte Civico* was taken over by *Monte S. Teresa* and most creditors preferred to extend their loans to *Monte S. Teresa* rather than receive repayment. *Monte S. Teresa* repaid the debts of *Monte S. Francesco* for 2.7 million lire. As long as it subrogated the loans to the *Camera* and redeemed the state royalties, which was fully achieved in 1787, it became the government's public bank, where all institutional deposits were held.[392]

The *Monte S. Teresa* system actually follows the model of the *Wiener Stadtbanco*, which was founded in 1706 with the aim of managing and repaying the government debt. As Clemens Jobst says, "the *Stadtbanco* was not a bank in the modern sense, but a special agency administering parts of the public debt. Key purpose was the amortisation of debt and the collection of fresh funds. Other banking businesses were only performed to the extent that they were necessary for fulfilling the role as government financing institution, namely the acceptance of remunerated deposits, their transfer and the issuance of debt. With very few exceptions the bank only granted loans to the central government while even advances on government debt were not permitted. The discounting of bills or the operation of current accounts did not play any role at all."[393] It is therefore clear that the two institutions were similar, with the difference that *Monte S. Teresa* did not lend to the government and that the *Stadtbanco*, although founded as an independent institution under the municipality of Vienna, was an instrument of the government, while *Monte S. Teresa* was able to maintain its independence. Caizzi notes that Vienna suspected that "the *Monte* was now an almost autonomous institution, more concerned with its own affairs and perhaps those of its administrators", who were chosen by the governor of Milan from the various classes of creditors, "than with the financial relief of the state."[394] A similar institution was planned by the government of Vienna in Habsburg Naples - the *Banco di S. Carlo* (1726-1729) - but it was unable to fulfil its mission due to strong opposition from the other banks, which practised a lower interest rate on deposits. Jobst notes that "if the *Banco di S. Carlo* had succeeded in attracting more deposits, it would probably also have started to lend to the government, as the *Stadbanco* did".[395] Looking at the experience of *Monte S. Teresa*, where the administrators managed to protect the bank's capital through "ambiguous accounting reports that cannot be put into words and are wrapped in

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[392] See Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., pp. 157 - 180.

[393] Jobst C., "The institutional Foundations of Successful Public Borrowing - Models of Public Banks in Habsburg Austria and Habsburg Naples" in Costabile L., Neal L. (eds.), *Financial Innovation and Resilience . A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, Palgrave Studies in the History of Finance, Palgrave-Macmillan, pp. 243-268, 2018.

[394] *"... il Monte fosse ormai un'istituzione quasi autonoma, attenta più alle cose cose proprie, e forse a quelle dei propri amministratori, che non a portare sollievo finanziario allo stato"* in Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., p. 184 (editor's translation).

[395] Jobst C., "The institutional Foundations of Successful Public Borrowing - Models of Public Banks in Habsburg Austria and Habsburg Naples", op. cit., p. 253.

terminology that is almost jargon,"[396] which made it impossible to control the bank through Vienna, the resistance of local interests prevented the bank from acting as an arm of the government, be it local (i.e. Milanese) or central (i.e. Vienna), at least until it was forced to grant loans to the latter from 1787 until the invasion of the French army.[397]

From the above cases of *Monte S. Teresa* and the *Banco S. Ambrogio*, which was eventually taken over by *Monte S. Teresa*, it is clear that the financial system in Milan differed from that in Venice as well as from that in Genoa, even though the *Banco S. Ambrogio* was modelled on the *Banco S. Giorgio* in Genoa. However, as we have seen, Milanese merchants did not use banks to conduct their business, and bank money did not develop in Milan. This explains why all the authors who dealt with the subject of money had no model of the *lira di banco* to refer to. This even applies to Neri, who, coming from Tuscany where such a system did not develop either, speculated on the *lira di banco* thanks to his reading, but he lacked real experience and the ability to apply the concept to the financial structure. Therefore, as we have seen in the previous chapter, the *lira di banco* is for Neri a theoretical instrument for the realisation of a monetary reform in which imaginary money is definitively tied to precious metal according to Locke's principles. Neri's proposal was developed as part of the monetary negotiations with Turin, and although the bimetallic ratio was ultimately not agreed upon, the layout designed by Neri was adopted by Turin in order to carry out a monetary reform. Although it is not possible to establish a direct link to Neri's work, it is worth noting that Maria Theresa also reached an agreement with Baviera in 1753 to fix the ratio of the thaler to the *gulden* (i.e. the German florin) at 1:2, thus ushering in the era of the conventional thaler, which played an important role as an international currency.[398]

In the following principles stated in the *Osservazioni sul prezzo delle monete*,[399] Neri outlines a monetary union that is to include Turin, but which is to be extended to Parma, Modena and Rome:[400]

1) "Fix the standard of the current *lira di Milano*" and "also for the *lira* of the other member states".[401] The *lira di Milano* must be pegged to silver to form the standard for the monetary agreement. Neri, as we have seen, calculates the current foot of the *lira di Milano* in 70 85/123 *grani* of silver, corresponding to the legal value of the silver *filippo* (he proposes a maximum of 2 percent minting costs, which he subtracts from the rate of the *filippo* to obtain the above value), and adds that the lira of the

396 *"... rapporti contabili ambigui oltre ogni dire e avvolti in una terminologia quasi di gergo"* in Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., p. 184 (editor's translation).
397 Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., pp. 189-192. See also para. 7.
398 See Tschoegl A., *Maria Theresa's Thaler: A Case of International Money*, Eastern Economic Journal, 27, 2001; Vorel P., "The function of the thaler in determining the exchange rates of European currencies in the second half of the 16th century", In *Polish Numismatic News* X (2022), pp. 283-306.
399 See Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., pp. 226-233.
400 See Venturi F., *Settecento riformatore,* op.cit., p. 470. We know that Venice opposed this initiative.
401 *"Fissare il campione della lira corrente di Milano [...] anche per la lira degli altri stati sociali"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* p. 226 (editor's translation).

other member states must also be fixed in relation to silver in order to be tied to the lira di Milano by a fixed exchange rate.[402]

2) "...hold this standard and preserve it from all attacks that could be made on the weight samples".[403] Neri worries here about the possibility that not only the monetary standard could be falsified, but also the unit of weight, i.e. the ounce, could be varied, since at that time uncertainty was widespread in all measurement systems.
3) Record not only the weight but also the fineness of gold and silver coins, as provided for in the current agreement.
4) Admit in the currency area only the currencies authorised in the agreement and to exclude the coins of lesser weight (i.e., *"monete calanti"*) beyond the established exemption limit. Here Neri refers to a selection of currencies (i.e., noble money) authorised for circulation within member states as a whole.
5) "Recall to the mint all the national currency of copper or low alloy, to be re-coined and priced in proportion to the metal it contains, until [...] only so small a quantity remains on the market as to serve with great scarcity to supply daily needs".[404] This is for Neri the most "*doloroso*" [painful] (i.e. most costly), but also the most necessary measure to be taken in Milan. In fact, the practice of allowing the mint to issue low money in order to finance itself over and above the normal coinage fees was the main cause of the monetary disorder. It is therefore clear that the privatisation of seigniorage by the mint, which had been subcontracted out, can no longer be allowed and the money supply must be brought back under control.
6) Keep the low money within the limits of the state in which it is coined. The problem of low money must be an issue for individual states to avoid negative externalities abroad.
7) Allow the approved currencies, without the possibility of being rejected, to pay taxes.
8) Specify that the authorised currencies cannot be rejected at the tariff, but for the payment of bills of exchange where the current custom can be maintained. Allow also, besides silver and gold, low currencies for the payment of large sums at a fixed rate. Neri thus provides for limited convertibility of all types.

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[402] See chap. 2 para. 3.2.

[403] *"[...] tener fisso questo campione preservandolo da tutti gli attacchi che potrebbero col tempo esser dati ai campioni dei pesi"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 227 (editor's translation).

[404] *"Richiamare alla zecca tutta la moneta nazionale di rame o di bassa lega per rifonderla e prezzarla a proporzione del metallo fino che contiene [...], lasciandone solo in commercio una quantità così tenue che serva con penuria grande al giornaliero bisogno"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 228 (editor's translation).

9) As for the gold coins, however, Neri claims that the agio with respect to the tariff must not be considered illegal "in agreement with the parties, to give the freedom that the day-to-day business requires".[405]
10) Establish that when the contract is made in *lire*, the tariff must be intended. That is, contracts can be concluded in real money or in *lire*, but in the latter case the payment must be made at the tariff (in *"moneta di grida"*).
11) In the event that the parties to a contract agree that the payment is below or above the tariff, the notary must correct the contract with the correct amount of *lire*, according to the value of the coins agreed by the parties, i.e. the money price must be in *moneta di grida*.
12) Register prices in the public markets rigorously in *moneta di grida*. Here Neri gives an example to explain the meaning of this provision: taking the wheat, two *zecchini* are paid to the modius, if the party accepts two *zecchini* at 20 *lire* each, if the tariff is 14 *lire* and a half, it is not correct to register the transaction at 40 *lire*, which can increase the price of bread and other supplies, but at 29 *lire*.
13) Set the tax payment in *moneta di grida* to pay both the government and the tax farmers. This is a provision, says Neri, to protect the people from possible speculation of the tax farmers.
14) Forcibly collect money and pay in *moneta di grida* for public funds.
15) Require public and private administrators to register accounts and make payments in *moneta di grida*.

In summary, the *filippo di Milano* is used as a pattern for the silver standard, but each member state can choose a pattern and calculate the value of the unit of account in terms of silver, which is set in the exchange rate with the other member states. The gold currencies that are allowed to circulate in the area are then valued according to the agreed bimetallic ratio, and fluctuations may occur. Low money is managed by the individual states and strictly controlled within the limits as a limited legal tender. All currencies authorised in the region are legal tender, including *monete calanti* that do not exceed a certain weight loss limit. All payments for taxes are made in *moneta di grida* and the same applies to public administration payments. In the private sector, the contracts and other monetary movements are registered in *moneta di grida*, but a gold agio is allowed. So the system is firmly anchored in the metal standard, but at the same time quite flexible as far as the bimetallic ratio is concerned, even if Neri says nothing about a continuing trend in the market for the bimetallic ratio. It would prevent the formation of a double monetary rate by limiting the amount of low money in circulation and by other measures, such as registering

[405] *"...per dare sopra il consenso delle parti quella libertà che il commercio giornalmente può richiedere"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., p. 230 (editor's translation).

transactions in *moneta di grida* to prevent the formation of a different rate and the relative effects on commodity prices.[406]

As already mentioned, Neri pursued a more pragmatic policy in his proposal for monetary reform to Francesco d'Este, Duke of Modena and, after Pallavicini, governor of Milan, after the prospect of a monetary union had faded. Although he started from theoretical principles, he recognised that these were quite revolutionary and tried to find a compromise with traditional politics by proposing solutions that were at least in line with the theoretical principles. The peculiarity of the document, dated February 1, 1754, is that it is a plan for a monetary reform in Milan, which corresponded to the request of Governor Pallavicini in the summer of 1753 (shortly before the end of his term of office), which was now renewed by his successor Francesco d'Este, who in turn wrote down the regulations for a new decree in the same document.[407] The governor agreed to peg the *lira di Milano* to the *filippo* at L. 7.10 and decided to set the bimetallic ratio at 1:14.916, as had been proposed in 1751 by Senator Gabriele Verri on behalf of the Milanese government. However, this ratio was to apply to foreign silver, while the national silver was to benefit from an increase of 1.25 percent as *"prezzo di affezione"*, which led to a corresponding seigniorage, although Neri had advised against the creation of two classes of silver. All large payments were to be made in weight (*"a peso di marco"*), and money worn or clipped (*"monete calanti"*) that exceeded a certain threshold was to be confiscated. As for low money, Neri wants to exclude foreign coins and to limit the amount of the national currency to the quantity "necessary for the needs of small commerce and nothing more".[408] In spite of the financial constraints, Neri strove to rebuild a national coinage by reactivating the mint. For the noble money, he proposed to recoin the *doppie* (i.e. the only gold coins minted in Milan) at the current value of 4 *filippi* (instead of the value of L. 25.5) and also to issue half *doppie*, *doppie* for 8 and 16 *filippi*, then new *filippi*, half *filippi* and new *lire* and double *lire* (i.e. 20 s., 40 s.). As for the low money, he wanted to withdraw the *lire* and half *lire* in silver, as they were not in proportion to the *filippo*, in order to mint new silver *lire* and new alloyed half *lire* (instead of silver half *lire*) and coins of 5 *soldi*, as said, to obtain a seigniorage to cover the cost of minting new *lire* and double *lire*. Since the low money was to be reduced, all the *parpaiole* plus the new half *lire* and the new coins of 5 *soldi* (i.e., the eroded money) should be almost enough to provide the low money needed. Perhaps, Neri suggested, the copper could also be withdrawn and recast in a small part so that some of the cost could be recovered, as he says:

> *Rispetto a questi quattrini il Progetto di ritirarli sarebbe certamente dispendioso per la Zecca, ma secondo alcuni conteggi che ho fatto, questo dispendio si residuerebbe alla pura importanza della manifattura della moneta nuova sopra della quale si potrebbe trovare qualche compenso per ottener facilità [...]*

[406] For a comparison of Neri's plan for a monetary union to the Latin Monetary Union, see Appendix 4.
[407] See Appendix 5 for the details.
[408] *"...necessaria ai bisogni del minuto commercio e niente più"* in Neri P., *Ragionamento del presidente Neri,* op.cit., para. 60 (editor's translation).

> [As for these *quattrini*, the plan to collect them would certainly be expensive for the Mint, but according to some calculations I have made, these expenses would fall short in relation to the sheer importance of producing the new currency, over which you could find some compensation to gain ease [...][409]

Neri wants to remint copper for a fraction of the amount withdrawn, in the hope that this fraction together with the eroded money (i.e. *parpaiole*, half *lire* and 5 *soldi*) would be sufficient for small trade, and with a low metal content to achieve a high seigniorage and cover the costs of reminting. However, the governor did not agree with this solution and only agreed to reaffirm the ban on foreign low money, which was immediately implemented by the decree of the third of February 1754.[410] The governor thus agreed to Neri's plan up to a certain point, i.e. he agreed to the issue of a new gold *doppia* worth 4 *filippi* based on a new bimetallic ratio of 1:14.916, but ultimately postponed the reopening of the mint and the copper withdrawal, so that the currency reform was not carried out, and the work was interrupted all the more in the following years by the Seven Years' War (1756-1763).

3. Monetary reform in Turin

While work on the currency reform was interrupted in Milan, this was not the case in Turin. Based on the work within the conference chaired by Neri, the currency reform was finally carried out in 1755. In this section, on the basis of the thorough work of Giuseppe Felloni[411] and the comments of Massimo Amato,[412] we will analyse the monetary situation in Piedmont and the reform that developed according to the principles established by Neri on the one hand, and the example of the French monetary system on the other. In the second part, we will look at the paper money experiment that took place in Piedmont in connection with the monetary reform and which, as we will see, is interesting from several points of view, above all because it is the first case of a large-scale use of "banknotes" in Italy. Moreover, both the monetary reform and the issue of paper money will influence the debate in Milan, so that we cannot exclude the Savoy experience from our context.

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[409] Neri P., *Ragionamento del presidente Neri,* op.cit., para. 60 (editor's translation).

[410] See Quadrio Curzio A., Scazzieri R., ed., *Sul disordine delle monete a Milano nel Settecento*, op.cit., p. 146; ASMI, Finanze p.a., c. 822.

[411] See Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII*, Banca Commerciale Italiana, Milano, 1968.

[412] See Amato M., *La moneta al bivio*, op.cit.

3.1 Monetary disorder and the new coinage

Piedmont, like Milan, was also affected by the "monetary disorder". In particular, the low money was used to finance the war, as Felloni reports:

> *Che le emissioni di moneta sopravvalutata (specialmente biglione e rame) costituissero anche nel Settecento un rimedio abituale alle deficienze straordinarie del bilancio piemontese, si può facilmente rilevare dalla coincidenza temporale tra i periodi di guerra e quelli in cui tali emissioni furono più cospicue (salvo naturalmente il caso della riforma del 1755): su un complesso di 96,8 milioni di lire in monete piccole emesse dal 1700 al 1803, 64,7 milioni furono coniati in tempo di guerra e soltanto 32,1 milioni in periodo di pace, ma in buona parte subito dopo la cessazione dei conflitti, quando le finanze statali erano ancora in pieno dissesto. | Durante la guerra di successione spagnola [1701 - 1713] le emissioni di monete basse furono contenute nella modesta cifra di 1,1 milioni nominali, su cui l'erario guadagnò circa L. 104.000. Vittorio Amedeo II [1684 - 1730], infatti, era amministratore troppo valente per non approvare i consigli di moderazione della Camera dei Conti circa l'uso di tale espediente.[...] Ma è anche vero che le coniazioni speculative poterono essere limitate grazie ai tributi di guerra, ai prestiti pubblici e soprattutto ai considerevoli sussidi militari delle potenze alleate, che ascesero ad oltre 43 milioni (su un deficit statale di guerra stimato dall'Einaudi in 113 milioni) [...] | Diverso fu l'atteggiamento di Carlo Emanuele III [1730 - 1773] durante le due guerre di successione polacca [1733 - 1738] ed austriaca [1742 - 1748], che nell'insieme dovettero pesare sull'erario piemontese con un onere non inferiore a quello della guerra di successione spagnola [...] | Sebbene i sussidi alleati ammontassero alla rispettabile cifra di 36 milioni ed altri fondi rilevanti fossero reperiti mediante le imposizioni straordinarie, i contributi milanesi e l'indebitamento pubblico, Carlo Emanuele III ricorse alle sofisticazioni monetarie in misura assai più larga del suo predecessore. Dal 1733 al 1738 e dal 1742 al 1748 le emissioni di biglione e di rame ammontarono a 4,1 ed a 4 milioni di lire, che fruttarono al tesoro rispettivamente L. 470.000 e L. 490.000 circa.*

> [That overvalued monetary expenditures (especially billon and copper) were a common means for the extraordinary deficits of the Piedmontese budget, even in the eighteenth century, is easily seen in the coincidence in time between wartime and the periods when such expenditures were most conspicuous (except, of course, in the case of the 1755 reform): Of the 96.8 million lire issued in small coins from 1700 to 1803, 64.7 million were minted in wartime and only 32.1 million in peacetime, though mostly immediately after the end of conflicts, when government finances were still in complete disarray. | During the War of the Spanish Succession [1701 - 1713], the issuance of small coins was limited to the modest number of 1.1 million, from which the treasury earned about L. 104,000. Vittorio Amedeo II [1684 - 1730] was indeed too good an administrator not to have accepted the advice of the Chamber of Accounts for moderation in the use of this means. [...] But it is also true that the speculative coinage could be limited thanks to the war tribute, the public loans and, above all, the considerable military subsidies of the allied powers, which

> increased to more than 43 million (with a state war deficit estimated by Einaudi at 113 million) [...] | Carlo Emanuele III [1730 - 1773] behaved differently during the two wars for the Polish Succession [1733 - 1738] and the Austrian Succession [1742 - 1748], which together burdened the Piedmontese treasury with a load not inferior to that of the War of the Spanish Succession [...] | Although Allied subsidies amounted to the respectable sum of 36 million, and other significant funds were raised through extraordinary levies, Milanese contributions and public debt, Carlo Emanuele III resorted to monetary sophistication to a far greater extent than his predecessor. From 1733 to 1738 and from 1742 to 1748, billion and copper issues amounted to 4.1 and 4 million lire, respectively, bringing the treasury about 470,000 and 490,000 lire.][413]

Thus, the low money (i.e. copper and billion[414]), were overissued to finance the war. But gold and silver coins were also changed in the 18th century, both in intrinsic value and nominal value, either to compensate for the devaluation of the unit of account due to the over-issuance of low money, or to adjust the bimetallic ratio, but also to achieve seigniorage. In 1733, for example, under the pressure of the abusive rate of coins, which developed after the oversupply of low money, all money was enhanced, with the exception of the one-*lira*, two- and three-*lira* coins and small money, as you can see from the table below. Note that the unit of account is the *lira piemontese* of 20 *soldi* and 240 *denari*.[415]

tab./fig. 9 **Piedmontese coinage before the reform of 1755**

Metal	**Coin**	**1717 tariff** (L. s. d.)	**1733 tariff** (L. s. d.)
gold	*10 Doppie* coin	157.10. _	163.15. _
	5 Doppie coin	78.15. _	81.17.6
	2 Doppie coin	31.10._	32.15._
	Doppia	15.15._	16.7.6
	Mezza Doppia	7.17.6	8.3.9

[413] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII*, op. cit., pp. 4 - 6 (editor's translation).
[414] Billion (*biglione*) is the equivalent of eroded money (*moneta erosa*) in Milan for alloyed money.
[415] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII*, op. cit., pp.44- 45. The *lira piemontese* was made obligatory in 1778, since until then the *lira milanese* had also been used in some areas; the latter was fixed by decree at 13.4 *soldi piemontesi.*

silver	*Ducatone*	5.5._	5.10._
	Mezzo Ducatone	2.12.6	2.15._
	Quarto di Ducatone	1.6.3	1.7.6
	Scudo bianco	4.6.8.	4.10._
	Mezzo Scudo	2.3.4	2.5._
	Tripla Lira	3._._	3._._
	Doppia Lira	2._._	2._._
	Testone	1.10._	1.10._
	Lira	1._._	1._._
	Mezza Lira	_,10._	_,10._
Billion	*Donzone*	_.12.6	_.12.6
	s. 7.6 coin	_.7.6	_.7.6
	Quarto di Lira	_.5._	_.5._
	Parpaiola	_.1.8	_.1.8
	Soldo	_.1._	_.1._
	Mezzo Soldo	_._.6	_._.6
copper	*Terzo di Soldo*	_._.4	
	d. 2 coin	_._.2	

Source; Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII*, op. cit., pp.44- 45

In addition, new coins were issued in 1733, such as a new *doppia*, a new *scudo* with subdivisions, a new *doppia* and its half in 1741, a *zecchino* and a multiple in 1743, etc., so that the confusion in the coinage and the resulting need for reform can be seen quite clearly. It is worth noting, however, that such a money enhancement caused the disorder because only the upper series of coins was revalued, while the lower series, which were not enhanced, were not made of copper (i.e. another metal) but of billon and also of silver (the lira and its multiples), so that the correct proportion of silver along the value scale was lost with the enhancement. Moreover, if the maintenance of the effective *lira* served to give the appearance of stability and consistency between the unit of account and the actual coins, it reinforced the "monetary disorder" because of the changes in the rate of the other coins, so the *lira*, which was the most common silver coin until the reform with its multiples and submultiples, was substituted by the new *scudo*.

The monetary disorder, according to Felloni, was mainly triggered by three factors: 1. the excessive multiplication of the small money; 2. the inconsistency of the bimetallic ratio in relation to the market value of gold and silver; 3. the mismatch of the intrinsic value of the different currencies in relation to the same nominal value; 4. the difference between intrinsic value and nominal value for some coins. All these factors repeat the reasons given by Neri, in particular the "proportion between gold and silver and copper" for points 1 - 2 and the "proportion in each metal between the whole and its parts, however divided and partitioned" for points 3 - 4, [416] with the correction of the first principle made by Neri himself to assume the limited quantity of low money instead of the proportional metal content of the latter.

As for the distinction between low money and noble money, Felloni claims that it was possible to distinguish between the full-bodied coins above the *lira*, typical of international and large-scale trade, and the token coins below the *lira*, typical of small-scale trade, but he maintains that in the 18th century an intermediate stage emerges, formed by full-bodied coins such as the same *lira* and the multiples of two and three *lira* and the sub-multiple of the *mezza lira*, which could be held and spent by anyone in the population.[417] It is quite clear that if the low money consists of billon and silver, even of full-bodied coins up to the 3 lira coins, in the absence of copper, the *alzamento* of 1733 could not avoid an imbalance in the scale of values, as far as the nominal value was increased from the *mezzo scudo* upwards, so that a monetary reform was necessary.

Monetary reform, according to the principles stated by Neri, consisted in a general recoinage to rationalise the type of currencies in circulation and, in particular, to reduce low money in circulation, as claimed in the preamble of the 1755 decree:

[416] See para. 3, sub - para. 8

[417] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII*, pp. 233 - 235.

[...] ristabilita fra i Metalli Nobili la proporzione, regolata la corrispondenza tra il valore numerario delle Monete fine nazionali, ragguagliato quello delle estere al loro peso, e bontà, posto ritegno all'abusivo corso delle calanti, e ridotta l'erosa alle esigenze del minuto traffico, a cui è destinata, vengano i nostri popoli a conseguire da un equilibrato Regolamento di Monete beneficio e favore nelle loro negoziazioni, ed a conservarsi le medesime senza valore estrinseco che le alteri, né calo intrinseco che lo pregiudichi.

[....] restored the ratio between the precious metals, regulated the correspondence between the numerical value of the national noble coins, adjusted that of the foreign currencies to their weight and fineness, limited the abusive rate of the diminishing currencies, and reduced the eroded money to the requirements of the minute traffic, for which it was intended, our peoples come to derive from a balanced regulation of currencies all the benefit and favour in their negotiations, and to preserve the same currencies without any external value altering them, nor any internal decay affecting them.][418]

In summary, as Giuseppe Felloni remarks, the purposes of the reform were the following:[419]

1) Clean up the money market, which was characterised by too much low money and disproportions in some tariffs compared to market value;
2) Simplify the national currency hierarchy;
3) Adjust the gold-silver rate to the market;
4) Reorganise the mint, and limit the minting of coins to the will of private operators according to the tariff.

As for points 1 and 2, first of all, the lira (i.e., the imaginary money) was set at g. 0.363 fine gold and g. 5.311 fine silver, then the following new scale of values was established:[420]

tab./fig. 10 **Piedmontese coinage after the reform of 1755**

Metal	Coin	Tariff
Gold	*Carlino*	*120._._*
	Mezzo Carlino	*60._._*
	Doppia	*24._._*
	Mezza Doppia	*12._._*

[418] ASMI, Finanza p.a., b. 821/822. Quoted by Amato M., *Il bivio della moneta*, p. 46.
[419] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII*, op. cit., pp. 7 - 8.
[420] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* op. cit.*,* p. 241.

	Quarto di Doppia	*6._._*
Silver	*Scudo*	*6._._*
	Mezzo Scudo	3._._
	Quarto di Scudo	1.10._
	Ottavo di Scudo	_.15._
Billion and copper	*s. 7.6.* coin	_.7.6
	s. 2.6 coin	_.2.6
	Soldo	_.1._
	d. 2 coin	_.2_

Source: Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* op. cit*.,* p. 241.

As we can realise from the above tables, all the coins except the *soldo* and the 2-*denari* coin were exchanged at the mint,[421] while the *lira* with its multiples and submultiples was no longer issued. The national coinage was now complete and the foreign coinage was forbidden, except for some valuable coins and small coins in certain areas near the borders. As for the bimetallic ratio (i.e. 1:14.625), it was determined by the ratio between the silver scudo of 6 *lire* and the gold *doppia*,[422] which had almost the same coinage cost, namely 1.9 and 2 percent respectively, as we can see in the following tables by Felloni, which show how seigniorage worked in 18th-century Piedmont:[423]

tab./fig. 11 S**eigniorage in Piedmont in the 18th century (gold)**

period	GOLD			
	Mint price Per mark	Mint equivalent *(valore legale)* In ***doppie***	seigniorage	%
1721-1732	L. 638	L. 638 s. 13 d. 9	s. 13 d. 9	0.1
1733-1740	L. 656	L. 664 s. 6 d. 5	L. 8 s. 6 d. 5	1.2
1741-1754	L. 656	L. 669 s. 5 d. 5	L. 13 s. 5 d. 5	2.0
1755-1785	L. 663	L. 677 s. 0 d. 4	L. 13 s. 5 d. 4	2.0

[421] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* p. 242.
[422] Amato M., *La moneta al bivio*, p. 50.
[423] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* tabs. 39-40, pp. 88-89 (editor's translation).

1786-1801	L. 696	L. 714 s. 6 d.9	L. 17 s. 10 d. 1	2.4

Source: Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* tab. 39, pp. 88-89 (editor's elaboration)
Note: The seigniorage percentage is calculated with respect to the mint equivalent.
The mint equivalent is the same for the multiples and subdivisions of *doppie*.

tab./fig. 12 **Seigniorage in Piedmont in the 18th century (silver)**

period	SILVER						
	Mint price Per mark	Mint equivalent in ***lire***	Mint equivalent in ***scudi***	Seigniorage ***lire***	%	Seigniorage ***scudi***	%
1704-32	L. 43 s. 13 d. 4	L. 43 s. 12 d. 9	L. 42 s. 10 d. 11	s. 19 d. 5	2.2	s. 2 d. 5	0.3
1733-41	L. 44	L. 45	L. 45	L. 1	2.2	L. 1	2.2
1742-46	L. 44	L. 46 s. 18 d. 2	____	L. 2 s. 18 d. 2	6.2	____	__
1747-54	L. 44	L. 47 s. 14 d. 7	____	L. 3 s. 14 d. 7	7.8	____	__
1755-85	L. 45 s. 8	____	L. 46 s. 5 d. 11	____	__	s. 17 d. 11	1.9
1786-1801	L. 45 s. 4	____	L. 46 s. 5 d. 11	____	__	L. 1 s. 1 d. 11	2.4

Source: Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* tab. 40, pp. 88-89 (editor's elaboration).
Note: The seigniorage percentage is calculated with respect to the mint equivalent.
The mint equivalent in the case of the *lira* is the same for the multiples of the *lira* and the *mezza lira*,while in the case of the *scudo* is the same for the half, the quarter and the eighth of the *scudo*.

These tables show that the seigniorage developed almost equally for gold and silver after the currency reform and even rose to 2.4 percent for both in 1786, when the bimetallic ratio also changed. In the decade before the reform, the seigniorage was levied on the lire and reached a rather high percentage of 7.8 percent, while a low percentage of 1.2 per cent was levied on the doppie.

Coming back to the reform as a whole, Felloni argued that it was successful as long as it achieved the following three results:[424]

1) The Mint melted down 33 million lire in the period 1755-64, while the total money in circulation was 35 million;

[424] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* p. 243.

2) In the period 1765-1769, the melting of money increased to 37 million *lire*, probably due to the favourable price at the mint, which may have attracted bullion and coins also from abroad;
3) The minting of noble coins reduced the importance of small money, so that the share of it decreased from 30 percent in 1755 to 25 percent in 1760 and to 20 percent in 1765.

Massimo Amato, commenting on Felloni, also notes on point 3 that low money remained constant since 1755, but as long as noble money increased and the population also increased, the ratio of low money per capita decreased. Moreover, the premium on noble money, which was positive before 1755, disappeared in the following years, indicating a stabilisation of the system. The bimetallic ratio, adjusted to the French one at 1:14.625, remained stable until 1785, when a slight increase was made following the example of France, which had minted gold *louis* with a lower intrinsic value, so Turin adjusted the rate for the new *louis* and withdrew the gold *doppie* to also reduce the intrinsic value. This policy was successful, as the trade balance remained positive in the second half of the century.[425]

3.2 The paper money experiment

It is also worth noting that the currency reform in Turin favoured the first large-scale experiment with bearer paper money in Italy.[426] In Piedmont, however, there was no bank that could have carried out such an experiment. We know that John Law proposed an issuing bank to Vittorio Emanuele II in 1711, but it was not realised.[427] Instead, it was the Treasury that issued legal tender in 1745, modelled on the French Mint bills used by Louis XIV, in various sizes from 100 to 3,000 L. to finance war expenditures at an annual interest rate of 4 percent until they could be redeemed in 1750. However, in the proposal he wrote to the king, John Law also criticised the instrument of Mint bills, saying that the French government did not trust them enough, especially because the same Treasury did not accept them as a means of payment for taxes, which was taken into account by the Savoy government. In fact, such Treasury bills were issued as legal tender for an amount of 4 million lire, and in 1746 there was a further issue of 2 million until 1750. Convertibility was limited to the total sum of 500,000 L. per year, which was distributed among several *banchi di cambio*, including the mint. The bills were intended to be a temporary instrument, but the lack of funds forced the government to postpone the deadline for redemption. The currency reform would have made redemption more expensive and at the same time the expenditure to finance the reform was quite high, so in 1756 it was decided to issue a further 2 million,

[425] Amato M., *La moneta al bivio*, pp. 48 - 51.
[426] For this part see Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* op. cit., pp. 171-186, pp. 244-246; see also Orlandi A., *L'Albero degli zecchini*, Fondazione "F. Datini", 2023, p. 48.
[427] See chap. 1, para. 4.

this time at zero interest. At this point, the Treasury bills were cash in the form of bearer bills, which remained stable until the war against France in 1792 (even though the situation had changed since 1783) and especially in 1793, when the issue skyrocketed. The proportion of fiduciary money rose from less than a third in 1792 to more than two thirds in 1797, which led to an enormous devaluation and hoarding of precious coins and triggered a process of inflation. In 1800, the circulation of paper money as legal tender was finally banned.[428]

It is interesting to go through the steps outlined above following Massimo Amato's interpretation of the development of bills as money.[429] He distinguishes four phases, from the beginnings, when the bills were issued as an asset, to the evolution of the bills into a means of payment circulating without interest, to the crossing of the frontier ending in hyperinflation:

1745-1754: The bills bear interest and have a maturity. They were convertible into species up to 50,000 *lire* per week. In 1746, 2 million more bills were issued and, in addition, 1.2 million bills were withdrawn from circulation as substitutes for an equivalent amount; in addition, part of the interest on the 1745 issue was paid in paper. In 1749, 2 million bills were withdrawn from circulation and converted into *luoghi del monte di S. Giovanni*, i.e. consolidated promissory bills. Throughout the period, the maturity of the bills was postponed (that of the 1749 bills indefinitely). This is the path to permanent debt consolidation, says Amato.

1755 - 1782: In 1755, the monetary reform was carried out. In 1756, 1.2 million and in 1757 800,000 bills were issued to replace the withdrawn coins. These bills do not bear interest and can be exchanged up to 15,000 per week, but no more than 5,000 were exchanged per week. In addition, the denomination of the bills has been reduced to up to 50 *lire*. The bills are no longer an asset, they are now used as a means of payment. The stabilisation of metallic money also guarantees the stability of paper money, and convertibility is assured, since paper money accounts for only 22 percent of noble money. The success of this new means of payment is shown by the fact that after 1760 paper money was exchanged for gold at a premium. From 1774, interest was no longer paid on the first issues: paper money finally became money.

1783 - 1792: In 1782, the issuance of 7,225,000 million *lire* was planned to replace the old paper money in circulation, but the following year the government cancels the withdrawal and all the paper money remains in circulation, so that there are now 14,450,000 million *lire* in circulation. This new money is used to buy wheat, to cap its price, and to pay subsidies, in

[428] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* op.cit., pp. 171-186, pp. 244-246.
[429] See Amato M., *La moneta al bivio*, op. cit., pp. 83 - 96.

short for countercyclical reasons, as Amato says. In 1792, another 4 million were issued. During this period, gold is hoarded and only paper money circulates.

1793 - 1800: This last phase is characterised by inflation, triggered mainly by the financial necessities of the war (in 1792 the French army invaded Piedmont) and aggravated by the trade deficit and the devaluation of the exchange rate. Paper money reached 100 million in 1796, and the proportions of circulating money were approximately as follows: 30% noble money, 20% low money, greatly increased, 50% paper money. Although the paper money issued during this period earned interest again, it was exchanged for gold below par. Towards the end of the war (i.e. 1796) and thereafter, the paper money was partly converted into consolidated promissory bills, partly redeemed on the church estates, and finally the bills still in circulation were declared to be no longer legal tender.

The following is a table by Felloni summarising the change in the money supply in the second half of the 18th century in millions of lire:[430]

tab./fig. 13 **The money supply in 18th century Piedmont**

Year	Gold and silver full-bodied coins	Copper and billion	Paper money	Total
1711	12.4	5.25	—	17.65
1750	24.25	10.20	5.3	39.75
1755	**24.25**	**9.95**	**6.8**	**41**
1760	29.65	9.6	6.8	46.05
1765	38	9.5	5.5	57.65
1770	42.65	9.5	5.5	57.65
1775	45.55	9.55	5.7	60.8
1780	48.55	9.5	7.2	65.25
1785	50.35	11.1	14,4	75.85
1790	54.75	11.5	14.4	80.65
1795	59.75	27.5	85.5	172.75
1799	61.55	34.1	14.5	110.15

Source: Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* op.cit., p. 245.

[430] Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII,* op.cit., p. 245.

The above table summarises what we have already said, i.e. the monetary reform stabilises the low money supply, as the premium on noble money disappears, and increases the paper money supply, which is, however, stable until 1783, and even trades at a premium to gold for a period after 1760.

The reform was successful. It is also reminiscent of the Great Recoinage in England in that the government accepted banknotes for the payment of taxes, thus preserving their value and enabling their development.[431] In fact, the Great Recoinage caused a short run at the Bank of England, which caused precious metal reserves to fall to 2.7 percent. The Bank had begun issuing “Bills" (at an interest rate of around 3 percent) and “Notes" modelled on goldsmith's notes (i.e. like deposit receipts) since its inception, over and above the statutory amount of £1,200,000 (i.e. the original loan to the government). In 1796, when the first run on the Bank occurred, the Bank's total paper money supply reached about £2 million. The Bank responded to the run by issuing bills in the hope that they would be held and not redeemed as they yielded interest. However, it seems to have been more the government's practice to accept Bank notes at face value (although they were not declared legal tender by an Act of Parliament until 1833) in order to keep them in circulation so that they could become a common bearer currency in the following years.

In Turin, the banknotes were not issued by a bank but by the Treasury, but they were legal tender and were first issued with interest and then without interest. As they were bearer bills in different sizes (e.g. 50 L. the smallest), they circulated like banknotes (they were also similar to banknotes in their graphic design) and were used both to finance the recoinage and to cover the shortage of metal currency due to redemption. They had limited convertibility, in a range that was clearly communicated to the public, and with the certainty of their relationship to stabilised coins, but since they were also legal tender, they gained the public's trust and even traded at a premium.[432]

4. The proposal of Verri and Beccaria

We have seen how the debate in the 1750s influenced events in Piedmont. As for Milan, new figures came into the limelight in the early 1760s. First Pietro Verri (1728-1797), a young aristocrat from Milan interested in economic studies, founded the *Accademia dei pugni*, an association of intellectuals who dealt with various cultural and political issues and engaged in public debate, especially through the journal *Il Caffé*. Members of the Accademia

[431] See Desan C., *Making Money*, op. cit., pp. 308-329; see also cap. 1, para. 3.
[432] See Amato M., *La moneta al bivio*, op. cit., pp. 86 - 87.

also included Cesare Beccaria (1738-1794), a younger Milanese aristocrat who studied mathematics and law and was also interested in economic and monetary issues, and Gian Rinaldo Carli. Beccaria intervened in the currency debate in 1762, supported by Verri, in response to a stricter decree on money. The *grida* of April 21, 1762, in fact, prohibited the circulation of copper and eroded money not minted in the Royal Mint, which had to be consigned to the mint within 40 days and paid at intrinsic value, and set a penalty of 50 *scudi* of gold or 3 public stretches of rope for those who did not comply; the same penalty was imposed for the export of gold and silver, whether it was coin or specie, unless the export was authorised. The importation of copper or eroded money was also punishable by confiscation of property or 10 years in prison or a term of confinement to be determined. The *grida* also established the reduction of the face value of some foreign silver coins.[433] In July, Beccaria answered with *Del disordine e de' rimedi delle monete nello stato di Milano* [On the disorder and remedies of coins in the state of Milan] published in Lucca, because in Milan the publication was not allowed,[434] the reason is easy to understand when reading such a passage:

> *Gli editti non possono cambiare i rapporti invariabili delle cose, né si possono togliere gli effetti se si lasciano sussistere le cagioni. Quella nazione, che pubblicasse editti contrari al vero valore delle monete, farebbe lo stesso male che colui che tosasse o facesse moneta falsa; e contraddittoria a se medesima, punirebbe negli altri il male che essa ha fatto.*
>
> [Edicts cannot change the immutable conditions of things, nor can they remove the effects if the causes are left to exist. That nation which would publish edicts contradicting the true value of the coins would do the same harm as one who clips money or manufactures counterfeit money; and, contradicting itself, it would punish on others the evil it has done.][435]

This pamphlet borrowed from the works of Carli and Neri, especially the latter, even though he is not cited, but his influence is clear from the beginning when the young Beccaria quotes in a note the words of Giulio Paolo that Neri discussed in the *Appendice*, and then in stating the theorems that reproduce in a more mathematical language the laws stated by Neri. In fact, Beccaria tried to summarise the whole complicated problem of money in three theorems that could be understood by the public:

> *1. Una egual quantità di metallo deve corrispondere ad un egual numero di lire in ogni moneta.*

[433] See Quadrio Curzio A., Scazzieri R., ed., *Sul disordine delle monete a Milano nel Settecento*, op. cit., pp. 150-151; ASMI, Finanze p.a., c. 823.
[434] Quadrio Curzio A., Scazzieri R., ed., *Sul disordine delle monete a Milano nel Settecento*, op. cit., p. 150.
[435] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* in Custodi P., SCIEP, Milano, parte moderna, vol. 12, 1804, p. 215 (editor's translation).

[An equal amount of metal must equal an equal number of *lire* in each coin.][436]

2. Come il totale di un metallo circolante è al totale dell'altro, così una data parte di un metallo deve essere ad una egual parte dell'altro metallo in ogni moneta.

[Just as the sum of one circulating metal equals the sum of the other metal, so a given portion of one metal must equal an equal portion of the other metal in each coin.][437]

3. Nello stabilire il valore delle monete non si deve considerare che la pura quantità di metallo fino, nessun conto facendo né della lega, né delle spese di monetaggio, né della maggiore raffinazione di alcune monete ecc.

[In determining the value of coins, one must consider only the mere quantity of the precious metal, not the alloy, nor the cost of monetization, nor the greater refinement of some coins, etc.][438]

As for the first two theorems, they recall the principles established by Neri and Carli. In particular, the observance of the correct proportion between metals in the relationship between coins of different metals, mentioned in the second theorem, corresponds to the principles that Neri identifies "in the proportion between gold and silver and copper, and in the proportion in each metal between the whole and its parts, however divided and partitioned".[439] On the other hand, the first theorem represents Neri's rule to establish the imaginary money parity with silver and consequently with gold. Moreover, Beccaria also attributes the causes of the non-compliance of the two theorems to the scarcity of the intrinsic value of copper money, as he explains below:

Se per esempio in venti de' nostri soldi in rame non vi sia tanto valore intrinseco, che comprar possa due quindicesimi di filippo, allora il popolo trovandosi in mano una moneta ricusata nel commercio esterno, non ammessa indistintamente nel pagamento de' tributi e de' grossi contratti, si avvede la fallacia, la valuta meno e per gradi insensibili tende a ristabilire la naturale proporzione. Così la lira che al principio dello scorso secolo era la quinta parte del filippo, ora è diventata meno della settima, e col numero delle lire si contano i tributi.

[If, for example, a twenty of our copper *soldi* has not so much intrinsic value as to buy with it two fifteenths of a *filippo*, the people, holding in their hands a coin rejected in foreign commerce and not indiscriminately admitted to the payment of

[436] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., p. 202 (editor's translation).
[437] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., p. 203 (editor's translation).
[438] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., p. 208 (editor's translation).
[439] *"...nella proporzione tra l'oro e l'argento e il rame, e nella proporzione in ciaschedun metallo fra il tutto e le sue parti comunque divise e suddivise"* in Neri P., *Osservazioni sopra il prezzo legale delle monete,* p. 224-225;

> taxes and large contracts, recognise the error, value the currency less, and by imperceptible steps tend to restore the natural ratio. Thus the *lira*, which at the beginning of the last century was the fifth part of the *filippo*, is now less than the seventh, and with the number of the *lire* the tributes are counted.][440]

Beccaria thus sees in the devaluation also a problem for the royal treasury, since taxes are calculated in *lire*. However, it is worth noting that they were generally paid with *moneta di grida* at the legal rate (i.e., the tariff), without any loss to the government, except for the *gabelle* (i.e., the price of monopoly goods), which were paid also with *parpaiole* (eroded money). Then Beccaria adds:

> *Dippiù: quando si moltiplica questa moneta entro una nazione, altrettanto ne esce della buona, crescendo i prezzi a misura che crescono le rappresentazioni del valore; così la nazione cambia un valor reale con un valor metafisico [...]*
>
> [More: when this currency multiplies within a nation, so much good money flows out that prices increase as the representations of value increase; thus the nation exchanges a real value for a metaphysical value [...]][441]

Gresham's law is established here, with the consequence that the money supply in the country is nominally stable, but not in terms of metal content, which is said to cause the increase of prices, consistently with the "naturalist" interpretation.[442]

As for the third theorem, Beccaria takes a more radical position with respect to both Carli and Neri. As for the former, he explicitly contradicts him and refers to one of his passages from *Delle monete*,[443] where he assumes that the coinage fees are to be included in the monetary value. Carli says:

> *Siccome poi in virtù del commercio reciproco, e della brevità, e molteplicità dei Domini in Italia, in ciascheduna Città ammesse sono le Monete di Dominio diverso, così ad ognuna di esse un valore più basso, che alle proprie si assegna; e per conseguenza una differente Proporzione risulta. Questa differenza de' valori fra le Nazionali, e forestiere Monete è da taluno posta in contesa, pretendendosi, che il metallo tanto nell'une, che nell'altre debba valutarsi egualmente. Io però son di diverso parere, sembrandomi cosa giusta, che ognuno valuti le Monete non nazionali, come semplice mercanzia, senza riguardo alcuno al sigillo, o conio, che esse abbiano, perché non entrino nello Stato con un valore immaginario, che esse non hanno, e che sarebbe tutto a carico dello stato medesimo. Al contrario avendo le nazionali Monete sopra di sé la manifattura, e le spese tutte occorrenti al lavoro di esse; giusto è, che*

[440] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., p. 207 (editor's translation).
[441] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op.cit., p. 207 (editor's translation).
[442] See chap. 2.
[443] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., p. 210.

abbiano un tal valore, che compensi cotesta spesa; sicché la proporzione fra le nazionali Monete dev'essere differente dalla proporzione delle straniere.

[Now, because of the reciprocal trade and the shortness and multiplicity of domains in Italy, the coins of different domains are admitted in each city, so each of them has a lower value assigned to its own; and consequently a different ratio results. This difference in value between the national and foreign coins is sometimes disputed by asserting that the metal in one and the other must be worth the same. But I disagree. It seems to me right that everyone should value the foreign currencies as if they were a simple commodity, without regard to any seal or minting they might have, lest they enter the state with an imaginary value they do not have, and it would all be at the expense of the state itself. On the contrary, since the national currencies have the minting costs, they have such a value that offsets these costs, so that the ratio between the national currencies must be different from the ratio of the foreign currencies.][444]

Carli justifies the fact that the price of national money includes the coinage fees. Foreign money, on the other hand, should be priced by weight, so that the bimetallic ratio is different for national and foreign coins, and the ratio to be taken into account is the one concerning national coins, as Carli explains below:

Sortendo pertanto alla Zecca le nazionali Monete col carico delle spese; chiaro è, che al confronto di queste le forestiere debbono correre a miglior mercato. Per conseguenza se l'Oro, e l'Argento nazionale sarà posto per esempio alla Proporzione di 1. a 14. ¾ , l'Argento delle forestiere Monete farà col suddetto Oro una Proporzione maggiore, e questa diverrà come 1. A 15.; al contrario l'Oro forestiero con l'Argento nazionale, sarà una Proporzione più bassa, cioè come 1. A 14 ½ in circa. Adunque la Proporzione delle nazionali Monete è l'originaria e la vera, a cui unicamente abbadar conviene, e l'altra con le forestiere è arbitraria, e avventizia, e per conseguenza varia, e incostante, a cui non devesi in tal occasione punto riflettere.

[Thus, if the national coins are drawn at the mint with the burden of cost, it is clear that the foreign coins must have a lower price compared to them. Thus, if the gold and the national silver are in the ratio of 1 to 14 ¾, for example, the silver of the foreign coins will form with the said gold a greater ratio, being 1 to 15; on the contrary, the foreign gold will form with the national silver a lesser ratio, being approximately 1 to 14 ½. Therefore, the ratio of the national currencies is the original and true one to be considered alone, and the other ratio with the foreigners is arbitrary and accidental, and consequently variable and unstable, about which it is not worth reflecting.][445]

[444] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione VI, op. cit., p.409 (editor's translation).
[445] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione VI, vol. 2, op. cit., p.410 (editor's translation).

Carli then criticises the view of those who believe that there should be no discrepancy between the intrinsic and extrinsic value of the coin, such as Pompeo Neri. Indeed, Neri argues that the cost of minting the coin should be borne by the sovereign, even if he agrees with the traditional approach, accepting the 2 percent fee introduced in the negotiations with Turin or the lower fee set by the governor Francesco d'Este in 1754, when he tried to convince the governor not to make a distinction between domestic and foreign silver, since "an ounce of silver equals an ounce of silver", or at least to keep this difference as small as possible. Thus, Carli and Neri do not agree in theory, but they do agree in practice, while the latter agrees in theory with Beccaria, who, however, makes no distinction between theory and practice and disagrees in practice with both Carli and Neri.

In any case, Beccaria's main "corollary" is that if the above theorems are not observed, money will flow out, leading to a rise in interest rates in the country, bankruptcies and the loss of public confidence, while "as the circulating mass increases, industry increases".[446] But we will see the economic impact of money flows later.[447] Let us go instead to the second part of the *Del disordine*, in which Beccaria identifies the causes of monetary disorder in the state of Milan and offers his solution to the problem. He summarises the main problems in three monetary tables, relying on the tables of Neri and especially on the tables of Carli.[448] In the first and second table, he compares the face value of gold and silver coins circulating in Milan with their metal content and finds that the ratio does not correspond to the first theorem, since one hundred *lire* of each currency does not coincide as for the metal content, as it should. In the third table, he compares the metal content of each gold coin with the metal content of each silver coin and finds that the bimetallic ratio is not constant, so that the second theorem is also violated. As for the relationship between silver money and low money, Beccaria, following Carli's *Delle monete,*[449] notes an "enormous difference" in intrinsic value between the silver *filippo* and the alloyed *parpaiola*, i.e. at 100 lire of both there is a negative difference of L. 11 s. 11 d. 6 in the intrinsic value of the *parpaiola*, and there is also an enormous difference between 20 copper *soldi* and the silver *lira*, because copper money contains only 70% copper and the rest is "imaginary".[450]

Let us now come to the solution. Beccaria drafts a fourth table in which he fixes the *gigliato* [gold florin] as numeraire at 15 *lire* (the tariff was L. 14 s. 10, but the popular rate was raised to 15 *lire* because of the agio), then he fixes the tariff for each coin according to the metal content in relation to the *gigliato* and to the bimetallic ratio of 14 ½, which is the European average calculated by Carli. He then envisages a new institutional character, i.e. "a minister specifically dedicated to this matter, who, with the tariffs of all nations in hand, will watch

[446] *"...durante l'accrescimento della massa circolante si aumenta l'industria"* in Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., p. 213.
[447] See para. 6.
[448] See Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit., appendix; Carli G. R., "Dell'origine e del commercio delle monete", op. cit., appendix.
[449] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione VI, vol. 2, op. cit., p.468.
[450] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., p. 222.

over the change in proportions and, with this thermometer, reform the price of coins as necessary and, with the help of the tests, determine the value of the new coins to be introduced", as it is useless to ban the noble foreign currencies "in a country as limited as ours".[451] It is interesting here to consider Luigi Einaudi's position on Beccaria's proposal. Einaudi, who together with Marc Bloch was one of the first authors to recover and study imaginary money,[452] considered Beccaria's interpretation to be the most authentic as far as the role of imaginary money was concerned.[453] He also drew up a table from Beccaria to measure the value of coins in Milan, using as numeraire the florin at L 14 s. 10 (instead of 15 like Beccaria) to calculate the correct rate of the coins given the bimetallic ratio of 1:14.5. The following is a simplified table from Einaudi:[454]

tab./fig. 14 **Einaudi's monetary table**

Metal	Coin	Tariff (lire)	Adjusted Tariff	Relation to the numeraire in percentage
gold	*Doppia di Savoia*	25	22.15.6	109,77 overvalued
gold	*Zecchino di Venezia*	14.10	13.16.3	104,97 overvalued
gold	*Doppia di Milano*	25.5	24.2.1	104,75 overvalued
gold	*Zecchino di Savoia*	14.7.6	13.17.11	103,44 overvalued
silver	*Testone nuovo di Roma*	2.5	2.2	107,14 overvalued
silver	*Scudo nuovo di Piemonte*	7.12	7.4.5	105,25 overvalued
silver	*Ducatone di Venezia*	8.8	8.3.9	102,59 overvalued
silver	*Filippo di Milano*	7.10	7.6.7	102,33 overvalued
gold	***Zecchino gigliato di Firenze***	**14.10**	**14.10**	**100 numeraire**
silver	*Livornina di Firenze*	6.19	7.2.1	97,83 undervalued
silver	*Genovina di Genova*	10.5	10.16.9	94,5 undervalued

[451] *"...un ministro particolarmente consacrato a questa materia, il quale colle tariffe di tutte le nazioni alla mano vegliasse al cambiamento della proporzione, e con questo termometro riformasse al bisogno il prezzo delle monete e fissasse col mezzo de' saggi il valore delle nuove monete che s'introducono; giacché le nobili monete estere è per lo meno inutile il proscriverle da un paese così limitato come lo è il nostro"* in Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* p. 230.

[452] See for example Redish A., *Bimetallism, an Economic and Historical Analysis*, op. cit., introduction.

[453] Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", *Rivista di storia economica*, Year 1 N.1., 1936.

[454] See the original table in Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", op. cit., p.22.

gold	*Ongaro di Vienna*	14.5	14.15.1	96,58 undervalued
gold	*Doppia di Genova*	25.7.6	27.5.11	92,96 undervalued

Source: Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", op. cit., p.22.

Although Einaudi gave an example of how a minister should proceed by adjusting the tariff to the correct rate in order to avoid Gresham's Law, the procedure is reminiscent of Locke's, who fixed the value of the crown at the traditional undervalued rate, with the result that it ran away. Indeed, the *gigliato* is severely undervalued in the table, which on the one hand requires a correction of the rates of the other coins, but on the other hand also explains why its value on the market was actually L. 15 and supports Beccaria's decision to set it at L. 15. Einaudi added to the argument that a minister should apply what he called the *"clausola galianea"* [Galiani's provision], i.e., as Galiani suggested:

> *la voce non sarebbe altro che quel prezzo, con cui imprima esce la moneta dalla zecca: dopo la quale uscita, non si avrebbe a costringere alcuno a stare a quell'istesso prezzo, ma si dovrebbe trattar come mercanzia. E, quando egli avvenisse che il consenso comune si difformasse dal prezzo della zecca, dovrebbe questo uniformarsi a quello della moltitudine, la quale, quando è lasciata in libertà, segue siempre il vero;*
>
> [the *voce* would be nothing other than the price at which the coin is issued by the mint: after issuance, no one would have to be forced to abide by that price, but the coin should be treated as a commodity. And if it should turn out that the general consensus differs from the price of the coin, it should be adjusted to that of the mass, which, if left free, will follow the truth][455]

the tariff should be adjusted to the *voce* (i.e. voice, something like *vox populi*, i.e. the market rate) and not to the *grida* (i.e. literally, call, but decree), i.e., the popular rate should be followed because it is the quickest to adjust to the proper rate (Locke took a similar approach to the bimetallic relationship, which led him to support a monometallic view).[456] Moreover, Einaudi sees the imaginary money a tool to counteract inflation and deflation, he says for example in the case of the former:

> *Correvano, per ipotesi, il fiorino d'oro a 24 lire e lo scudo d'argento a 2 lire, quando il livello generale dei prezzi era a 100. Sale il livello a 111,11? Ed ecco la grida abbassare di un decimo il corso del fiorino d'oro da 24 lire a 21 lire e 12 soldi e quello dello scudo d'argento da 2 lire a 1 lira e 16 soldi. L'operazione equivale a quella che oggi si chiamerebbe « deflazione » monetaria. La massa della moneta effettiva*

[455] Galiani F., Della moneta, p. 163.

[456] See Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", op. cit., pp. 19-21, 23.

circolante è invariata; ma il nome monetario utile per le contrattazioni è ridotto di un decimo.

[Let us assume that the gold florin was 24 lire and the silver *scudo* 2 lire when the general price level was 100. Did it rise to 111.11? And here is the decree to lower the rate of the gold florin by a tenth, from 24 *lire* to 21 *lire* and 12 *soldi*, and that of the silver *scudo* from 2 *lire* to 1 *lire* and 16 *soldi*. This process corresponds to what we would call "deflation" today. The mass of money actually in circulation remains unchanged, but the denomination of money useful for trade is reduced by a tenth.][457]

Einaudi thus saw enormous potential in the instrument of imaginary money. The special minister envisaged by Beccaria would have calibrated the tariff according to the change in the bimetallic ratio and for each new foreign coin that came into internal circulation, or even in the case of "*monete calanti*" (i.e. coins with less precious metal than the standard), and would have been able to control inflation and deflation. Einaudi even opens up the possibility of the *alzamento* theorised by Galiani to realise a "currency devaluation" for fiscal purposes, but since people ultimately want "certainty", he claims, imaginary money was eventually discarded.

Let us consider the difference between Beccaria's vision and that of Neri. They differ not only in that Beccaria thinks of a system in which the tariff is constantly changed, but also in that Neri wanted to create a national coinage system, while Beccaria thought that this was not a suitable solution for a small state like Milan with intensive trade with its neighbours, so he had to deal with foreign coins, as Verri also confirms. From a mercantilist point of view, Beccaria dynamically places the state of Milan on the European market in order to assert itself in "this state of war in which nations find themselves, according to Hobbes", which "occurs in trade and coinage, where each nation tries to enrich itself by impoverishing others".[458] On the other hand, Neri sought a monetary union between the Italian states based on the Italian bimetallic ratio, in which the state of Milan could have played a leading role with a national coin. The alternative was a national coin in an autonomous state of Milan with a common bimetallic ratio with the neighbouring Italian states. For Beccaria, however, the only case in which a national coinage is worthwhile is when a state "is "surrounded by other nations where darkness and chaos still reign in the currencies". Then "the wise nation will enrich itself at the expense of the others, by depriving the ill-regulated nation of the best coins in exchange for the worst that are introduced, reducing the former to the form of the latter, and this will be a perpetual tribute to the inertia of industry".[459]

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[457] Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", op. cit., p. 28.

[458] "*Questo stato di guerra, in cui Obbes ha creduto essere le genti, si verifica nel commercio e nelle monete, dove ogni nazione cerca d'arricchirsi coll'impoverimento altrui"* in Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., pp. 213-214 (editor's translation).

[459] *"...quando sia esso circondato da altre nazioni, nelle quali regnino ancora le tenebre e il caos fra le monete. Allora estraendo dalla mal regolata nazione le migliori monete in iscambio delle peggiori che vi si introducono, e riducendo le prime alla forma delle seconde si arricchirà la nazione avveduta a spese dell'altra, e sarà questo*

This confirms the mercantilist approach described above. Another case for reactivating the mint is the possibility of regulating copper, but if it is not possible to remint it for lack of means, "then the low currency should not be considered a real currency, but a partial representation of it, just like the bank bills".[460] This position is indeed similar to that of Neri, when he compares low money to "token money," which includes paper money and deserves special regulation, but which Beccaria does not explain.

Pietro Verri intervened in the debate that followed Beccaria's work and a few days after Beccaria (also in Lucca) published a pamphlet in support of Beccaria's argument, *Dialogo sul disordine delle monete* [Dialogue on the disorder of coins][461] in which he praised the policy of not allocating funds for national coinage. He argued that this was an unnecessary expense for a small nation like Milan, and that it did not make sense to finance it through the coinage fees, which set the face value of the coins higher than the intrinsic value when the money was exchanged in international trade at the intrinsic value. He suggested:

> *Lasciamo battere moneta alle nazioni che hanno miniere e grande commercio marittimo; noi, abitatori di un piccolo stato Mediterraneo senza miniere, pensiamo [...] ad accomodare le nostre partite del commercio, a diminuire le importazioni, ad accrescere l'esportazione, ad animare l'industria; pensiamo ad avere* moneta buona*, a valutarla bene, e non ci prendiamo briga dell'impronto che questa moneta debba avere: così fanno Amburgo e Francofort sul Meno [...]*
>
> [Let us allow nations that have mines and a large maritime trade to mint coins; we, the inhabitants of a small Mediterranean state without mines [...], we should think of adjusting our trade, reducing imports, increasing exports, reviving industry; we think of having *good money*, valuing it well, and we do not care about the stamp that this currency must have: so do Hamburg and Frankfurt am Main[...][462]

Thus Verri followed exactly the speech of Beccaria, a sign that they had previously agreed on the proposal. Both referred to the case of Hamburg and Frankfurt, for example, on which we will come back later. In addition, Verri pointed to the need for a positive trade balance in order to receive money from abroad and not let it flow away. Thus, he contradicted the widespread opinion that imports are paid exclusively with bills of exchange, which are based on the assumption of an even balance of trade. Then, in 1763, he published *Considerazioni sul commercio dello Stato di Milano*, in which he analysed Milanese trade historically and addressed the issue of the balance of trade for the first time in Milan.

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un costante tributo pagato all'indolenza dell'industria" in Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., pp. 228 (editor's translation).

460 *"...allora la moneta bassa dovrebbe considerarsi non come vera moneta, ma come in parte una rappresentazione di essa, appunto in quella guisa che si considerano le cedole di banco"* in Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit., pp. 233 (editor's translation).

461 Verri P., "Dialogo sul disordine delle monete nello Stato di Milano nel 1762", In Custodi P., SCIEP, parte moderna vol. 16, 1804.

462 Verri P., "Dialogo sul disordine delle monete nello Stato di Milano nel 1762", op. cit., p. 290 (editor's translation).

Verri returned to this point a few years later in the *Meditazioni sull'economia politica* [Meditations on Political Economy],[463] also published by Carli with some commentaries.[464] As we know, he was of the opinion that it made no sense for small states to mint their own coins because of the enormous costs involved, and he pointed out the "optimal system" (in line with what he and Beccaria had set out in the early 1760s)::

> *[...] i piccoli stati, poiché abbiano valutato nella tariffa ogni moneta circolante al prezzo comune del metallo , avranno l'ottimo sistema. Se il gigliato sarà 10 lire, la lira sarà la decima parte del gigliato. Il gigliato sia 70 grani d'oro puro, la lira sarà sette grani d'oro puro, ovvero 105 grani d'argento puro , posta la proporzione di 1 a 15, e ognuno intenderà cosa sia la* lira *senza bisogno di una moneta che abbia questo nome.*
>
> [...] the small states, having estimated in the tariff each circulating currency on the common price of the metal, will have the optimal system. If the *gigliato* [*zecchino* of Florence, ed.] costs 10 *lire*, the *lira* will be the tenth part of the *gigliato*. If the *gigliato* is 70 grains of pure gold, the *lira* will be seven grains of pure gold or 105 grains of pure silver, in the ratio 1 to 15, and everyone will understand what the *lira* is, without the need of a coin with that name.][465]

Carli does not agree and comments:

> *Supposto però un paese senza moneta propria, come si calcoleranno in esso le Monete forestiere? Uno Zecchino di Firenze a cosa si ragguaglierà, se manca il campione nazionale a cui riferirlo? Varrà dieci lire; ma di quali lire, se manca il Tipo? Questo Tipo dunque in un paese, ove si contratti, ed ove ci siano per l'addietro fatti Istromenti di vendite, di doti, livelli ec. sarà necessario. E se è necessario il Tipo del soldo, e della lira, a cui le monete maggiori si proporzionano, e per cui le monete forestiere coniate in Zecche inesorabili, ove non si lavora per nulla, debbano allontanarsi; non ritrovo gran male, che si coniano anche le monete grosse nobili, e d'argento, e d'oro.*
>
> [But suppose a country has no currency of its own, how are foreign coins calculated in that country? What will a Florentine *zecchino* be equalised if there is no national pattern to which it must refer? It will be worth ten *lire*; but what *lire* if the pattern is absent? So this pattern will be necessary in a country where there are contracts and where there are sales guidelines, assets, levels, etc. from the past. And if the pattern of the *soldo* and the *lira* is necessary, to which the large coins are in proportion and for which the foreign eroded coins, minted in inexorable mints where work is not

[463] Verri P., *Meditazioni sulla economia politica* (1771), ed. De Felice R., Bruno Mondadori, 1998
[464] Verri P., *Meditazioni sulla economia politica con annotazioni* [of G.R. Carli], ed. Carli G. R., Venezia, 1771.
[465] Verri P., *Meditazioni sulla economia politica* (1771), op. cit., p. 68 (editor's translation).

done for free, are not allowed, I find no great evil that there are also minted noble large coins, in silver and gold.][466]

According to Carli, the unit of account cannot be separated from the coin and this is a controversial position, as we shall see. However, the problem is another, for on what basis do you decide that the *zecchino* is worth ten *lire*? You can answer that this is the current value, as Beccaria did by setting it at 15 *lire*, but what if the process of devaluation continues (which he did by bringing the *zecchino* to 17 *lire*)? How can the value of the *zecchino* be kept at the assumed 10 *lire*? The only solution to anchor the value of the *zecchino*, if one does not want to reactivate the mint, is to consider low money as bills traded at a discounted value, as Beccaria probably also meant. In fact, as Neri wrote in the *Osservazioni* when he analysed the genealogy of imaginary money, the smallest money is the measure of the whole coinage (in agreement with Carli), not the large one, because people calculate according to this measure, and if you take a larger measure for the *lira*, you risk forming a new coinage rate based on a smaller *lira*.[467] For example, look at Einaudi's chart above. The *gigliato* is severely undervalued. So to rebalance the system, you need to lower the value of most other coins. This may be quite simple for large coins, but it is more complicated for small coins. As we will see in the debate on the devaluation of the *quattrino* to the *sestino*, just because people are used to reckoning with *quattrini*, the same Verri was in favour of changing the value of the *quattrino* and converting it into a *sestino* (i.e. a reduction of the coin from 3 to 2 deniers) in theory rather than in practice, and it seems that he changed his mind over time.[468]

We can now look at the case of Frankfurt and Hamburg, cited by both Beccaria and Verri, to see which solution they chose. First, we should remember that in Germany Charlemagne's system of reckoning based on the pound was replaced by a system based on the gold *gulden*, so the unit of account was the *gulden* divided into *schillingen* and *pfennige*, or divided into *kreutzer* and *pfennige*.[469] The first *thaler* was issued in 1486 by Archduke Sigismund of Habsburg from the silver mines of Tirole to correspond to the imperial *gulden*, which is why it was called *guldiner*. in 1520, the Bohemian Diet passed a resolution permitting the export of newly mined Jáchymov silver only in minted form, so that these coins, called thaler (from *Joachimsthaler Guldengroschen*), spread to neighbouring regions, so that there were two types of silver coins in Central Europe, *guldiners* and *thalers*. in 1566, Emperor Maximilian II introduced a common pattern, the “imperial thaler” (88.9 percent silver for 29.232 g gross weight), which lasted until Maria Theresa's “conventional thaler” of

[466] Verri P., *Meditazioni sulla economia politica con annotazioni* [of G.R. Carli], op. cit., pp. 129 - 130 (editor’s translation).
[467] See chap. 2, para 3.2.
[468] See para. 5.
[469] See Shaw W. A. *The History of Currency*, Wilson & Milne, London, 1896, pp. 360-395.

1753 (83.33 percent silver for 28.07 g gross weight), worth the double of a *gulden*.[470] In 1595, a sheet with exchange rates among several currencies based on the imperial thaler was published on the Hamburg Bourse. Although the thaler was widely used as a unit of account (e.g. 1 *thaler* = 70 *kreutzer* of the imperial currency = 35 *groats* of the Polish currency = 30 white *groats* of the Bohemian currency), this document was the result of the comparison between the actual thaler, called the "broad thaler", and the other coins according to their characteristics.[471] It is likely that something similar happened at the Frankfurt Bourse in 1642, when the first printed rate sheet for exchange rates was published, and thereafter, in 1675, the obligation to pay the outstanding debts of the Frankfurt Fair in thalers was introduced.[472]

Verri and Beccaria did not elaborate on the reference to Frankfurt and Hamburg, so it is not clear what exactly they are referring to and to what period. In fact, we know that in both cases the thaler was used as the unit of account for the valuation of foreign coins, but at least in Hamburg real thalers were also minted.[473] Be that as it may, if there had been an exchange in Milan where the money changers were institutionally organised (as in Frankfurt and Hamburg), the circulation of foreign noble money could have been regulated within a market institution (even if it was publicly regulated). Instead, Verri and Beccaria seem to have relied on a state institution, such as a minister in charge of money. Their case is more reminiscent of that of Antwerp in the 16th century, as illustrated by Boyer-Xambeau et al.:

> Antwerp played this role of center for the redistribution of minted metals between all European countries, thanks to its extreme flexibility in determining the legal value of the coins. [...] the Flemish authorities followed the commercial value of all the coins circulating in the country on a daily basis (and there were no fewer than a thousand of them at the end of the sixteenth century!) and promptly announced the new legal values of coins and of unminted metals.[474]

However, the problem of foreign low money would still have to be solved, because it was not possible to control the borders, as was the case in Milan, Hamburg and Frankfurt, as these were small states with intensive transactions with their neighbours. One possible

[470] For this part about the thaler see Vorel P., "The function of the thaler in determining the exchange rates of European currencies in the second half of the 16th century", In *Polish Numismatic News* X (2022), pp. 283-306. For the convention thaler see Shaw W. A., op. cit., p. 375.
[471] See Vorel P., "The function of the thaler in determining the exchange rates of European currencies in the second half of the 16th century", op. cit., p. 298.
[472] See Deutsche Borse, *Jubilaeum 425*: https://www.deutsche-boerse.com/resource/blob/264318/c028e32a4e99d8cc0a5ce8f53b7b84bd/data/jubilaeum425-1585_en.pdf
[473] See Bindseil U., *Central Banking before 1800: A Rehabilitation*, op. cit., p. 44.
[474] Boyer-Xambeau M. T., Deleplace G., Gillard L., *Private Money & Public Currencies*, M. E. Sharpe, 1994, p. 117.

solution can be seen in the example of Hamburg, which withdrew the foreign low money by weight as collateral for Lombard loans.[475]

PART II - Vienna takes the leads

5. From the work of the *Consiglio dell'economia* to the decisions of Kaunitz

At the beginning of the 1760s, Maria Theresa, through Chancellor Kaunitz, attempted to reorganise the local institutions in Milan with the aim of deposing the Milanese aristocracy and replacing it with loyal functionaries.[476] The Senate was reduced to ten members and was made up of personalities from various places, four of whom came from Tuscany and only one, Senator Lambertenghi, belonged to the Milanese aristocracy. In 1765, the *Supremo Real Consiglio di economia pubblica* was founded, which had enormous powers in the economic and financial sphere. It too was made up of imperial officials from all parts of the empire, with the exception of a few innovators who came from the local aristocracy, such as the "outsider" Verri and later Beccaria (1771). Gian Rinaldo Carli, who originates from Istria, became president due to his expertise in the field of money and Verri vice-president. The two characters were quite at odds within the Council, so that the monetary issue was dealt with by Carli, while Verri was more concerned with other issues such as the regulation of the *Ferma* and other trade matters. In May 1766, the Council published an initial report on the currencies, which was based on Carli's work and in which a recoinage was proposed. However, a decree in August only confirmed the previous one of 1762.[477]

[475] See Appendix 6 and Bindseil U., *Central Banking before 1800: A Rehabilitation*, op. cit.; id.., *Some Pre-1800 French and German Central Bank Charters and Regulations*, April 27, 2019. Available at SSRN: https://ssrn.com/abstract=3177810 or http://dx.doi.org/10.2139/ssrn.3177810

[476] See Capra C., *La Lombardia austriaca nell'età delle riforme*, op. cit., pp. 217-230.

[477] See Vianello C. A., *La riforma monetaria in Lombardia nella seconda metà del '700*, pp. XIV - XV. You can find the *Relazione del Consiglio* in ASMI, P.A. 823.

5.1 Carli's perspective and monetary plan

Carli intervened in April 1766 with the *Osservazioni preventive al piano intorno alle monete di Milano*[478] [Preliminary remarks on the plan for the Milan coins], in which he analysed the current situation in order to explain the reasons for the new coinage and he distanced himself from the position held by Verri and Beccaria in the debate at the beginning of the 1760s. In fact, in the preface to the 1784 edition, he criticises a proposal circulating in Milan at the time that coincided with the perspective of Verri and Beccaria:

> *[...] in detta operetta […] è bastantemente confutata l'opinione di quelli che credevano esser sufficiente rimedio la pubblicazione di una nuova grida; non mancando in quell'anno di partito e favore l'opinione d'un ragionato del Monte di s. Teresa, cioè che si dovesse aumentare il soldo al numero di sei quattrini; il che fu presso poco l'illustre abbaglio di Newton per le monete d'Inghilterra, corretto poi dal Locke con una totale rifondita.*
>
> [...] in said operetta [...] it has been sufficiently refuted the opinion of those who believed that it was sufficient remedy the publication of a new decree; it was not lacking this year and the party and the favour for the opinion expressed by a functionary of the *Monte s. Teresa* that the *soldo* should be increased to the number of six *quattrini*; which came close to the illustrious error of Newton for the coins of England, which was then corrected by Locke with a total recasting.[479]

In practice, someone within *Monte di S. Teresa* had proposed a reduction in the *quattrino* rate, which, as we shall see, was later proposed within the Council (i.e., the plan of the *sestini*). In fact, the *quattrino* was worth 3 *denari* and 4 *quattrini* corresponded to one *soldo*. So if the *quattrino* was worth 2 *denari* (i.e. renamed *sestino*), 6 *quattrini* (i.e. *sestini*) would have been required for one *soldo*. In fact, as mentioned in the Council's report, the *quattrino* suffered a devaluation process over the years, so that it was issued at 150 coins per one mark of copper, whereas in 1603 it was 91, and the Council calculated that the *soldo* was currently equivalent to 8 ¾ *quattrini* instead of 4, more than double. For Carli, such a solution was like Newton's proposal (which he calls the *"illustre abbaglio"* [famous mistake]) to realign the tariff instead of recoinage the pound sterling, as Locke had suggested. As far as we know, it is a mystery how Carli knew Newton's position if no one seems to have known it before Li published Newton's report in 1963, as Craig and Shirras, writing in 1945, also show:

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[478] Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano* (1766), in Custodi P., SCIEP, parte moderna vol. 14, 1804.

[479] Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., p. 8 (editor's translation). Note that Carli repeats these reflections on Newton elsewhere, e.g. in "Considerazioni preventive alla grida del 1778", op. cit., p. 175: "*La totale rifusione è stata sempre l'unico e il vero rimedio: mentre Newton istesso s'ingannò, e confessò d'essersi ingannato, allorché pensò che con una tariffa si potesse correggere il disordine della moneta inglese.* [Total recoinage has always been the only and true remedy: while Newton deceived himself, and admitted to having deceived himself, when he believed that a tariff could be used to correct the disorder of the English currency. Editor's translation].

> All four - Somers, Montagu, Locke and Newton - were of the same political persuasion - Whigs. Feavearyear also notes that Newton agreed with Locke. It is, however, unlikely that so analytical, and indeed captious, a person agreed completely with all Locke's theses. There is nothing in his subsequent views to suggest substantial disagreement with those most relevant.[480]

The authors raise the doubt, but they have no other document than Feavearyear's conjecture about the agreement between Locke and Newton. Be that as it may, Carli praised the final decision to make the recoinage.

The *Osservazioni preventive* are important also because they are the work in which Carli takes a clear position on imaginary money, rejects it as a political instrument and regards it as evil. Carli begins again to examine the reasons for the devaluation and begins as Neri did for the florin,[481] with the devaluation of the *zecchino*, first issued in Milan in 1261 at the value of 1 *lire*, to the current value of 14.10 *lire*. In Carli's story, the devaluation of the *zecchino* was due to the devaluation of silver coins, which also led to a proportional increase in the price level. At the beginning of the 17th century, however, there was not only a devaluation of the coins, but also the fact that "the parts were no longer proportional to the whole, so that four *quattrini* no longer contained the value of the *soldo,* ten *quattrini* not that of the *parpaiola* and eight *parpaiole* not that of the *lira*, thus replacing the silver with copper and adding an imaginary value to the deficits of the real value [of the coins]."[482] At this time, according to Carli, it was elaborated "a theory of intrinsic and extrinsic value, the first depending on the will of the prince, and the second on the relation between one coin and another; from which it follows that the coin may be imaginary, and that the number alone is sufficient to equalise the quantity."[483] From this peculiar reasoning we can derive Carli's concept of imaginary money. As we have already noted,[484] Carli considered the unit of account to be copper money, i.e. the *quattrino*, while imaginary money is interpreted by Carli as the number, i.e. the face value of the coin, which also takes into account the part of the value that is not represented by the precious metal but is imaginary, since this part is necessary to maintain the proportions between the coins. From this point of view, imaginary money is like a patchwork quilt that makes it possible to pass something false as true. As we have seen, also Girolamo Costantini criticised the "imaginary value" of

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[480] Craig J. T., Shirras G. F., "Sir Isaac Newton and the currency", in *The Economic Journal*, Jun. - Sep., 1945, vol. 55, p. 227. See also Horsefield J. K., *British Monetary Experiments (1650-1710)*, op. cit., note 32 p. 52.

[481] See chap. 2, para. 2.

[482] *"...di non proporzionare le parti aliquote col loro tutto; cosicché in quattro quattrini non si ritrovò più l'intrinseco del soldo, nè in dieci quattrini quello della parpaiola, nè in parpaiole otto quella della lira, facendosi sostituire il rame all'argento e supplendosi con un valore immaginario ai difetti del valore reale"*, Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., pp. 23 - 24 (editor's translation).

[483] *"...una teoria di valore intrinseco ed estrinseco; il primo, secondo essi, dipendente dall'arbitrio del principe, ed il secondo dal rapporto di una moneta con l'altra; e quindi formarono un corollario, che la moneta possa essere immaginaria e che il numero solo basti a compensare la quantità"*, Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., p. 24 (editor's translation).

[484] See chap. 2, para. 4.

money,[485] but he was far from saying that imaginary money was such a negative concept, for he had a positive model of the latter, namely the *lira di banco*, which Carli does not consider. In calculating the disproportions between the coins, however, Carli cannot do without imaginary money, because when he calculates the value of the metal content of the coins, this calculation is only possible using the ideal unit of account. As Massimo Amato observes, "in Carli's project, the imaginary *lira* sinks into insignificance, but without ceasing to be the implicit horizon in which his project also takes place."[486]

Carli thus chooses the *quattrino* as the unit of account, even if he expresses the value in lire, and the results are extreme. He determines the correct value of the *filippo*, which he calculates with L. 16 s. 15 d. 1 ⅞. instead of L. 7 s. 10 (i.e. the tariff). Let us take a look at the procedure. First, he calculates the intrinsic value of the *quattrino* and that of the *filippo*, then he divides the latter by the former and gets the number of *quattrini* that make up a *filippo*. Then he multiplies this number by the face value of the *quattrino* and finds the proper value of the *filippo* (actually, he makes an intermediate passage with the *parpaiole* to also calculate the value of the *filippo* in terms of *parpaiole*, which is L. 8 s. 15). Finally, by the same procedure and applying the bimetallic ratio of 14 1⁄2, he finds the (supposedly) correct value of the *zecchino* in L. 31 s. 14 1⁄4 in terms of *quattrini* and in L. 16 s. 12 d. 6 in terms of *parpaiole*, so that he can say, averaging, that "the correct value in terms of low money is *lire* 24 s. 11 3⁄8."[487] Needless to say, such a procedure seems rather far removed from reality.

On the other hand, Carli gives a picture of the monetary situation at the time with the corresponding consequences on a social level. The silver *filippi* and *ducatoni* have almost disappeared, the gold *zecchini* rarefied and one finds only copper and eroded money, also foreign, while the agio in the *zecchino* increases. Carli sees the reasons for this development primarily in arbitrage, which is based on the misalignment of monetary tariffs in neighbouring states.[488] The solution to monetary disorder, according to Carli, is a complete recoinage on the model of Turin. The principles to be followed are the same as those of

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[485] See chap. 2, para. 3.3.

[486] *"...nel progetto di Carli, la lira immaginaria sprofonda nell'inapparenza, senza peraltro cessare di essere l'orizzonte implicito in cui accade anche il suo progetto"* in Amato M., *Il bivio della moneta*, op. cit., p. 119 (editor's translation).

[487] *"...il valore giusto dello zecchino nella moneta bassa è di lir. 24.11 ⅜"* in Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., p. 30 (editor's translation).

[488] Carli sees two tendencies: first, a wave of speculation against the *filippi*, due to the fact that the Venetians demand *filippi* instead of *zecchini di Firenze* for the payment of the trade surplus with Milan, because the latter are worth less in Venice than the *zecchini di Venezia* and it is more convenient to exchange the *filippi* for the *zecchini di Venezia*, on the other hand, the money changers in Milan exchange the *zecchini di Firenze* for *filippi* and take the latter in Venezia to buy the *zecchino di Venezia* at a profit. Secondly, the *zecchini di Firenze* also become the object of speculation with the eroded money of Venice, Switzerland, Parma and Genoa, e. g. *blhozer, lire di Parma, di Piacenza, Butalà* and *parpaiole di Genova*, because it is profitable, e.g. to buy *marchetti* in Bergamo with the *zecchino di Firenze* and to buy this *zecchino* again in Milan, and so on with the other eroded money from above, so that the *zecchino* in Milan becomes rarer and the agio increases. See id., *Osservazioni preventive al piano intorno alle monete di Milano*, op.cit., pp. 31 - 35.

Neri, i.e., the right proportion between the metals and the relation between the whole and its parts. As for the former, Carli assumes a bimetallic ratio of 14 1⁄2, which he calculates as the European average. As for the latter, he states that each coin has the correct metal content:

> *[...] sarà vero altresì che la prima operazione debba esser quella di coniare i quattrini e le parpaiole, in modo che rappresentino giustamente il valore loro rispettivo senza nessuna contraddizione.*| *Proporzionata a queste sue parti dovrà per conseguenza esser la lira, la quale sarà regolata per rispetto all'oro con la proporzione comune, cioè di 14 ½ per un peso d'oro compresa la spesa di monetaggio; cosicché tanto valore debba essere in lira una, quanto in otto parpaiole e in quattrini 80, come era prima del secolo antecedente [...]*
>
> [...] it will also be true that the first operation must be to coin the *quattrini* and the *parpaiole*, so that they properly represent their respective value without any contradiction.|Proportional to these parts must therefore be the *lira*, regulated with the common proportion with respect to gold, i.e. 14 1⁄2 for a weight of gold, including the expenses of minting; so that there must be as much value in one lira as in eight parpaiole and in 80 soldi, as there was before the last century [...][489]

One part of gold should therefore be equivalent to 14 ½ parts of silver,[490] including the minting costs, which Carli will determine later. Then it is necessary "to recall to the mint all the coins that exist in the state and that have been minted with so much disorder in the same mint, that is, the *quattrini*, the *parpaiole* and even the current *lira*, in order to carry out an appropriate recoinage".[491] As for the larger coins, Carli proposes to abandon the *filippo* in favour of the *scudo*, on the model of the *scudo piemontese*, both for minting reasons and for the simplicity of calculation and change.[492] As for gold coins, the mint should issue "*dobble"* (i.e. *doppie*) and *zecchini*. Thus, Carli takes as a sample the *zecchino* with the legal value of L. 14 s. 10 and the weight of 68 *grani*, so that he can determine the value of the ounce of gold and, through the bimetallic ratio, the ounce of national silver. The value of copper, on the other hand, is derived from the arbitrary choice of 100 *quattrini* per mark.

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[489] Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., p. 82 (editor's translation).

[490] As we will see, this new ratio means a silver revaluation in Milan.

[491] *"... richiamare alla zecca tutte le monete che esistono nello stato coniate con tanto disordine nella medesima zecca; cioè i quattrini, le parpaiole, ed anche le lire correnti per farne una proporzionata refusione"* in Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., p. 85 (editor's translation).

[492] Carli says: *"lo scudo del valore di lire 6 ha la sua metà in lire 3, il suo quarto in soldi 30; sicché una lira e mezza fa il quarto dello scudo, tre lire la metà, sei lire lo scudo intiero"* [the *scudo* of the value of 6 *lire* has its half in 3 *lire*, its quarter in 30 *soldi*; so that one and a half *lire* make up the quarter of the *scudo*, three *lire* the half, six *lire* the *scudo*]; moreover, *"scudi 2, un quarto, e una lira facilmente danno le lire 14.10, che è il valore dello zecchino,"* [*scudi* 2, a quarter, and a *lira* easily add up to 14.10 *lire,* which is the value of the *zecchino*], in id., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., p. 85 (editor's translation).

In fixing the price of the ounce of metal, Carli then performs the same operation that Neri did in fixing the value of an ounce of silver in relation to the imaginary *lira* from the *filippo* at L.7 s. 10 and the ounce of gold by the bimetallic ratio (he proposed 15 ½), while Carli first fixes the ounce of gold by the *zecchino* at L. 14 s. 10 and then the ounce of silver by the bimetallic ratio at 14 ½. However, while Neri first deducts the minting costs from the value of the *filippo* and then calculates the parity with silver, Carli, starting from the value of gold *zecchino*, sets the bimetallic ratio directly to the ounce of national silver, which includes the minting costs. Since he states that foreign silver must be exchanged at intrinsic value excluding minting costs, it is difficult to see how to determine its value. One possibility is to calculate the difference at 2 percent, i.e. the percentage of minting costs agreed at the Turin conference, but he did not clearly commit himself.[493] Instead, later in the year, in the *Piano ragionato per la refusione* [Reasoned plan for recoinage], he states that the minting costs should vary according to the type of coin and, after analysing the minting costs, he gives the values shown in the following table:[494]

tab./fig. 15 **Carli's proposal on the minting costs**

Coins	Minting costs In s. d.
Scudi	4. 2. 4/7
Mezzi scudi	5. 6. 45/52
Quarti di scudo	7. 1. 7/20
Lire	6. 11. 2/5
Mezze lire	8. 7. 7/8
Parpaiole doppie	6. 10. 49/50
Parpaiole semplici	7. 5. 13/25
Soldi	2. 7. 23/100
Sestini	3. 3. 3/30
Quattrini	4. 51/64

Source: Carli G. R., "Piano ragionato per la refusione," op.cit., p. 78.

[493] See Carli G. R., *Osservazioni preventive al piano intorno alle monete di Milano*, op. cit., p. 91.
[494] See Carli G. R., "Piano ragionato per la refusione," op.cit., p. 78.

The system that differentiates expenditure according to the actual cost of production is indeed confusing, because on the basis of these terms it is not possible to clearly derive the spread between the value of national silver and the value of foreign silver or the mint price of silver bullion, so that, as we shall see, Kaunitz and the final architects of the reforms eventually discarded this system. Apart from the technical aspects, the difference with Neri is that Carli wants to calculate in real money, so that the *lira* in his eyes is effective money counted in 80 *quattrini*, the latter being the "real" unit of account, while Neri uses imaginary money to value copper and eroded money apart from intrinsic value.

When analysing the costs of minting coins, Carli suggested that the *Consiglio dell'economia* should manage the mint and pay the workers "by the day and not by the mark, granting each one wages in proportion to the effort and fatigue involved".[495] In fact, Carli noted that the payment of mint fees per mark by the government to subcontractors led to some "inefficiencies," as we can see looking at the contract with the mintmaster Giuseppe Triepi.[496] Of course, in this case the minting would not have been subcontracted, but still the payment of salaries per mark would have led to inefficiencies. Savings in minting expenditures could have been increased by investing in mechanisation of the mint to reduce staffing levels. Another problem to be solved was that there was no guaranteed weight sample, because the only one was in the possession of the goldsmiths, who used one kind of measure when they had to buy precious metals and another when they wanted to sell them! Therefore, Carli, like Neri, recognises the need to grant a public standard and proposes:

> *[...] riunire al tribunale di S. M. la regolazione de' pesi, ingiungendo inoltre di formare in Zecca un giusto e vero campione regolare sull'antico e non mai alterato ragguaglio di grani 68 per zecchino di Venezia il qual campione debba servire immancabilmente per tutti gli artefici di oro e di argento i quali saranno obbligati a ricevere le bilance e i pesi dalla Zecca contraddistinti col bollo. Cosicché l'oro e l'argento, a salvezza de' pubblici e privati contratti, non sieno più soggetti a variazioni di peso.*
>
> [Her Majesty's Court assumes the regulation of the weights, and also orders, that there be formed in the Mint a just and true regular pattern according to the ancient and never altered indication of the grains 68 for the *zecchino di Venezia*, which pattern must serve without exception all gold and silver manufacturers, who are obliged to receive the scales and weights from the Mint with the stamp. Thus, to save public and private contracts, gold and silver are no longer affected by weight changes.][497]

[495] *"... in ragione di giornata e non di marco, accordando la paga a ciascheduno in proporzione della rispettiva ingerenza e fatica"*, Carli G. R., "Piano ragionato per la refusione," op. cit., p. 82 (editor's translation).
[496] See para. 1.
[497] Carli G. R., "Piano ragionato per la refusione," op. cit., pp. 83-84 (editor's translation).

Carli returns to his plan and calculates the loss they would suffer if they withdrew all the money at face value, i.e., the discrepancy between the intrinsic and nominal value of the *parpaiole* and the *quattrini*, and thus, estimating the quantity of these currencies, calculates a loss of L. 1,347,500 for the *quattrini* and the rest for the *parpaiole* for a total of L. 1,355,963 s. 6 d. 3.[498] Actually, this loss would not be if the mint exchanged the coins by weight, but for Carli this would not be fair because the responsibility for the monetary disorder does not lie with the people. So it is up to the government to finance the loss, and he notes that the mint needs 1.5 million *lire* to start operations. This is the case for a loan, and there are two ways to get it without paying interest: The Chamber lends the entire sum to the Mint through a receipt, or the latter gives "many bills of L. 50, 100, 200, 500 and 1000, which do not yield any interest but are received by all and also by the Chamber, as *moneta di grida*,"[499] to be cancelled as long as the mint makes a profit - and to this end Carli proposes to allow the Mint to issue *talleri* to be sold at a profit in the ports of Venice, Genoa and Leghorn. The project of the "*viglietti"* [bills] follows the example of Piedmont, which issued bills with absolute success, first with interest and then without interest, as the same Carli admits. The loan would eventually be offset by the coinage costs saved and the deal with the *talleri*. Be that as it may, if the project of a complete recoinage on the Piedmontese model in a "province" like Milan proves to be quite ambitious, both the technical and financial aspects were indeed anything but certain, which explains why the reform was postponed once again.

5.2 The Council's final report

The 1770s began with the last act of the *Consiglio dell'economia* in 1771, when it was dissolved and replaced by the *Magistrato camerale*. In this document, written by Beccaria, who had just been appointed member of the *Consiglio* on April 29 of the same year,[500] a common plan for monetary reform was presented.[501] The plan is based on Carli's of 1766, but also takes into account the intervention of the new council member appointed in 1766, Stefano Lottinger, a Habsburg functionary. Lottinger's report,[502] published a few months earlier, is interesting for several reasons. First, because of the plan of the *sestini*, which was taken into account by the *Consiglio* and integrated into the overall plan, and second, because of the original approach to the matter. First of all, Lottinger describes the monetary

[498] Carli G. R., "Piano ragionato per la refusione," op.cit., pp. 87-88.

[499] *"... tanti viglietti di credito di L. 50, 100, 200, 500 e 1000, i quali non portino nessun interesse ma sieno ricevuti da tutti ed anche dalla Camera, come moneta di grida"* in Carli G. R., "Piano ragionato per la refusione," op. cit., p. 90 (editor's translation).

[500] See Spirito U., *Beccaria Cesare*, Enciclopedia Italiana, Treccani, 1930.

[501] Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", in Vianello C. A., *La riforma monetaria in Lombardia*, 1939, pp. 35-71.

[502] Lottinger S., "Relazione sopra la riforma delle monete dello stato di Milano" (6 febbraio 1771), in Vianello C. A., *La riforma monetaria in Lombardia*, 1939, pp. 98 - 123.

landscape of the state of Milan at the beginning of the 70s, characterised by an almost complete disappearance of silver. The problem is the bimetallic ratio, and Lottinger claims that it would have been changed in favour of silver several years ago, as the process of silver outflow has been taking place since mid-century, as silver was undervalued at the legal gold:silver ratio of 1:15. The disappearance of silver, already described by Carli in 1766, has just taken place, leaving the *zecchino* on the upper level and the *quattrino* on the lower level of the monetary system without "a barrier between gold and copper,"[503] with the exception of the *parpaiola*. The lack of silver drives up the gold agio, the *zecchino* reaches the value of 16 *lire* and is exchanged for 1280 *quattrini*, instead of the 1160 required for the *corso di grida* of L. 14 s.10. The originality of the approach consists in the positive consideration of agio, as Lottinger says:

> *L'introduzione del corso abusivo che, confondendo sempre l'effetto con la causa, si è tante volte tentato di proscrivere con leggi in contraddizione con la natura della cosa, non è dunque per se stessa un male per lo stato; anzi ogni grado di accrescimento del medesimo corso è un passo verso la vera proporzione.*
>
> [The introduction of an abusive course, which always confuses the effect with the cause, and which one often tries to prohibit with laws that contradict the nature of the thing, is therefore in itself no evil for the state; in fact, every degree of growth of the same course is a step in the direction of the true proportion.][504]

Lottinger understands that the market is the only way to adjust the value of currencies to each other. The only problem for Lottinger is that the market did not immediately adjust the exchange rate of the *zecchino* to the correct level. This might have been possible if the market had been free to set the exchange rate, if money changers had not been threatened with sanctions. Practically, this would be the rule that Einaudi calls *clausola galianea*, referring to Galiani who said that the mint should indicate the price of coins as *"corso di voce"* and not as *"di grida"*, meaning that it should be non-mandatory and changeable by the market, so that the *corso di voce* could be adjusted afterwards.[505] The same Einaudi, commenting the *clausola galianea*, claims that "the domestic market would have promptly indicated the price,"[506] so that the proportions between the metals were promptly adjusted without harming anyone, says Lottinger, except the day labourers (who are paid in *quattrini*) until they do not obtain higher wages. But he also says that lowering wages would make the economy more competitive, which the other members of the council, namely Beccaria and Carli, do not approve, given the sheer subsistence level of those.

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503 *"...una barriera tra l'oro e il rame"*, Lottinger S., "Relazione sopra la riforma delle monete dello stato di Milano", op. cit., p. 112 (editor's translation).

504 Lottinger S., "Relazione sopra la riforma delle monete dello stato di Milano", op. cit., p. 108 (editor's translation).

505 See para. 4.

506 *"...the domestic market would have promptly indicated the price"*, Einaudi L., "Teoria della moneta immaginaria", op. cit., p. 23 (editor's translation).

The manoeuvre on the *quattrino* was the core of his *sestini* plan. First, Lottinger proposed that the mint exchange them at the *corso abusivo*, which was somewhere around 17 *lire* per *zecchino*, and since "reducing the numerical value of a species by a third or increasing the weight of a half has the same effect",[507] he proposed to issue the new *quattrini* at a different rate, that is, to reduce their face value and call them *sestini* (i.e., each coin of d. 2, so 6 *sestini* makes one *soldo*). The *Consiglio dell'economia* did not agree with such a manoeuvre, and Beccaria, in the final report of the Council simply gave the reasons, namely that people are used to a *soldo* of 4 *quattrini* and it would have been so likely that they would follow this habit even if the *sestini* plan was implemented, which would mean to create again a *corso abusivo* in *quattrini.* It should be noted here that Beccaria had changed his mind compared to about ten years earlier. In fact, the *sestini* plan would have fitted perfectly into his model at the time, but within the Council he sided with Carli and took the leading position when he drafted the final report, while Verri maintained the position against a national coinage, although he was still vice-president and continued to deal with other issues, but in a letter reporting a discussion in the presence of the emperor, who visited Milan in 1769, he revealed that he favoured the abatement of the *quattrini* (in fact as a consequence of his early proposal of 1762):

> *[...] io, naturalmente, dissi che sarebbe forse stato più semplice un editto che dichiarasse che il soldo dovesse essere composto di otto, dieci, o dodici quattrini, quanto corrispondesse all'intrinseco. Lottinger mi replicò che questa operazione ricadeva sul popolo più miserabile: no risposi, i miserabili non hanno che quel poco denaro della giornata e per un giorno di diminuzione ne sarebbero assai ricompensati in seguito coll'aumento dei salari.*
>
> [I said, of course, that an edict stating that the *soldo* should consist of eight, ten, or twelve *quattrini*, according to their intrinsic value, would have been simpler. Lottinger replied that this measure would affect the poorest: No, I replied, the poorest have only the little money of the day and would be greatly rewarded later with the increase in wages for a day of decrease.][508]

However, it was the same Lottinger who, a few years later, presented the project of the *sestini* inside the *Consiglio dell'economia*, which actually did not completely discard it. In fact, Beccaria modified it to be integrated into the final plan, which was mainly based on Carli's plan of 1766.

Beccaria begins the final report of the Council by describing the monetary disorder and the known reasons with the corresponding effects. First of all, the main problem has become the lack of silver money:

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[507] *"...diminuire di un terzo il valor numerario di una specie, o accrescerne il peso di una metà viene ad essere la stessa cosa quanto all'effetto",* Lottinger S., "Relazione sopra la riforma delle monete dello stato di Milano", op. cit. p. 119 (editor's translation).

[508] Greppi E., Novati F., ed., *Carteggio di Pietro ed Alessandro Verri dal 1766 al 1797*, L. F. Cogliati, 1910, p. 349.

> *Colla perdita del metallo, e massime dell'argento ch'è quello che solo può portare comodamente le minute divisioni del commercio, si rende tarda la circolazione, nasce premura e ricerca di quelle monete e di quel metallo che si trova mancante, questo cresce di prezzo e si viene a pagare il danaro medesimo ch'è destinato a pagare ogni cosa [...]*
>
> [With the loss of the metal and especially of the silver that alone can comfortably carry the tiny parts of the trade, the circulation is delayed, the worry and the search for the coins and the missing metal arise, which rises in price and one comes to pay the same money that is destined to pay for everything [...][509]

Thus, the scarcity of currency suitable for trade in agricultural products or for the production of goods slows down the velocity of money (*"si rende tarda la circolazione"*) and forces to seek it abroad, so that foreign eroded money is imported at an exchange rate below par, for example, the *marchetti* from nearby areas are exchanged 1 for 3 *quattrini* when the exchange rate is higher based on the intrinsic value (i.e. the par).

Second, the lack of a monetary standard in silver makes it difficult for the population to calculate the value of money and creates uncertainty in negotiations, where money changers benefit from their stronger position.

Third, wages for day labourers are the same and prices are increased by devaluation:

> *Il prezzo dei generi prende un ingiusto incarimento, che non proviene in tal caso da un più grandioso esito di prodotti di consumazione né dall'aumentata quantità di denaro, ma dall'indebolimento e diminuzione dell'intrinseco valore delle monete nazionali.*
>
> [The price of genres assumes an unjust increase, which in this case results neither from a more grandiose outcome of consumer goods nor from the increased money supply, but from the weakening and reduction of the intrinsic value of national currencies.][510]

It seems that here a possible inflation due to demand (i.e. Beccaria speaks of "a more grandiose outcome" [*un più grandioso esito di prodotti*], which can probably be interpreted as an increase in demand that drives the outflow of goods from the warehouses) is rejected as well as inflation due to an increase in the money supply (according to the quantity theory of money), while the debasement of low money is the cause. According to Beccaria, the 12 percent premium on the *zecchino is* the cause of exactly the same increase in the price level (we will come back to Beccaria's theory of money later).

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[509] Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 44 (editor's translation).
[510] Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 45 (editor's translation).

Finally, the treasury loses because it has allowed the payment of taxes in *parpaiole* up to one third. But the problem from which all these difficulties stem is that the mint equivalent (i.e. the legal value in *quattrini*) of a copper mark has increased enormously in relation to the mint price, as Beccaria summarises below:

> *Prima di altra operazione noi abbiamo creduta indispensabile la rifusione della moneta di rame [...] indebolita di un terzo dell'intrinseco valore; cioè dove prima 100 quattrini pesavano un marco, ora ce ne vogliono 150 per formare il medesimo peso, frattanto che quel medesimo rame che monetato valer dovrebbe solamente 25 soldi, e non monetato vale soltanto 17, viene ad essere valutato come se valesse L. 1, s. 17 d. 6.*
>
> [Before any other operation, we considered it essential to recast the copper coin [...] weakened by a third of its intrinsic value; that is, where 100 *quattrini* used to weigh a mark, it now takes 150 to form the same weight, while the same copper, which should be worth only 25 *soldi* monetised and is worth only 17 not monetised, is valued as if it were worth L. 1, s. 17 d. 6.][511]

Therefore, the Council needed a careful plan, which we analyse step by step: 1. The recoinage of copper would cost as much as the difference between the mint equivalent of the *quattrino* for a mark of copper (L. 1.17.6) and the mint price (s. 17) of s. 20 d. 6. per mark. Nevertheless, the total quantity of *quattrini* is uncertain, but the Council refer to the (hopefully pessimistic) estimate of Carli, who estimated the production of 170 *quattrini* per mark for 980,000 marks from the beginning of the century, while he put the price of copper at L. 15 per mark due to its poor quality. However, as some territories were ceded to Piedmont over the years, the number of *quattrini* may have shifted abroad, even if some more would have come from the foreign mints and from counterfeiters. Be that as it may, the Council is working on the basis of Carli's estimate of a loss of L. 1,347,500.[512] 2. According to this estimate, the number of *quattrini* amounted to 166,600,000 for a face value of around 2 million *lire*. 3. The Council assumes that the needs of trade amounted to 1 million *lire*, i.e. 80 million *quattrini*, based on the assumption that each person spent 20 *soldi* per day,[513] i.e. 80 *quattrini*, so that the multiplier was 1 million, i.e. the number of inhabitants.[514] 4. The 1 million *lire* must be converted for one half at the original rate of 100 *quattrini* per mark, which Carli has determined.[515] 5. The remaining one million and a half *quattrini* are to be reduced to *sestini* at 2 d. each, in the hope ("should perhaps happen

[511] Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 50 (editor's translation).
[512] See Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 50; Carli G. R., "Piano ragionato per la refusione," op.cit., pp. 87-88.
[513] Carli reports (see above, para. 5.1) that 20 soldi are the daily pay of the labourer, which is supposed to be entirely spent.
[514] The number of inhabitants corresponds to the historians' estimate for the state of Milan, see para. 1.
[515] See Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 50.

that…" writes Beccaria with an experimental approach that will not please Kaunitz) that they will retain the same exchange rate with the *marchetti* as before (i.e. 3 *sestini* per 1 *marchetto*), which is now above par because the *marchetto* would cost half a *soldo* instead of 3⁄4 as before, and this would drive the *sestini* abroad, where they could buy gold and silver: "our copper would be exchanged for the gold and silver of others, as is now happening with the copper of our gold and silver", i.e. the war of coins that Beccaria spoke of in the *Disordine delle monete*.[516] 6. As soon as the *sestini* had flown away, they would be banned as foreign money (eroded foreign money is to be banned under the plan). 7. The remaining copper which is brought to the mint is to be exchanged for paper money according to the Turin model *("coi viglietti o* coupons *all'esempio di Torino")* as envisaged by Carli (which Kaunitz will discard as "dangerous"). 8. the exchange of the copper brought to the mint was to be made at the value of the *zecchino*, i.e., L. 14 s. 10 *(corso di grida)* of the new copper money for every L. 16 s. 5 *(corso abusivo)* of the old copper money, and at the same time, in order not to harm the population, all *mete* [administered prices] and even credits were to be reduced by 12 percent (i.e., by the percentage of the markup on the *zecchino* deducted in the exchange). 9. As for the phases of exchange, the *quattrini* were to be accepted on the above terms for 6 weeks, remaining in the coin depository to prevent the same *quattrini* from being exchanged more than once. 10. During this time, the low money in circulation would be the eroded and copper foreign money (another point that will not please Kaunitz).

The Council's plan, in fact, seems to be a compromise between Carli's plan, reflecting the Savoy monetary reform, and the manoeuvre of the tariff in the wake of Verri and Beccaria's proposal of the early 1760s, followed by the *sestini* plan, which is then modified and integrated into the final plan. In this way, the manoeuvre of the tariff becomes a game with the aim of driving the surplus copper money out of the state, with the alternative second-best result of lowering the price of this copper when it is exchanged at the mint, as can be seen from Beccaria's words on the *sestini*:

> *Uscita poi che fosse la moneta bassa attuale [*the *sestini], questa potrebbe in seguito considerarsi come forestiera e trattarsi come quella. In questa maniera si verrebbe forse a rivolgere la sagacità de' trafficanti di monete, fino ad allora a noi contraria, in nostro favore. [...] quantunque potesse accadere che li finitimi, cessato per essi il vantaggio, anzi rivolto in perdita, dell'introduzione delle loro monete basse [...] non prendessero le misure più giuste e le più sollecite per prevenirci, in maniera poi che restando tuttavia la vecchia moneta col pericolo della vecchia valutazione, non si dovesse necessariamente richiamarla alla Zecca. Pure, considerando noi che allora sarebbe richiamata in qualità di sestini, non già di quattrini, cesserebbe ogni svantaggio [...]*

[516] *"...dovrebbe forse accadere che...", "...questo cambio si farebbe del nostro rame coll'oro e argento altrui, come ora si fa coll'altrui rame col nostro oro e argento"*, Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op.cit., pp. 53-54 (editor's translation). See also para. 3.

> [When the present low currency [the *sestini*] has flown away, which might later be regarded as foreign and so treated. In this way, perhaps, we would turn the wisdom of the money dealers in our favour, which until then had been against us. [...] though it might be that, as soon as it was over, the advantage, nay the loss, which they would suffer by the introduction of their low coins, [...] they would take the most just and prompt measures to prevent us, so that the old currency, with the danger of the old valuation, would necessarily have to be referred to the Mint. Moreover, we must consider that it would then be recalled as Sestini, not already of Quattrini, which would cancel any disadvantage [...][517]

Thus, if most of the *quattrini* (i.e., 1.5 million out of 2 million) were converted into *sestini*, they would either flow off or, as for the remaining part, be withdrawn at a lower price and exchanged for paper money without loss.

The basic framework of the plan is thus based on Carli's assumption that the correct weight of the *quattrino* is 100 per mark, which is more or less the value in 1603, when this coin was first issued and all money was proportional, as Carli has researched. A recoinage is therefore necessary to restore the intrinsic value of the *quattrino*, and the costs that would be reduced by changing the rate of the *quattrino* would, according to the Piedmontese experience, be financed by treasury bills. Another important point is the centralization of the money supply, which had been taken over by various private forces such as subcontractors and money changers. "The reform of the coinage is almost a great alienated royalty which the ruler can conveniently redeem",[518] says Beccaria, implicitly referring to the great work of *Monte S. Teresa* to redeem the revenues alienated to private tax farmers. The move to turn to the bank to issue a loan of 1.5 million *lire* in banknotes to carry out the recasting is short, but this threshold is not crossed: "treasury bills of 50, 100, 200, 500 *lire*" are to be issued, "circulating without interest as *moneta di grida* and accepted by the Treasury, which immediately grants them general credit",[519] payable in fifteen annual instalments of 100,000 lire, i.e. 60,000 *lire* from the *"Cassa della Regia Amministrazione"* [Royal Administrative Treasury] and 40,000 *lire* from the *"dazio della seta greggia"* [raw silk duty], a levy on the export of raw silk to finance the processing industry, which was damaged by the same export of raw silk and could be partially diverted to the new area of application.

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[517] Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", p. 54 (my translation).

[518] *"... la riforma delle monete è quasi una gran regalia alienata, la quale convenga al sovrano di redimere",* Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", p. 66 (editor's translation).

[519] *"... rilasciando de' viglietti di 50, 100, 200, 500 lire, i quali non portino verun interesse, ma sieno ricevuti alle casse come moneta di Grida, colla quale accettazione acquisteranno immediatamente un credito universale"*, Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", p. 66 (editor's translation).

To summarise, the operations would have started with the issuance of the credit (i.e. 1.5 million *lire*) in the form of treasury bills to cover the entire cost of the recoinage. Once the small amount of money needed for circulation was produced (i.e. 20 *soldi* per person per day, or half a million *lire*), this amount would be made available in *quattrini* as 100 per mark.[520] The following operations would have had to be carried out: first, the exchange of the old *quattrini* at *corso abusivo*; second, the conversion of the remaining part into *sestini*; third, the prohibition of foreign eroded money. As for the new coinage, in addition to the *quattrini*, the *parpaiola* is to be withdrawn and converted into a 5-soldi coin.[521] The *campione di grida* (i.e. the money pattern) is the *zecchino* of 68 grains of gold at L. 14 s.10, the bimetallic ratio of 1 to 14 1⁄2 is established, the *scudo* of 6 *lire* on the title of Milan of 10.20 carats is the silver pattern "with the minting cost at 32 grains per mark and 3 grains weight per *scudo*".[522] Then the minting of the *mezzi scudi* and *quarti di scudo* "with the minting cost of 2 grains for the *mezzo scudo* and grains 1 ½ for the *quarto di scudo*",[523] and the "*lira* of *20 soldi* at the title of ounces 6.15 [per pound] and mint cost in proportion to the *scudo*"[524] is established, finally the *mezza lira* to the same title and the quarter of *lira* or *5 soldi* to the title of 3 ounces per pound. Gold coins are also minted, such as *doppie* and *mezze doppie* of 21.18 carats worth 24 and 12 *lire* respectively. The *"rimedio"* [minting costs] is thus applied to all silver coins, and increasingly so the smaller the coins are, because the smaller the coin, the higher the minting costs (although we have already pointed out the possible criticism of this system in the previous section).[525] While the *scudo* has the fineness of all Milanese silver, the *lira* is alloyed and the *mezza* lira even more so in order to obtain a suitable size of coin. Finally, the weight samples of gold and silver were to be kept at the mint, which was responsible for tasting the gold and silver traded by the goldsmiths and certifying the weight and fineness of the precious metals.

5.3 Archduke Ferdinand's intervention and Kaunitz's reaction

In 1771, a comprehensive reform of the Milanese administration was carried out. Giuseppe II, who had become emperor and co-regent with his mother Maria Theresa after the death

[520] It seems that sestini and soldi coins would also have been available at the same rate per mark : "*Che si prepari un mezzo milione … di nuovi quattrini di 100 al marco e de' rispettivi sestini e soldi",* Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", p. 68.

[521] The *parpaiola semplice* is to be banned as foreign money.

[522] *"...col rimedio in bontà di grani 32 al marco e in peso grani 3 per ogni scudo"*, Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", p. 69.

[523] *"...col rimedio di grani 2 per il mezzo scudo, e di grani 1 ½ per il quarto di scudo"*, Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", p. 69.

[524] *"...lira di 20 soldi a titolo di oncie 6.15 [...] e il rimedio a proporzione dello scudo"*, Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", p. 69.

[525] Moreover, it is not clear whether there is a minting cost for gold coins. However, it is stated that "no loss can occur in the minting of silver and gold coins" (*"nessuna perdita potendo esservi nel coniare le monete di argento e d'oro"*, Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 62).

of his father Francesco Lorena in 1765, criticised the Milanese government and, following an investigation carried out during a visit to Milan in 1769, pushed ahead with a reorganisation. In particular, the *Ferma generale*, a private company headed by Antonio Greppi, was abolished and tax collection was centralised at the *Camera dei conti*. In addition, the *Consiglio dell'economia* was abolished and a *Magistrato camerale* was set up, which was always chaired by Carli and in which Verri and Beccaria participated alongside other ministers. Verri's more radical position, especially with regard to liberalisation, was in turn opposed by the more conservative Carli, and the opposition in the council remained. In 1771, Archduke Ferdinand, a brother of Giuseppe II, became governor of Milan and Kaunitz reported on a plan for the recoinage that followed that of the *Consiglio dell'economia*, which had been drawn up by a ministerial conference chaired by Ferdinand, with the aim of reorganising some points of the previous plan and reducing the costs of implementation. However, Kaunitz was quite sceptical about the solution proposed by the *Consiglio dell'Economia* and the conference chaired by Ferdinand and opened a sort of consultation on 5 specific points to be discussed by ministers, bankers and businessmen who had to write a report to the Magistrato camerale. The questions were as follows:

1. *Qual proporzione fra l'oro e l'argento possa meglio convenire alle circostanze del paese.*

[What ratio of gold and silver would best suit the circumstances of the country.][526]

2. *Se e quali monete d'argento si debbano coniare ed in qual bontà, per valutarle poi colle altre nazionali ed estere secondo la suddetta proporzione, calcolando nelle prime la spesa della fabbricazione, e ritenendo il puro intrinseco rispetto alle seconde.*

[Whether and which silver coins of what quality should be minted and then valued with other domestic and foreign coins in the above ratio, calculating for the former the cost of production and for the latter the pure intrinsic value.][527]

3. *Se debbasi dar corso nello stato a tutte le monete estere, o escluderne alcune, come sarebbero le monete erose e di rame.*

[If all foreign currencies are to be legal tender in the state, or some are to be excluded, such as the eroded and the copper coins.][528]

4. *Se invece di rifondere i quattrini per accrescerli di peso, si debba minorarne il valor numerario, e fissar questo, come anche il prezzo al quale dovranno essere prima ricevuti al concambio.*

[526] Verri P., "Consulta sulla riforma delle monete" (1772), in Custodi P., SCIEP, parte moderna, vol. 16, 1804, p. 298 (editor's translation).
[527] Verri P., "Consulta sulla riforma delle monete", op. cit., p. 301 (editor's translation).
[528] Verri P., "Consulta sulla riforma delle monete", op. cit., p. 305 (editor's translation).

[whether, instead of refunding the *quattrini* to increase their weight, we must reduce their nominal value and fix it and the price at which they must first be purchased on the exchange.][529]

5. *Se vi sia alcun mezzo provvisionale per rimediare almeno in parte agli sconcerti presentanei, ammettendo nelle regie casse con una giusta proporzione fra di loro ogni specie di monete, diminuendo così la ricerca di quelle di grida e l'aggio che ne viene in conseguenza.*

[Whether there is a way to at least partially eliminate the current inconvenience by allowing all varieties of coins in the right proportion to each other in the royal funds, which would reduce the search for those *di grida* and the resulting premium.][530]

Let us take the individual questions and consider the various answers and the positions of Chancellor Kaunitz (1776),[531] Pietro Verri (1772)[532] and the other ministers in particular.

Starting from the first question about the right bimetallic ratio, the *Consiglio* proposed to lower the gold-silver ratio from about 1 to 15 (this is the ratio as reported by Lottinger, although Verri says that the current ratio varies according to the coins considered and the average is 14 ⅘)[533] to 14 ½, which was calculated by Carli as the European average, and everyone agrees, even if Kaunitz claims that the average with the neighbouring country should be taken into account, but the result may not change even if the current calculations are taken into account and 14 ½ can be confirmed.

The second question refers to the proposal of the *Consiglio dell'economia* to reopen the mint and issue *scudi* instead of *filippi* for silver coins and *doppie* for gold coins, allocating the minting costs to the coins. Verri disagrees on this point, for as he also wrote in *Dialogo sulle riforme delle monete* in 1762, he believes that a small state like Milan should not issue its own coins because of the lack of mines and the cost of providing gold and silver bullion. In addition, coinage fees on national money would turn the public's favour to foreign coins that circulated at intrinsic value. From his metallist perspective, which he traced first to Giulio Paolo and then to Davanzati (as Neri did), Verri believed that all money, foreign or otherwise, should circulate at intrinsic value. Kaunitz, while not of the same conviction, considers Verri's reasons against the reopening of the mint in Milan to be valid. He adds that the higher bimetallic ratio would likely attract silver from abroad in the form of bars or specie, but this could have a negative impact on the exchange rate and also on domestic gold circulation. In addition, the government cannot bear the cost of a full recast, and the

[529] Verri P., "Consulta sulla riforma delle monete", op. cit., p. 307 (editor's translation).
[530] Verri P., "Consulta sulla riforma delle monete", op. cit., pp. 309 - 310 (editor's translation).
[531] Kaunitz W. A., "Relazione conclusiva a sua maestà" (11 ottobre 1776), in Custodi P., SCIEP, parte moderna vol. 14 pp.133-180, 1804.
[532] Verri P., "Consulta sulla riforma delle monete", op. cit.
[533] Cfr. Lottinger S., "Relazione sopra la riforma delle monete dello stato di Milano", op. cit., pp. 100 - 102; Verri P., "Consulta sulla riforma delle monete", op. cit., p. 298.

alternative of issuing treasury bills as in Piedmont seems too risky to Kaunitz, who concludes that "the plan of a general recast does not seem to be compatible with the circumstances in Lombardy".[534] He agrees, however, that it is possible to issue new coins as part of the reform as *"accessorio"* [optional], e.g. some *scudi* with the silver of the full-bodied undervalued *filippi* or some *doppie* buying gold from Genoa until the exchange rate is favourable, or by other temporary and convenient means. In addition, Kaunitz hints at the possibility of minting coins that carry a *"prezzo d'affezione"* even abroad, like the thalers issued by the Royal Mint in Vienna, but also to the *zecchini* from Venice and Florence,[535] and continues:

> *Se gli scudi e le doppie o zecchini da monetarsi in Milano avranno un buon successo, ciò che dipenderà dalle ben accertate misure e giuste massime con cui si eseguirà la riforma, quella zecca, caduta da molti anni nell'annientamento ed oziosa, ripiglierebbe l'antico splendore; ed oltre al vantaggio per lo stato della mano d'opera, ne potrà risentire un sensibile beneficio nel corso de' cambi, rialzandosi essi a suo favore sopra al pari.*
>
> [If the *scudi* and *doppie* or *zecchini* to be minted at Milan will have a good success, which depends on the well-considered measures and just maxims with which the reform is carried out, this mint, which for many years has been sunk in destruction and idleness, would regain the old splendours; and in addition to the advantage to the condition of the labour force, it may be affected by a significant advantage in the course of the exchange, which will go beyond the par.][536]

Let us examine the third question on the *Consiglio*'s recommendation to ban eroded and copper foreign money. Verri disagrees on this point as well. He believes that all money should be valued according to its metal content and that a coin whose alleged properties, such as weight and fineness, have been verified should be accepted by the government even in payment of taxes, even if it is foreign. Kaunitz, on the contrary, considers that "without the absolute prohibition of the aforementioned coins, a fixed and unalterable system can never be achieved",[537] on the other hand, he takes into account the opinion of those who believe that trade with neighbours, especially in wheat, requires the use of low foreign coins, and supports Lottinger's proposal to entrust the local merchants with the task of exchanging foreign money at the proper value. In fact, the problem was that these eroded and copper foreign coins circulated in the country at face value, thus receiving a

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534 *"...Il piano dunque di una rifusione generale non sembra combinabile colle circostanze della Lombardia"*, Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 147 (editor's translation).

535 As for the conditions for a *"prezzo d'affezione"* of a particular coin abroad,, we can observe that they depend on the technical characteristics of the coin, the weight and the fineness and, moreover, the security of the standard, guaranteed only by prestigious mints supported by solid governments that can guarantee the stability of the coinage, in short, all the characteristics that make the money an efficient means of payment and also a safe store of value.

536 Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., pp. 148 - 149 (editor's translation).

537 *"...senza l'assoluta proibizione delle monete suddette, non si potrà mai ottenere un sistema fermo e inalterabile"*, Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., pp. 149 - 150 (editor's translation).

liquidity premium, in a sense something similar to the *"prezzo d'affezione"*, so that the Milanese holders paid the seigniorage to the foreign country. Moreover, foreigners benefit from this exchange as they gain access to gold at a cheaper rate than in their country, so they can earn from arbitrage transactions (as Beccaria recognised in the final report of the *Consiglio dell'economia*). For example:

> *Il corso del zecchino gigliato in Milano è secondo la vegliante tariffa di lire 14.10, o siano quattrini 1160. Nello stato di Parma lo stesso zecchino vale 1520 de' così detti mezzi soldi, ciascuno de' quali equivale ad uno de' nostri quattrini. Dunque riuscendo ai Parmigiani di dar corso alle loro monete di rame nel Milanese, potranno con soli 1160 dei loro mezzi soldi acquistare uno zecchino, e così avere un profitto di numero 360 suddetti, ossia il 31 per cento.*
>
> [The rate of the *zecchino gigliato* in Milan, according to the current rate, is 14.10 *lire* or 1160 *quattrini*. In the state of Parma the same coin is worth 1520 of the so-called *mezzi soldi*, each of which is equivalent to a piece of our *quattrini.* Thus, if the Parmesans manage to export their copper coins to Milan, they can buy a *zecchino* with only 1160 of their *mezzi soldi*, and thus have a profit of 360 of the above, or 31 percent.][538]

According to Kaunitz, there is a problem of territorial control that can be overcome following the example of Austria:

> *L'Austria anteriore è limitrofa con più principi esteri che il Milanese: essa ha una moneta di rame di un minor valor intrinseco che questa di Vienna: essa fa il suo commercio con i sudditi dei suddetti principi, i quali avrebbero un considerevole profitto se loro riuscisse di spargere le proprie monete di rame nella suddetta provincia di V.M. Eppure l'Austria anteriore si mantiene senz'altra moneta di tal genere che colla nazionale. | Il riceverla dunque, come sinora si è fatto nel Milanese, in concambio di un'altra nobile collo stesso numerario o in pagamento di merci, fa vedere o una mancanza di legislazione, o l'esistenza di una, ma sonnolente ed abbandonata all'arbitrio di coloro che hanno interesse nel non eseguirla.*
>
> [The Further Austria is surrounded by more foreign principles than the Milanese: it has a copper coinage of less intrinsic value than that of Vienna: it makes its trade with the subjects of the above principles, who would make a considerable profit if they could distribute their copper coins in your Majesty's province mentioned above. | However, the Further Austria has no other money than the national one. |To receive them, as has been done so far in Milan, in exchange for another noble coin of the same number, or as payment for goods, shows either the absence of a legislation or the existence of one, but sleepy and left to the will of those who have an interest in not fulfilling it.][539]

[538] Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., pp. 157 - 158 (editor's translation).
[539] Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 159(editor's translation).

Therefore, the proposal to ban eroded and copper foreign money and to establish money changers at the border is a step toward comprehensive control of the territory, typical of the modern state.

As for the fourth question, about the plan of *sestini*, we can recall the position of Verri on this point, who, as we have seen was in favour of the tariff manoeuvre,[540] and also on this occasion he writes that "the process of reducing the value of money is really the simplest of all",[541] but this time he is restrained by the fear that the *sestini* might be mistaken for *quattrini* by the population. As already mentioned, Kaunitz is also sceptical of this proposal. In particular, he comments on a new proposal concerning the *sestini*, which emerged from the conference between Firmian and the ministers with Archduke Ferdinand.[542] This conference proposed to reduce the *quattrini* in *sestini* and also that "the government should have the power to strike *soldi* worth six current *quattrini*".[543] The Conference also charged the cost of the reform to a fund of one million *lire* created by taxing ecclesiastical property, which would serve mainly for the loss in exchanging the *quattrini* for *sestini*:

> *Che i possessori di quattrini, portandoli dentro un determinato tempo alle casse, ricevano l'abbonamento della metà di più di quanto avranno depositato[...] Che la perdita di risulta dal suddetto abbonamento non debba andar a carico della camera, ma di un fondo di un milione che si è formato col contributo imposto sui fondi ecclesiastici prima esenti.*
>
> [That the holders of *quattrini*, which they bring to the mint within a certain period of time, shall receive a credit equal to half of the amount they paid in[...] That the loss resulting from the above credit shall not be charged to the chamber, but to a fund of one million, formed with the contribution imposed on the ecclesiastical funds previously exempted.][544]

That is, the mint was to exchange the *quattrini* worth 3 d. for the *sestini* (i.e., the same coins) worth 2 d. to return the same number, so fifty percent more must be added in intrinsic value, although "deducting the 20 percent from the deposit, which is the difference that now exists between the *moneta di grida* and the *abusiva*",[545] i.e. the total cost is reduced because the deposit is received at the *corso abusivo* and repaid at the *corso di grida*, which is currently 20 percent lower. Then the *sestini* should be integrated by the new

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[540] See the previous section.

[541] *"l'operazione di minorare il valor numerario de' quattrini veramente è la più semplice d'ogni altra"*, Verri P., "Consulta sulla riforma delle monete", op. cit., p. 307 (editor's translation).

[542] Firmian was the plenipotentiary in Milan under the governor Ferdinand.

[543] *"...il governo abbia la facoltà di battere dei soldi di un valore equivalente a sei attuali quattrini"*, Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 155 (editor's translation).

[544] Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 156 (editor's translation).

[545] *"...dedotto però prima il 20 percento a loro carico sulla somma depositata, che è la differenza che passa ora fra la moneta di grida e la abusiva"*, Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 156 (editor's translation).

soldi. After that, eroded and copper foreign money should be banned and all national coins should be legal tender at the *corso di grida*, which would be the only rate allowed.

According to Kaunitz, if the *quattrini* were exchanged with the *sestini*, the quantity of *quattrini* would be reduced by a third, but it would not be possible to regulate such a quantity; second, there is a danger that the population will not change the habit of counting in *quattrini* (i.e., four pieces for one *soldo*), as is said to have happened in a similar case in 1678. The alternative is to completely remint the copper money, and Kaunitz eventually decides on this solution, also considering the poor condition of the coins, which were worn and badly minted, so that they could be easily counterfeited. But he proposes that not the Mint of Milan, but the Imperial Mint should mint the new money. In fact, he says there are wrecks in the deposits that can be used, and this mint is much more efficient than the one of Milan. Kaunitz, however, does not accept the principle, affirmed by the *Consiglio dell'economia* and the more recent conference headed by the archduke, that low money must be in proportion to noble money as far as the metal content is concerned, i.e. that the intrinsic value must be equal to the nominal value minus the cost of coinage. He asserts instead:

> *Volendosi seguire il principio della Conferenza [...] ne dovrebbe nascere necessariamente che le monete di rame nazionali fossero nell'intrinseco del tutto proporzionate alle nobili. | Ma un tale mezzo, quanto più nuovo ed inusitato in tutti gli stati d'Europa, altrettanto ripugnerebbe all'originaria istituzione di simili piccole monete. | [...] |Le monete di rame non sono destinate né al commercio cogli esteri, né all'interno per ciò che riguarda le grandi contrattazioni. Per questo motivo è un requisito necessario, che la quantità circolante delle monete di rame sia appena proporzionata al bisogno; supplendo in tal guisa la scarsezza della specie alla mancanza del valore.*
>
> [If we were to follow the principle of the conference [...], it would be necessary that the national copper coins be proportional in intrinsic value to the nobles. | But such a means, new and unusual in all the countries of Europe, would also contradict the original creation of these small coins. [...] Copper coins are neither intended for foreign trade nor for internal trade on a large scale. For this reason, it is a necessary condition that the quantity of copper coins in circulation is hardly proportional to the need; thus, the scarcity compensates for the lack of value.][546]

Actually, according to Kaunitz, copper money should be overvalued and he brings the example of coins in the Empire, such as the copper coins in Trieste or the *carentano* of Vienna, "perhaps the strongest in intrinsic value existing in all of Germany",[547] yet the mint makes about 40 percent profit on this coin, which Kaunitz takes as an example for the new Milan copper coin. Moreover, in the last sentence Kaunitz clearly echoes the findings of

[546] Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 161 (editor's translation).

[547] *"...forse il più forte nell intrinseco che vi sia in tutta la Germania"*, Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 161 (editor's translation).

Pompeo Neri when he says that, as long as low money is concerned, "it would be necessary, that it not only not be abundant, but be kept within the limits of positive scarcity, and this scarcity, in conjunction with daily needs, would be the one that maintains the legal value".[548] Moreover, in the case of low money, not only is the full intrinsic value not necessary, but it must even be lower than the nominal value in order not to be taken abroad, as Kaunitz explains with reference to the new Milanese coins:

> *Nè potrà nascere un fondato timore che i nuovi soldi, resi intrinsecamente migliori di un quarto degli attuali e di un conio assai seducente, verranno esportati negli stati esteri; perché [...] il loro valore, comprese le spese di monetazione, sarà mancante del 45 circa per cento a fronte delle monete nobili. Sembra adunque improbabile una forte ricerca di detti soldi dai finitimi; massime che, ritenuta per inalterabile la massima della proibizione delle monete di questa specie forestiera, dovrebbero in concambio gli esteri sostituirvi delle monete d'oro e d'argento, ovvero ricevere i nuovi soldi in pagamento di mercanzia colla perdita di lire 45 per cento.*
>
> [Nor can there be any reasonable apprehension that the new *soldi*, which is inherently better than a quarter of the present and very tempting coins, will be exported to foreign states; for [...] its value, including the cost of minting, will be about 45 percent less than that of the noble coins. It seems unlikely, therefore, that the neighbours will strongly solicit this money; provided that the rule of prohibition of the coins of this foreign type is considered invariable, the foreigners would exchange gold and silver or receive the new money as payment for goods at a loss of 45 percent in *lire*.][549]

Finally, the rule first established by Geminiano Montanari and then by Pompeo Neri is made official here by Kaunitz in the modern form that Cipolla recalls, i.e., small coins must be limited in quantity and the intrinsic value must be less than the face value (Cipolla adds the third requirement of convertibility with larger money, but this is not inherent in the current monetary system),[550] moreover, better production would have a guarantee against counterfeiting.[551] It is certainly true that the issue of the quantity of small money was also considered by Beccaria in the final report of the *Consiglio dell'economia*, when he tried to estimate the appropriate amount in one million *lire*, but it was not yet clear that this type of money had to be overvalued in order not to be subject to Gresham's law, on the contrary, the full metal content (apart from expenses) was established.

As for the economic aspect, this project would reduce costs and recoup them through seigniorage, while the Habsburg treasury, anticipating the expenditure, would expect to be

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548 *"...bisognerebbe che non solo non abbondasse ma fosse tenuta dentro i limiti della positiva penuria, e questa penuria congiunta col giornaliero bisogno sarebbe quella che sosterrebbe il detto valore impositizio"*, Neri P., *Osservazioni sopra il prezzo legale delle monete,* op. cit., pp. 192-193. See chap. 2, para. 4.

549 Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 170 (editor's translation).

550 See chap. 2, para. 4.

551 Cfr. Sargent T. J., Velde F. R., The big problem of small change, Princeton University Press, 2002, chap.4.

repaid in 30 monthly instalments. Whereas in the *sestini* plan of the conference chaired by the archduke the exchange of the copper money would cost an estimated 694,000 lire (about half the cost estimated in the *Consiglio*'s final plan), in the Kaunitz project the withdrawn copper would be sent to the imperial mint in exchange for new copper coins at a lower net cost of about 379.000 lire, provided that the new coins, issued according to the *carantani* pattern, would have a total value of about 1,388,000 lire, based on the *Consiglio*'s calculation, which was to be revised upwards as the new coins were also to be used for the payment of taxes, so that the total amount would be higher.[552] The weight of the new copper money would be higher than the current one,[553] because, if intrinsic value is no longer considered necessary to put small denomination coins in proper proportion to larger denomination coins, but is even discouraged, a fairly strong metal content, apart from the prestige that the external features might convey, can be useful in raising the cost of possible counterfeiting.

There is one last point about gold. The *"oro calante",* i.e., gold coins with a lower intrinsic value than normal because clipped or worn is a problem in the state. Part of the problem is that the government does not accept *monete calanti* in its registers, so there is a premium on standard gold coins, but Kaunitz does not see this as a problem, since it amounts to about half a percent. Rather, some flexibility may be necessary to compensate for market fluctuations. Just as Neri believed that the gold agio must be allowed, Kaunitz seems to hold the same opinion when he says that "the gap that exists between the bank currency and *di grida* is about ½ percent: a gap that cannot cause sensitive confusion in the new regulation, like the reward that gold sometimes enjoys over silver coins is not",[554] that is, since the banks also accepted *monete calanti* but the *camera* did not, the *monete di grida* (i.e. sound coins accepted by the *camera*) received a premium on the *calanti*, just as gold sometimes receives a premium on silver, which are tolerable cases. However, Kaunitz wants to regulate private transactions by providing that for payments exceeding a certain sum (e.g., 10 *zecchini*), "one should weigh the coins not by the number but by the mark",[555] i.e., the weight should be taken into account to reimburse the loss, as Neri also proposed. Moreover, Kaunitz believes that the *tariffa* should be better regulated by testing the approved coins for their quality at the Mint of Vienna in order to adjust that tariff, which must be the sole value of the coins, and this is even more true for new foreign money in order to allow it to circulate.

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[552] See Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., pp. 168 - 170.

[553] See Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 167.

[554] *"...il divario che passa tra fra la valuta bancaria e di grida è di ½ circa per cento: divario che non può produrre de' sensibili sconcerti nel nuovo regolamento, come qui non ne cagiona l'aggio che talvolta gode l'oro a fronte delle monete d'argento"*, Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 174 (editor's translation).

[555] *"...si dovessero pesare le monete non a numero, ma a marco"*, Kaunitz W. A., "Relazione conclusiva a sua maestà", op. cit., p. 175 (editor's translation).

6. Money, paper money, and economic growth

In this section we look at the contribution of Verri and Beccaria to the emerging political economy, which was then systematised in Adam Smith's The Wealth of Nations.[556] We will thus examine some commonalities with Smith on the one hand and with the mercantilists and physiocrats on the other. If Smith sees political economy as a development of physiocracy as opposed to mercantilism, Verri and Beccaria draw on both to develop a view of political economy.[557] In the case of Beccaria, we will look in particular at the lectures he wrote in 1769 after his appointment as Professor of *Scienze Camerali* [public economics] in Milan (1768), which were later published by Custodi.[558] As for Verri, we will consider the *Meditazioni sulla economia politica* [Reflections on political economy],[559] which he wrote in 1770 in response to Beccaria's appointment as professor (he wrote to his brother: "The revenge I will give to the professor of public economics will be to teach him").[560] The book was revised by the author in 1781, and there is also an edition by Carli[561] with his own annotations to the text, which we will consider in order to include him in this discussion as well. In the second part of this section, we will look in particular at the early theory of paper money that developed in Milan and Turin in the wake of the Turin paper experiment, the failure of Law's system in France and in the light of Adam Smith's contribution later in the century.

6.1 The political economy in Verri and Beccaria

If we start with Beccaria, we can say that he has much in common with the Physiocrats. He believes that agriculture must be promoted because it ensures the "annual reproduction" that boosts economic growth, and can also ensure the development of manufactures. In the context of agriculture, he analyses the method to develop it, coming to talk about the division of land. In doing so, he makes some arguments very similar to those made by Smith in book III ch. 2, when he talks about the institutional features that promoted agriculture in England, especially the division of land. Beccaria, like Smith, believed that large landowners did not take care of the land, while tenants managed it carefully.[562] Beccaria describes a particular approach of the large landowner, whose management ultimately results in the farmer being allotted too small a piece of land, while the proper measure is that of the large

[556] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations* , op. cit.
[557] See Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., book IV, ch. 9.
[558] Beccaria C., "Elementi di economia pubblica", in Custodi P., SCIEP, op. cit., parte moderna, vol. XII.
[559] Verri P., *Meditazioni sulla economia politica*, ed. De Felice R., Mondadori, 1998.
[560] *"...la vendetta ch'io farò col professore d'economia pubblica sarà d'insegnargliela"*, in Venturi F., "Le Meditazioni sulla economia politica di Pietro Verri", in Verri P., *Meditazioni sulla economia politica*, op. cit., p. 119 (editor's translation).
[561] Verri P., *Meditazioni sulla economia politica con annotazioni* [of G.R. Carli], ed. Carli G. R., Venezia, 1771
[562] See Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., book III, ch. 2, p. 360.

tenants.[563] Moreover, small tenant farmers are particularly exploited when prices are low, which is reflected in low rents (they were usually paid in kind) that cause the owners to destroy the farmers:

> *L'avvilimento del prezzo de' prodotti diminuisce il prodotto netto nelle mani de' proprietari; questi avidi delle ricchezze, ed accostumati allo splendore ed alle pretensioni del loro rango, strappano di mano al coltivatore il pane della necessità;*
>
> [The devaluation of the prices of the products reduces the net product in the hands of the owners; those greedy for wealth and accustomed to the glamour and pretensions of their rank, take the bread of necessity from the hand of the cultivator;][564]

Thus, when prices are low, the small farmer's profit is barely sufficient for mere subsistence, while when prices rise - except when the increase is due to higher transportation costs for produce - the owner's higher rent allows a greater portion of income to be reserved for farmers and workers, so that they work more (contrary to popular belief) and even spend more on goods such as clothing and other necessities, driving demand for manufactures. For both Smith and Beccaria, the possibility of higher wages than the living wage is guaranteed by competition among entrepreneurs. Smith says:

> The scarcity of hands occasions a competition among masters, who bid against one another in order to get workmen, and thus voluntarily break through the natural combination of masters not to raise wages. [565]

But while for Smith it is ultimately the wealth of nations that drives the demand for labour, for Beccaria it is the "circulation of money":

> *Quando cresce il valor delle cose per l'accresciuta quantità circolante del denaro, allora nasce concorrenza nel pagare di più la giornata dell'operaio [...]*
>
> [If the value of things increases due to the increasing amount of money in circulation, then a competition arises in which more is paid for the day of the worker.][566]

According to Beccaria, the rise in the price level is not necessarily negative. As he wrote in the final report of the *Consiglio dell'economia*, it can depend on the devaluation of money, and in this case it is not beneficial, but it can also depend on a virtuous circle, which we can summarise as the "effective demand" (if we want to use Keynes' words) that accompanies the increase in the circulation of money. It is therefore neither a simple increase in the "quantity of money" nor a simple increase in the velocity of circulation, but a more complex

[563] Beccaria C., "Elementi di economia pubblica", op. cit., pp. 132-133.
[564] Beccaria C., "Elementi di economia pubblica", op. cit., p. 124 (editor's translation).
[565] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., Book I, ch. 8, pp. 61-62.
[566] Beccaria C., "Elementi di economia pubblica", op. cit., p. 57 (editor's translation).

mechanism involving investment, competition, higher employment and higher prices (even if Verri disagrees with the latter). Indeed, when effective demand increases, competition between entrepreneurs increases (in this case because more entrepreneurs want to enter the market) and wages also increase due to competition in recruitment, even if this may seem paradoxical in a situation where there were many vagabonds. However, it was very difficult to convert them into production workers.[567] Verri and Beccaria, dealing with the state of Milan, identify the trade surplus as the main driver of effective demand. Indeed, the increase in the circulation of money within the frontiers is due to a positive trade balance. Contrary to Smith, they believe that the trade balance is the real lever of economic growth.

Beccaria suggests that a country should develop the internal conditions that allow it to generate a trade surplus, four of them: 1. Competition "of both buyers and sellers",[568] both internally and internationally 2. low labour costs, which depend on competition (this is not a contradiction, since wages should be rather high to support consumption, but not so high as to suppress entrepreneurship) 3. efficiency in transportation, which depends on infrastructure 4. low interest rates, which again depend on competition (and on the money supply). When a country meets these four conditions, it can achieve a trade surplus, precious metals flow into the country, and the economy flourishes on the one hand, and prices rise on the other.[569] The increased money supply pushes the interest rate down and drives investment, as Beccaria says:

> *I bassi interessi del danaro facilitano gli imprestiti, ed aumentano lo stimolo a rendere molto fruttifero quel medesimo capitale, che dando per un solo momento un piccolo profitto sforza il commerciante a non riposarsi, finché non abbia fatto fare al proprio capitale tanti movimenti, cioè non abbia egli moltiplicate tante azioni utili che equivalgono a un gran profitto e ad un alto interesse, che nel medesimo tempo in una sola volta altrove si potrebbe ottenere.*
>
> [The low interest of the money facilitates the borrowers and increases the incentive to make very fruitful the same capital that for a single moment yields a small profit, which forces the merchant not to rest until he has made so many movements of his capital, that is, he has not multiplied so many useful shares that equal a large profit and a high interest that could be obtained immediately at the same time elsewhere.][570]

The results of the more lively economic activity are visible in agriculture and also in the growing population. So, a positive process begins on the supply side, which is promoted

[567] Towards the end of the century, the system of hospitals was introduced in Milan to collect vagabonds, as well as a system of forced labour. See Capra C., "Il Settecento", op. cit.; id. *La Lombardia austriaca nell'età delle riforme*, op. cit.

[568] *"...sia dei compratori come de' venditori"*, Beccaria C., "Elementi di economia pubblica", op. cit., p. 95 (editor's translation).

[569] See Beccaria C., "Elementi di economia pubblica", op. cit., pp. 93 - 94.

[570] Beccaria C., "Elementi di economia pubblica", vol. 12, p. 97 (my translation).

mainly by competition and allows a trade surplus, which in turn causes an influx of precious metals, which pushes down the interest rate and increases investment, competition, prices and, finally, national income.

As for Verri, he was an expert on the balance of trade, indeed he was the first to calculate the balance of trade of the state of Milan, first for the year 1752, then for 1762. When Smith criticises the method of the balance of trade because he says that the criteria for calculating it are unreliable, he makes the same points as Verri, he says:

> There are two criterions, however, which have frequently been appealed to upon such occasions, the custom-house books and the course of exchange. The custom-house books, I think, it is now generally acknowledged, are a very uncertain criterion, on account of the inaccuracy of the valuation at which the greater part of goods are rated in them. The course of exchange is, perhaps, almost equally so.[571]

The same Verri says that the exchange rate is a dubious indicator because it fluctuates daily and its evolution could be determined by capital movements that are not necessarily related to trade (which opens up the broader concept of the balance of payments), moreover, the customs books are not entirely reliable because they are imprecise. However, it is extremely important to consider the trade balance, so that the government can intervene to correct the trade balance. This is precisely what Smith criticises, campaigning against mercantilism and for free trade. But also Verri is a liberal. In fact, he bases his analysis on Hume's system of adjustment of the balance of trade,[572] but he adds some capital innovations. Hume foresees a process of adjustment through the quantity theory of money: In a surplus country, the quantity of money increases and therefore prices increase, while in a deficit country, the quantity of money decreases and therefore prices decrease, so that the terms of trade are reversed and equilibrium is reached through this mechanism. Verri instead links the trade balance to another type of balance, and this is the innovation that Groenewegen suggests may have really inspired Smith, even at the level of language.[573] It is the "balance of annual produce" that Smith contrasts with the balance of trade:

> There is another balance, indeed, which has already been explained, very different from the balance of trade, and which, according as it happens to be either favourable or unfavourable, necessarily occasions the prosperity or decay of every nation. This is the balance of the annual produce and consumption. If the exchangeable value of the annual produce, it has already been observed, exceeds that of the annual consumption, the capital of the society must annually increase in proportion to this excess. The society in this case lives within its revenue; and what is annually saved out of its revenue, is naturally added to its capital, and employed so

[571] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., book IV, ch. 3, part I, p. 437.
[572] Hume D., "Of the Balance of Trade", in *Essays, Moral, political, and Literary*, 1752.
[573] Groenewegen P., "Verri's Political Economy", in Id., *Eighteenth-century Economics*, Routledge, 2002.

> as to increase still further the annual produce. If the exchangeable value of the annual produce, on the contrary, falls short of the annual consumption, the capital of the society must annually decay in proportion to this deficiency. The expense of the society, in this case, exceeds its revenue, and necessarily encroaches upon its capital. Its capital, therefore, must necessarily decay, and, together with it, the exchangeable value of the annual produce of its industry.[574]

Indeed, this passage is very similar to the following one of Verri:

> *Quando il valore totale della riproduzione equivale al valore dell'annua consumazione, quella nazione persevera nello stato in cui si ritrova, qualora tutte le circostanze sieno uguali. Deperisce quella nazione, in cui l'annua consumazione eccede la riproduzione annua. Migliora quello Stato, in cui l'annua riproduzione sopravanza il consumo.*
>
> [When the total value of reproduction is equal to the value of annual consumption, the nation remains in the state it is, if all circumstances remain the same. It spoils the nation in which annual consumption exceeds annual reproduction. It improves the state in which annual reproduction exceeds consumption.][575]

However, according to Verri a positive balance of trade is a condition for a positive balance of annual produce. Since the two concepts are correlated, he modifies Hume's mechanism of adjusting the balance of trade by resorting to the balance of produce. The mechanism envisioned by Verri is as follows:

> *Quando l'annua consumazione ecceda la riproduzione annua, necessariamente la nazione deve deperire, poiché ogni anno diminuisce e consuma del suo capitale oltre i suoi frutti. Ma questo stato, come ognun vede, non può essere permanente al di là di un certo limite, né può una nazione continuare per una lunghissima serie di anni a scapitare colle altre, essendo che o saran forzati a partirsene tanti consumatori, quanti corrispondono al debito nazionale, ovvero saranno costretti a diventar riproduttori, e così pareggiare le partite.*
>
> [When the annual consumption exceeds the annual reproduction, the nation must necessarily perish, for every year it decreases and consumes its capital beyond its fruits. But this condition, as we all see, cannot be permanent beyond a certain limit, nor can a nation continue for a very long series of years to lose with the others, since either many consumers will be forced to leave as much as corresponds to the national debt, or they will be forced to become reproducers, and so even the current account.][576]

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[574] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., book IV, ch. 3, part II, p. 459.

[575] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 23 (editor's translation).

[576] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 25 (editor's translation).

So, in a nation in debt, the increase in the number of "reproducers" provides a realignment increasing the supply. Let us look at what happens in a surplus nation:

> *Nella nazione poi, ove l'annua riproduzione ecceda la consumazione, ivi dovrà accrescersi la merce universale; la quale, resa più famigliare e comune ivi che ne' finitimi, andrebbe gradatamente incarendo i prezzi delle riproduzioni, per modo che non avrebbero più esito presso gli esteri, i quali altrove si rivolgerebbero per ottenerle; [...] Ma la merce universale acquistata coll'industria accrescerà ivi i bisogni, perché tanto ogni uomo ha più bisogni quanto ha più desideri, e tanto più desideri quanto maggior probabilità di soddisfarli, e questa s'accresce a misura che se ne accresceranno i mezzi; quindi ogni uomo acquistando maggior quantità di denaro accrescerà la propria consumazione; quindi proporzionalmente se ne accrescerà la riproduzione, perché vedesi accresciuto lo smercio [...] onde la merce universale, acquistata coll'industria e diradata sopra un gran numero d'uomini, colla celerità maggiore rimedierà e compenserà i cattivi effetti che la sola massa dovrebbe fare.*
>
> [In the nation, then, where the annual increase exceeds the consumption, the *universal commodity* [money] will increase; being better known and more common there than among its neighbours, it will gradually drive up the prices of reproductions which would no longer succeed in foreign countries, which will seek them elsewhere; [...] But the universal commodity acquired by industry will increase needs there, because every man has more needs than he has more wants, and the more wants he has, the more likely he is to satisfy them, and this increases as means increase; therefore every man who gets more money will increase his own consumption; therefore proportionally his reproduction will increase, because he has seen sales increase [....] so that the *universal commodity*, the faster it is obtained by industry and thinned out to a large number of people, the more it will remedy and compensate the bad effects that the mass alone should have.][577]

According to Verri, the increased quantity of "universal commodity" (i.e. money in the form of precious metal), when distributed among several producers because it is acquired through industry, drives demand and stimulates economic growth, thus avoiding the usual results of the quantity theory of money. That is, initially, according to the quantity theory of money and Hume's equilibrium adjustment, there is a rise in prices, so that exports fall, but the increased circulation of money drives up effective demand and supply follows suit, so that there is no deflationary mechanism that Hume takes for granted. If we also assume that increased competition leads to a fall in prices, as we will see in more detail later, it is not clear which effect prevails. A surplus country can therefore be subjected to an equalisation or continue to prosper, depending on which of the two forces prevails. As Verri examines the situation in Milan, Milan, as a developing country on the road to industrialisation, has enormous growth potential if a trade surplus can be achieved.

[577] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 26 (editor's translation).

While Beccaria focuses on competition between entrepreneurs in the labour market when money circulation increases, Verri focuses on competition in commodity markets, which keeps prices stable or even lowers them as the number of producers increases and monopolies are eliminated, which is also a typical argument of Smith. In fact, Verri underlines the importance of extending the right to compete as far as possible, because "the interest of every citizen watches over the usurpations of every citizen", and "the public interest is nothing else than the totality of the interests of the individuals,"[578] so in a certain way designing the concept of the "invisible hand". It is possible to find the same vision also in Beccaria when he says that "the common interest is only the result of particular interests, and these particular interests do not oppose the common interest, unless there are bad laws that put them in contradiction".[579] Coming back to Verri, the extension in the number of producers is the way to increase the economy and at the same time, in contrast with Beccaria, to decrease prices:

> *Accrescasi con questa norma il numero de' venditori: ella è cosa naturale che quanto più questo numero cresce, tanto più l'accordo fra di essi si rende difficile, tanto più il numero delle maggiori vendite compenserà la diminuzione del prezzo [...]*
>
> [This rule increases the number of sellers: it is natural that the more this number increases, the more difficult it becomes to reach an agreement between them, the more the number of higher sales will compensate for the decrease in price [...][580]

Verri considers that the fall in prices is made possible by the increase in the number of producers and competition, which breaks up monopolies and allows an increase in supply, so that "the more sales each seller makes, the more each sale can be limited to a smaller part of the profit".[581] It seems that Verri had an intuition that he could not fully deduce, namely the marginal cost curve along which business expands to the break-even point, where marginal costs are equal to average costs, so that the total profit is in some way distributed to each marginal unit and in smaller parts as marginal costs increase. On the other hand, Carli replies that "the seller tries to make as much as possible from the daily sales, he does not distribute a certain sum exactly over the number of his contracts, but also

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[578] *"...l'interesse di ogni cittadino veglia sopra le usurpazioni di ogni cittadino", "l'interesse privato di ognuno, quando coincide col pubblico interesse, è sempre il più sicuro garante della felicità pubblica", "l'interesse pubblico altro non è se non l'aggregato degl'interessi de' particolari"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 43.

[579] *"...L'interesse comune non è che il risultato degl'interessi particolari, e questi interessi particolari non si oppongono al comune interesse, se non allorché vi sieno cattive leggi che li rendano contraddittori tra di loro",* Beccaria C., "Elementi di economia pubblica", op. cit., p. 120 (editor's translation).

[580] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 31 (editor's translation).

[581] *"...quanto maggior numero di vendite farà* [each seller], *tanto sopra ciascuna vendita particolare potrà limitarsi a una minor porzione di guadagno"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 63 (editor's translation).

tries to increase this sum by adapting to price competition",[582] which means profit maximisation, but it seems that Carli did not understand what Verri wanted to mean.

To summarise, for both Verri and Beccaria, as well as for Smith, free competition is of crucial importance for the prosperity of nations. However, while Smith criticises policies aimed at achieving "the unconsumable wealth of money", for both Verri and Beccaria money is an indispensable medium of exchange for trade with neighbouring countries and its increasing circulation is a prerequisite for growth (i.e. money is anything but neutral). If we focus on the nature of money, we see that Beccaria in the lectures of public economics clearly follows Carli's doctrine, i.e. money is represented by gold, silver and copper, the unit of account being copper:

> Q*uesto valore dei metalli tutti, rapportato ad una terza ed infima moneta* [i.e., copper money, such as the *quattrino*, ed.], *ha dato origine al valor numerario [...] | Purché il dato peso di rame sia quello che la proporzione esige per un dato peso d'argento o d'oro, l'ulteriore divisione di questo dato peso di rame è perfettamente arbitraria rispetto al valore intrinseco [...]*
>
> [This value of all metals, compared to a third and lowest coin [i.e., copper money, such as the *quattrino*, ed.], gave rise to the numerical value [...] | Insofar as the given weight of copper corresponds to what the ratio requires to a given weight of silver or gold, the further division of this given weight of copper is completely arbitrary in terms of intrinsic value [...][583]

That is, the smallest money is the numeraire and, provided that the value of the metals is proportional to each other, the intrinsic value of the unit of account is arbitrary. Although originally it was a full-bodied coin, it now contains a part of "imaginary":

> *Il valore numerario delle monete, che una volta indicava quanto intrinseco di rame si dava per l'oro e per l'argento, ossia il prezzo di ambedue questi metalli, ora indica meno la quantità del metallo, che la divisione delle monete nobili in tante porzioni o tanti gradi di stima rappresentati dalla moneta di rame; che perciò racchiude in se, parte un valore reale e parte un valore immaginario datole dal conio e dall'impronto, e sottratto dal peso e dal metallo.*
>
> [The numerical value of the coins, which once indicated how much copper was given for gold and silver, that is, the price of these two metals, now indicates not so much the quantity of the metal as the division of the noble coins into so many portions or so many degrees of esteem represented by the copper coin; which, therefore, holds

[582] *"...il venditore cerca di ricavare dalle vendite giornaliere quanto più può, egli non ripartisce una determinata somma sopra il numero dei suoi contratti esattamente, ma regolandosi su la concorrenza de' prezzi cerca anche di aumentare questa somma"*, Verri P., *Meditazioni sulla economia politica con annotazioni* [of G.R. Carli], op. cit., pp. 121 (editor's translation).

[583] Beccaria C., "Elementi di economia pubblica", op. cit., p. 34 (editor's translation).

in itself a part of the real value and a part of the imaginary value given to it by the coinage and imprint, and subtracted by weight and metal.][584]

This *"valore immaginario"* [imaginary value], according to Beccaria, "does not deprive nations of gold and silver",[585] because the low money is only used in domestic trade and for small transactions, because the enormous transport costs prevent it from being exported to buy precious metal abroad, even though we have seen that this is not the case in the areas close to the border. In fact, Beccaria recognises that small money retains an imaginary value abroad (i.e. he assumes that small money circulates at face value both at home and abroad, which actually happened), but this phenomenon is limited by the high transport costs. However, the imaginary value results in the premium on precious metals being created domestically:

> *[...] alterato il valore della moneta di rame, ossia diminuitone il suo valore intrinseco conservandone lo stesso numero, cioè la stessa apparente divisione* [of larger coins, ed.]*, si alzerà il valor numerario delle monete nobili d'oro e d'argento.*
>
> [...] changed the value of the copper coin, i.e. reduced its intrinsic value, while keeping the same number, i.e. the same apparent division [of larger coins, ed.], will increase the numerical value of the noble gold and silver coins.][586]

Thus, Beccaria believed that when copper money is debased, i.e., its intrinsic value decreases while its nominal value remains the same, noble money suffers an *"alzamento"* [appreciation] in nominal value because when the owner of the latter exchanges the former for the latter, he demands more from the former than before, simply because it contains less intrinsic value. It is not quite clear whether Beccaria assumes as "starting point" a situation in which copper coins are fully minted or some coinage fees are allowed, as in Carli's thinking, it is true that from what he says and considering his position on coinage fees, it seems to be the first position. Be that as it may, the revaluation of the noble money has consequences, says Beccaria:

> *Nel medesimo tempo tutte le merci, che negli spicciolati contratti prima si vendevano per una, due, tre, quattro, cinque delle antiche lire, e per le parti e frazioni di quelle lire, diverranno vendibili a più caro prezzo, perché i rivenditori di quelle merci per il minuto consumo ed uso popolaresco le comprano all'ingrosso dai commercianti e dai produttori e manifattori, e le comprano colle monete nobili che hanno avute in cambio di monete di rame, delle quali per la supposta da noi alterazione hanno dovuto darne in maggior copia di quella che davano prima; sono perciò costretti nel vendere al minuto le proprie merci, e ricevendone il prezzo in monete di rame, di*

[584] Beccaria C., "Elementi di economia pubblica", op. cit., pp. 53 - 54 (editor's translation).
[585] *"...non spoglia le nazioni dell'oro e dell'argento"*, Beccaria C., "Elementi di economia pubblica", op. cit., p. 54 (editor's translation).
[586] Beccaria C., "Elementi di economia pubblica", op. cit., p. 37 (editor's translation).

alzare il prezzo di quelle per adequare il valore speso nel comprarle colle monete nobili, e per non perdere in un commercio che essi hanno stabilito per guadagnare.

[At the same time, all goods sold in the small quantities previously contracted for one, two, three, four, five of the old lira and for the parts and fractions of that lira are sold more expensively, because the retailers of these goods for retail consumption and popular use buy them wholesale from merchants and producers and manufacturers, and buy them with the noble coins they had in exchange for copper coins, of which they had to give up more than before because of our alleged alteration; therefore, they are forced to sell their goods in retail trade and raise the price of them, since they receive the price in copper coins to compensate for the value they spent to buy them with noble coins and not to lose in a trade they have set up to earn.][587]

From this passage it appears that the premium on noble money is a cause of inflation, because merchants must buy wholesale goods in noble money while selling them in small money, so the premium on noble money is added to the final prices.[588] However, as we have already seen, this is not the only possible cause of inflation, as he explains when introducing the problem of wages that must be adjusted to the increase in prices:

Quando cresce il valor delle cose per l'accresciuta quantità circolante di danaro, allora nasce concorrenza nel pagare di più la giornata dell'operaio, perché l'accresciuto danaro dà tutta la facilità di poterlo fare; ma quando cresce per l'incoerenza delle monete basse colle monete preziose, allora i padroni che regolano i salari sul valore reale e sul totale de' loro prodotti, che si misura con monete d'oro e d'argento, non possono aumentare li detti salari; onde ogni travaglio non rende a' giornalieri quella porzione di guadagni che loro fornisca li cinque alimenti necessari per la prosperità delle arti e delle opere tutte.

[If the value of things increases because more money is in circulation, then competition arises to pay more for the worker's day because the increased money gives everyone the opportunity to do so; But if it increases because low coins do not correspond with valuable coins, then the masters who regulate wages on the real value and the sum of their products, measured by gold and silver coins, cannot increase these wages; Therefore, each worker does not earn daily such a salary which provides him with the five foodstuffs necessary for the flourishing of all arts and works.][589]

Thus, according to Beccaria, wages adjust when the quantity of "sound" money increases because it increases the volume of business, so that competitive pressures drive wages upward, while this does not happen when there is no improvement in production and

[587] Beccaria C., "Elementi di economia pubblica", op. cit., pp. 38 - 39 (editor's translation).
[588] See para 1.2.
[589] Beccaria C., "Elementi di economia pubblica", op. cit., p. 57 (editor's translation).

profits while prices rise. This is the case when inflation is caused by the spread of low money in relation to noble money, which Beccaria associates with the trade deficit, as he says:

> *[...] se una nazione non vende alle altre più di quello che compri da esse, può correr rischio con tale sbilancio di perdere quasi tutto il suo oro ed il suo argento, e di restare innondata dalla feccia delle più vili monete; il che porterebbe un eccessivo rincarimento del tutto, e quindi resterebbe ogni industria ed ogni attività.*
>
> [...] if a nation does not sell to the others more than it buys from them, it may run the risk of losing almost all its gold and silver and be overwhelmed by the dregs of the vilest coins; this would lead to an excessive increase in the price of the whole, and therefore every industry and every activity would stop.][590]

When the increase in the general level of prices is due to an increase in the quantity of sound money, industries flourish and salaries can rise, if it is due to the proliferation of token money *("la feccia delle più vili monete")*, industries struggle and salaries cannot rise. So, in the case of a trade deficit, precious metals flow out and the supply of low money is increased to cover the shortage of sound money. But in this case, which for Beccaria is most representative of the Milan case, wages do not rise and the entire economy declines, necessitating monetary reform.

Let us now consider the position of Pietro Verri. He defines money as a *"merce universale"* [universal commodity][591] because it can be exchanged for any commodity, and he does not include copper and eroded money in this definition because they cannot be exchanged abroad. As for the relationship between money and prices, "the price of goods is directly related to buyers [i.e. the number of] and vice versa to sellers [idem]",[592] so he clearly introduces the mechanism of supply and demand, which, as we have already said, affects the quantity theory of money in an opposite way with respect to Beccaria, as he says:

> *Se adunque in uno Stato si accrescerà il danaro, e le merci vendibili proporzionalmente non si moltiplicheranno, i prezzi cresceranno; se si accresceranno del pari e il danaro e le merci vendibili, i prezzi resteranno come erano; se accrescendosi il danaro si moltiplicheranno in maggior proporzione le merci vendibili, si vedrà che i prezzi diminuiranno.*
>
> [Therefore, if in a state the money is increased and the saleable goods are not increased in the same proportion, the prices will increase; if the money and the saleable goods increase equally, the prices will remain as they were; if we increase

[590] Beccaria C., "Elementi di economia pubblica", op. cit., pp. 57 - 58 (editor's translation).
[591] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 21.
[592] *"...il prezzo delle merci è in ragione diretta de' compratori e inversa de' venditori"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 54 (editor's translation).

the money, we will increase the saleable goods in a greater proportion, we will see that the prices will decrease.][593]

Thus, it is not always the case that prices rise when the money supply increases, as in Beccaria and also in Carli, because the play of supply and demand in the commodity market can counteract the quantity theory of money. This is how Carli comments on Verri's argument:

> *Ci può esser moneta senza Compratori; ma non ci saranno mai Compratori senza moneta: né ci saranno Venditori, se non ci sarà roba da vendere. Dunque la quantità assoluta della moneta costituirà il maggiore, o minore prezzo de' generi: dunque la maggiore abbondanza di moneta produrrà maggiori ricerche di generi, e per conseguenza quanto il pregio dell'oro, e dell'argento si diminuirà da una parte, altrettanto s' alzerà il prezzo de' generi suddetti dall'altra.*
>
> [There may be coins without buyers, but there will never be buyers without money, and there will be no sellers if there is no commodity to sell. Therefore, the absolute quantity of money will make the greater or lesser price of the genera: The greater the abundance of money, the more genera will be sought, and as much as the value of gold and silver will be diminished on one side, the price of the above will increase.][594]

Carli thus affirms the validity of the ancient theory: "this was a truth known in all times",[595] he says, claiming that when the money supply increases, the prices of commodities increase and the prices of gold and silver decrease. For Verri instead, the money supply is rather to put in relations to the volume of business, as he explains:

> *La troppa abbondanza della merce universale non si misurerà dalla quantità né assoluta, né circolante di essa; ma bensì allora soltanto che il numero de' compratori avrà a fare con uno scarso numero de' venditori [...]*
>
> [The surplus of the universal commodity is not measured by quantity, either absolute or circulating, but only by the fact that the number of buyers meets a small number of sellers [...][596]

In this case, too, the mechanism of supply and demand may affect the quantity theory of money. It is true for Verri that the increasing quantity of money drives income forward, as it does for Beccaria, but only under certain conditions, as Verri goes on to point out:

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[593] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 54 (editor's translation).
[594] Verri P., *Meditazioni sulla economia politica con annotazioni* [of G.R. Carli], op. cit., p. 95 (editor's translation).
[595] *"...questa è stata una verità conosciuta in tutti i tempi"*, in Verri P., *Meditazioni sulla economia politica con annotazioni* [of G.R. Carli], op. cit., p. 95.
[596] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 53 (editor's translation).

Da ciò ne segue che questa esuberanza di merce universale diverrà sensibile allorquando entri tutta in grossi sfoghi nello Stato, e non dia tempo gradatamente all'industria di accorrere e moltiplicare i venditori. [...] Per la ragione medesima in quella nazione, in cui l'instancabile industria e un florido commercio gradatamente fanno accrescere la quantità della merce universale , questa sarà un nuovo sprone all'industria, accrescerà il numero dei contratti, renderà sempre più rapida l'interna circolazione, farà conoscere nuovi comodi e nuovi agi, raffinerà le arti e le manifatture, inventerà i metodi per renderle più perfette e fabbricarle con celerità maggiore, tutto spirerà coltura, vita e prosperità.

[It follows that this abundance of universal commodity becomes sensitive when it enters the state through huge flows and does not gradually give time to industry to hurry up and increase the sellers. [...] For the same reason, in the nation where indefatigable industry and flourishing commerce gradually increase the quantity of universal commodity, where internal circulation becomes more and more rapid, introducing new conveniences and new amenities, refining the arts and manufactures, inventing methods to perfect them and produce them more rapidly, all culture, life and prosperity will flourish.][597]

The inflow of money thus acts as an incentive to increase trade and products and to raise productivity. This happens when precious metals enter the country in exchange for goods sold by several sellers. In this case, the increased money supply "will increase the internal circulation with the consumption which must necessarily make all the men employed to this reproduction",[598] so that the number of buyers and consequently the number of sellers increases, "for the more buyers there are, the greater is the profit resulting from the sale", [599] and this is the key to economic growth. The effect is amplified by the reduction in interest rates, as Verri says:

L'abbondanza adunque universale del danaro porta con sé per necessaria conseguenza il ribasso degli interessi, e i molti possessori del danaro, non trovando più la stessa rendita nel darlo a mutuo, si rivolgeranno a fare acquisto di fondi stabili, ovvero lo impiegheranno nelle manifatture. Prima conseguenza adunque che nasce dal ribassarsi gl'interessi del danaro si è di vedere cresciuto il prezzo dei fondi di terra, e di veder data una nuova spinta alle manifatture. [...] Seconda conseguenza]...] si è la bonificazione che fassi alle terre della nazione [...] La terza conseguenza [...] si è la facilità di fare delle più grandi intraprese sia nel commercio, sia nell'agricoltura [...]

[597] Verri P., *Meditazioni sulla economia politica*, op. cit., p. 53 (editor's translation).

[598] *"...accrescerà la circolazione interna con le consumazioni che necessariamente dovranno fare tutti gli uomini impiegati a quella riproduzione"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 34 (editor's translation).

[599] *"...perché, quanto più compratori vi sono, tanto cresce l'utile di essere venditore"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 31. (editor's translation).

> [The general abundance of money brings with it the necessary consequence of the fall of interest, and the many possessors of money who do not find the same return in lending will turn to the purchase of land or they will use it in manufactures. The first consequence of the fall of the interest on money is that the price of land rises and production experiences a new upswing. [...] The second consequence [...] is the reclamation of the lands of the nation [...] The third consequence [...] is the ease with which the greatest undertakings can be made both in commerce and agriculture [...][600]

To summarise, for Verri, as for Beccaria, the inflow of money follows a trade surplus, which depends on an economy in which there is initial competition, which in turn is driven by the trade surplus. For Verri, the inflow of money promotes growth when it encounters a network of economic agents who are willing to invest the money. If, on the other hand, the money is held unproductively, the virtuous circle does not get going and the increase in the money supply raises prices, as predicted by the standard theory of the quantity of money, otherwise prices may remain stable or even fall.

6.2 Early theories on paper money

Let us consider the particular case of paper money in the considerations first of Verri, Beccaria and Carli in Milan, then of Giambattista Vasco and Prospero Balbo in Turin. While the latter directly experienced the use of paper money on a large scale in the form of Treasury bills and can therefore offer some reflections on it, the former reflected on the banking system and credit in general, finally resorting to Treasury bills as the more viable solution for financing monetary reform.

First of all, we must note that the Milanese authors discuss examples of paper money abroad, since this practice did not exist in Milan. In particular, they speak of *"viglietti"* [*biglietti*], *"cedole"* or "coupons", referring indiscriminately both to the Treasury bills in Turin and to the bills of the Bank of Vienna and the *fedi di credito* used in Genoa. It is possible, however, that the *cedole* were available in Milan as financial assets, since Caizzi reports that *Monte Tanzi* was opened in Milan in 1762 with the aim of making capital available to Vienna and it was stipulated that Tanzi was to collect for the Austrian government "an amount of 4 million lire, renewable up to 2 million florins, with an interest rate of 6% and guaranteed by as many coupons of the Bank of Vienna given as deposit".[601] According to Verri, "coupons introduced a representation of the universal commodity, extremely convenient to transport, which must increase circulation and the rapid circulation

[600] Verri P., *Meditazioni sulla economia politica*, op. cit., pp. 56 - 57 (editor's translation).

[601] *"...un importo di 4 milioni di lire estendibile fino a 2 milioni di fiorini, fruttante il 6% e garantito da altrettante cedole del banco di di Vienna dategli in deposito",* Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit. , p. 192 (editor's translation).

of contracts throughout the territory to which credit is extended".[602] This is on the assumption that general consent supports the public trust (*"pubblica fede"*) on credit. Carli also agrees that "coupons, if they do not yield interest, increase the circulating mass of the pledge and of the common measure of things, which is the currency", but he is quite sceptical about the *"fede pubblica"* because of recent bank failures (the John Law case is a well-known example).[603] Be that as it may, assuming that this public faith exists, according to Verri, "banks cause a doubling of the mass of the universal good that they receive, since it remains in the state and the universal good and its representation",[604] while for Beccaria "the banknotes have no other value, if not because they are realisable, they only facilitate the circulation, but they do not increase the real mass of circulating values".[605] It seems that neither Verri nor Beccaria consider the principle of fractional reserve. Indeed, Verri's argument implies that no bank reserves are held and that the quantity of *"moneta universale"* is doubled by the paper, while Beccaria's argument implies that it is equal to the total quantity of the precious metal, so that the paper does not increase the quantity of money, but only the velocity of circulation. In this case, too, we can recognise the poor knowledge of finance if we make a comparison with Smith, for example. Surely it is the different environment that characterised Smith on the one hand and the Milanese authors on the other, also considering the fact that they had no significant experience abroad to understand banking practise, as a figure like John Law did, for example. In any case, according to Smith, the fractional reserve in specie should amount to ⅕ of the paper money issued, so that the whole amount of the latter can replace the metallic currency in circulation when the relative amount is "sufficient for circulating the whole annual produce of their land and labour," so that the coins can be used abroad. In particular, "they may purchase an additional stock of materials, tools, and provisions, in order to maintain and employ an additional number of industrious people, who reproduce, with a profit, the value of their annual consumption", so that the money used abroad may "promote industry".[606]

In the event that paper money increases the money supply, Verri again puts forward the controversial argument that the higher money supply does not lead to an increase in prices, but has the opposite effect. He says that the increase in the velocity of circulation ("the rapid circulation introduced by the banks")[607] leads to an increase in transactions and thus

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[602] *"...colle cedole si è introdotta una rappresentazione della merce universale sommamente comoda al trasporto, la quale per tutta la sfera a cui si estende il credito deve accrescere sommamente la circolazione e il rapido giro dei contratti"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 61 (editor's translation).

[603] See Verri P., *Meditazioni sulla economia politica con annotazioni* [of G.R. Carli], op. cit.

[604] *"...i banchi fanno l'effetto di raddoppiare quella massa di merce universale che ricevono, poiché resta nello Stato e la merce universale e la di lei rappresentazione"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 62 (editor's translation).

[605] *"...non avendo [..] i viglietti altro valore se non in quanto sono realizzabili, facilitano bensì la circolazione, ma non aumentano la massa reale dei valori circolanti"*, Beccaria C., "Elementi di economia pubblica", op. cit., p. 155 (editor's translation).

[606] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., pp. 269-270.

[607] *"...la rapida circolazione che [i banchi] introducono"*, Verri P., *Meditazioni sulla economia politica*, op. cit., p. 62 (editor's translation).

in revenue, but that prices not only do not increase, but may even decrease, according to the mechanism described above. Coming back to Beccaria, he considers that "the danger and harm of the *viglietti* is their realizability", and it is why he believes that they do not increase the amount of money in circulation, assuming a full backing by species. But "these facts", i.e. the risk and harm of realizability, "would not be present in the case of a state guarantee",[608] i.e. if the *viglietti* are covered by the state, there is no risk of failure, so that the *viglietti* could double the money supply, as Verri says. This is the perspective he assumed in the final report of the *Consiglio dell'economia*, when he explained the use of Treasury bills as legal tender in a Piedmontese-style monetary reform:

> *[...] questi viglietti posti in circolazione produrrebbero il vantaggio di riempire il vuoto lasciato per la rifusione; ritornato il denaro in circolazione* [the new coins, ed.]*, raddoppiando la quantità circolante, darebbero un nuovo vigore ed una nuova spinta all'industria nazionale.*
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> [...] these bills put into circulation would have the advantage of filling the gap left by the recast; the return of money into circulation [the new coins, ed.], the doubling of the circulating quantity, would give a new impetus to national industry.][609]

Another source of "sound" money appears here, namely paper money in the form of Treasury bills. Circulating government debt, which is different from bank money, is now part of the "sound" money that can sustain economic growth. Again, the fractional reserve principle is not considered here, as Beccaria assumes that banknotes should be fully backed when issued by banks, and vice versa for Treasury bills.

Let us see if a limit to the issuance of paper money can be identified in the Piedmontese paper money experiment. At the end of the century, both Giambattista Vasco and Prospero Balbo, who wrote on the subject, were strongly influenced by the work of Adam Smith. On this point, Smith established a principle:

> The whole paper money of every kind which can easily circulate in any country never can exceed the value of the gold and silver, of which it supplied the place, or which (the commerce being supposed the same) would circulated there, if there was no paper money.[610]

Such a principle is enforced by the so-called "law of reflux", which requires banks to exercise due caution in order to avoid bankruptcy:

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608 *"...il pericolo ed il danno de' viglietti si è la loro realizzabilità; ma questi fatti sotto la sovrana garanzia sarebbero fuori di questo caso"*, Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 66 (editor's translation).

609 Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 66 (editor's translation).

610 Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., p. 276.

> Should the circulating paper at any time exceed that sum, as the excess could neither be sent abroad nor be employed in the circulation of the country, it must immediately return upon the banks, to be exchanged for gold and silver. Many people would immediately perceive that they had more of this paper than was necessary for transacting their business at home; and as they could not send it abroad, they would immediately demand payment for it from the banks. When this superfluous paper was converted into gold and silver, they could easily find a use for it, by sending it abroad; but they could find none while it remained in the shape of paper. There would immediately, therefore, be a run upon the banks to the whole extent of this superfluous paper, and if they showed any difficulty or backwardness in payment, to a much greater extent; the alarm which this would occasion necessarily increasing the run.[611]

Smith links the micro and macro levels. He starts from the micro level of the individual bank in order to explain the macro level of the money circulating in the country. The law of reflux marks the limit of the expansion of paper money, as the surplus banknotes are brought to the bank to be exchanged for coins. Based on a fractional reserve of ⅕, the more banknotes are surplus, the more reserves are needed in coins. Considering the case of England and Scotland, where paper money consisted mainly of promissory notes issued by banks when discounting bills of exchange (including the Bank of England and the Bank of Scotland), Smith proposes a rule for banks to avoid over-issuing paper, the so-called "real bills doctrine",[612] i.e. the limit is observed "when a bank discounts to a merchant a real bill of exchange drawn by a real creditor upon a real debtor, and which, as soon as it becomes due, is really paid by that debtor", i.e. the practice of discounting bills drawn to pay for real goods, as opposed to bills drawn and redrawn to "raise money by circulation", which Smith says was a common escamotage for raising credit at the time.[613] In this way, the bank advances the payee of the real bill of exchange a sum equal to "the value which he would otherwise have to keep with him unemployed and in ready money for answering occasional demands",[614] i.e., the cash required by the entrepreneur.[615]

Giambattista Vasco, a Piedmontese abbot who took part in the academic debate in Turin, intervened in the discussion on paper money in 1790, explicitly referring to Smith.[616] However, he was operating in a different context compared to Smith. He did not have the examples of the banknotes of the English and Scottish banks in mind, but the case of Treasury bills (*"biglietti di credito verso il pubblico erario"*), even if he extended the

[611] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., p. 276.
[612] See Ugolini S., *The Evolution of Central Banking: Theory and History*, op. cit., p. 289; Bindseil U., *Central Banking before 1800: A Rehabilitation*, op. cit., p. 45.
[613] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, pp. 285-290.
[614] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, p. 296.
[615] The real bills doctrine was subsequently the subject of various interpretations, see for example Bindseil U., *Central Banking before 1800: A Rehabilitation*, op. cit., p. 45.
[616] Vasco G., "Della moneta, saggio politico", in Id., *Opere*, vol. 1, Fondazione Luigi Einaudi, 1989.

argument to the bills of the "public banks", imprecisely to the cases of England, Scotland and France (i.e. the *Caisse d'escompte*), since no banknotes circulated in the real public banks of Amsterdam and Venice. However, since the banks that issued banknotes are supported by the government, Vasco thinks, why should not the Treasury "issue bills instead of money[617] in order to benefit from all the use that banks normally have"?[618] And so he comes to the example of Carlo Emanuele III in Piedmont, where Treasury bills circulate even at a premium, and reports the widespread opinion: "If the finances require a certain sum for some accidental urgency, is it not better to procure it immediately by creating new bills than to burden the nation with new taxes or incur a debt on which interest must be paid?"[619] On the other hand, he invokes Smith when he says that "any kind of paper money distributed in a country cannot increase the quantity of money in circulation".[620] But whereas for Smith, paper money cannot exceed the right amount because of the law of reflux that returns it to the banks, in Vasco's interpretation, the excess of paper money in circulation by definition removes from circulation the corresponding value in coins, which is used either for consumption or for investment, as if it were thus destroyed, which it is not. In fact, Vasco does not introduce the possibility of using coins abroad, as Smith does, since he considers the outflow of species as a loss for the country, so that the circulation of paper money would stimulate consumption and investment through coins.[621] Vasco again refers to Smith when he says that "it is possible to withdraw ⅘ " of the circulating coins "to replace them with bills",[622] but he adds that in the case of Piedmont, where bills of exchange are not commonly used within the country, one half paper and one half coin may be the right proportion, but he cannot justify this prediction more scientifically. However, he is more precise when he says that paper money is dangerous because its circulation is based only on public confidence and all it takes is one wrong policy, which can happen especially in a monarchy where a minister might make a misstep, for this public confidence to be destroyed so that paper money loses its value and has to be replaced by coins. Finally, he

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[617] Vasco regards real money as the noble money, while he regards low money as half real money and half paper, i.e. for the difference between face value and intrinsic value. See Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 497.

[618] *"... dar fuori biglietti in vece di denaro, ed approfittarsi di tutto il beneficio, che far sogliono i banchi con tale operazione"*, Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 475 (editor's translation).

[619] *"...se per qualche urgenza accidentale le finanze abbisognano di qualche somma , non è egli meglio provvedere all'istante bisogno colla creazione di nuovi biglietti che aggravare la nazione di novelli tributi o fare un debito per cui se ne debbano pagare gli interessi?"*, Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 479 (editor's translation).

[620] "*...qualunque specie di carta-moneta sparsa in un paese non può per modo alcuno accrescere la massa del danaro circolante",* Vasco G., "Della carta moneta. Saggio politico",op. cit., p. 489 (editor's translation). Vasco had lived also in Milan (1766-1772), where he took part in the money debate. He published *"Della moneta, saggio politico"* in 1772, in Id., Opere, op. cit., with the aim of taking over the chair of public economics that Beccaria had left behind - without success. Although he presented the work as original, it is a repetition of the theories of Neri and Carli (except for proposing the decimal system in currency denominations), even in a rather advanced technical form.

[621] Vasco G., "Della carta moneta. Saggio politico", op. cit., pp. 489-495.

[622] *"... Smith pensa che si possano sottrarre i quattro quinti, rimpiazzandogli con biglietti"*, Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 495 (editor's translation).

warns of the signals that may indicate an overissue of paper money, i.e. "when the public coffers are bursting with paper money, when there is a shortage of gold and silver, when all debtors try to pay with bills"[623] and above all "if you make extensive and frequent inquiries at the public cashier's office to exchange the bills for real money".[624] For this reason, Vasco proposes a reserve (*"fondo morto di cassa"*) of 1/10 when the bills have the value of the public credit (notwithstanding Smith's rule of ⅕) to be increased when public confidence decreases. However, he sees the greatest danger if the specie decreases, e.g. in the event of war or if the country's exports decrease for a few years, so that the value of the bills, which cannot be used abroad, decreases, and if they are issued by a bank, that bank would risk bankruptcy:

> *[...] se in tempo di guerra asportasse per qualunque modo il nemico una porzione considerabile di questa moneta* [coinage]*, se il sovrano si trovasse in necessità di fare straordinarie gravi spese fuori stato ove avesse portato la guerra, se, per un qualche accidente, per uno, due, o tre anni di seguito si fosse scemata l'esportazione delle merci nazionali, o accresciuta l'importazione delle straniere, in tutti questi casi i biglietti non servono a nulla, poiché non si spendono fuori paese, e ne escirà necessariamente una porzione cospicua del suo denaro. Sarebbe rovinato allora il credito di biglietti e, rappresentando essi un minor valore, sarebbe con grave pregiudizio scemata la circolazione, e per la moneta sottratta e pel minor valore de' biglietti. Sarebbe scemato l'ammontare dei tributi, che si pagherebbero tutti in biglietti di finanze, se ve ne fossero di questa sorte, e i salari pagati con essi diverrebbero insufficienti. Se i biglietti circolanti fossero di qualche pubblico banco e di libera accettazione , i possessori si affollerebbero al banco per cambiarli in moneta, e, non potendo esso soddisfare per mancanza di fondo a tante dimande, sarebbe costretto a fallire o poco meno.*
>
> [...] if, in time of war, the enemy should by any means usurp a considerable portion of this currency [coinage], if the sovereign should make extraordinary and serious expenditures outside the state in which he has waged the war, if by any accident in one, two, or three successive years the exportation of domestic goods should have decreased or the importation of foreign goods increased, in all these cases the bills would serve no purpose, since they could not be spent outside the country, and the latter would necessarily be deprived of a considerable portion of its money. The credit of the bills would then be ruined, and as they would be worth less, and the state would have suffered a diminution of currency, circulation would be seriously affected. The amount of taxes, all paid in bills, would be reduced, and the wages paid with them would no longer be sufficient. If the circulating bills were from a public bank and freely accepted, the holders would flock to the counter to exchange them

623 *"...quando abbondano assai di carta-moneta le casse pubbliche, se vi scarseggia l'oro e l'argento, se tutti i debitori cercano di pagare in biglietti"*, Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 503 (editor's translation).

624 *"…quando si fanno copiose e frequenti ricerche alla cassa pubblica di cambiare i biglietti in moneta effettiva",* Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 503 (editor's translation).

for money. But since they would not be able to satisfy them, lacking the money for so many requests, they would be forced to fail, or somewhat less.][625]

Prospero Balbo, then secretary of the Royal Academy of Sciences in Turin and later (1799) *Controllore generale delle finanze*, tried to understand the relationship between paper money and metal money more precisely:[626]

> *Il valore totale della carta circolante a guisa di moneta non può mai assolutamente eccedere la somma necessaria alla interna circolazione, cosicchè se un milione, per modo di dire, di metalli nobili basta a quest'uopo, la carta circolante qualunque ne sia la quantità e la denominazione non avrà mai maggior valore di un milione.*
>
> [The total value of the paper circulating as money can never exceed the sum necessary for internal circulation, so that if one million, so to speak, of precious metals is sufficient for this purpose, the circulating paper will never be worth more than one million, regardless of the quantity and face value.][627]

Balbo also starts from Smith's principle, but with a new interpretation that differs from Vasco's rather naïve one. He claims that the more bills are issued in excess of the correct amount, the more they lose value, so that the value of the money supply remains the same. Balbo then attempts to establish the rule linking paper money to metal money in order to apply this rule to the empirical data. The rule is as follows:

> *Un segno certissimo che non siasi oltrepassato il vero confine si è quando la carta si conserva al pari, cioè non perde al cambio co' metalli nobili. Il che però si dee solamente intendere della carta che non porta interesse. Giacché quella che porta interesse è soggetta alle naturali variazioni dello interesse medesimo.*
>
> [A sure sign that you have not exceeded the real limit is that the paper is held at par, that is, it does not lose when exchanged for precious metals. However, this refers only to paper that does not earn interest. This is because interest-bearing papers are subject to natural changes in the interest rate.][628]

So when precious metal is exchanged for paper money at a premium, as happened in the mid-1790s when Balbo writes, the line is crossed. Since the premium was formed for the

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[625] Vasco G., "Della carta moneta. Saggio politico", op. cit., pp. 500-501 (editor's translation).

[626] Balbo P., "Della somma a cui si possa estendere la carta circolante a guisa di moneta", in Fossati A., *Contributi alla storia della carta moneta*, Giappichelli, 1943 (the entire document is in ASTO, raccolta Balbo, vol. 18, it is presumably written in 1794-1795). Balbo explicitly refers to Smith at a certain point: *"Non è qui necessario richiamare le profonde dottrine di Smith..."* [It is not necessary to recall Smith's profound doctrines here, editor's translation], in Fossati A., op. cit. p. 120, which means that he takes them into account but wants to proceed in his own way.

[627] Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 119 (editor's translation).

[628] Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 121 (editor's translation).

luigi and the *doppia* (e.g. the *doppia* is worth 24 *lire* at the tariff, but is exchanged for paper money at 30, so that the premium is one fifth of the final rate), Balbo, having calculated the percentage of the premium, can subtract it from the face value of the paper money to find the corresponding value of the money needed for circulation (we must take into account that species were not in circulation at the time, so that paper was the only currency in circulation). The calculation is as follows:

> *Pongasi a cagion d'esempio che la proporzione tra il valore nominale de' biglietti e quello dell'oro e dello argento sia in comune del quattro al cinque, cosicché cinque lire in carta non vagliano più che quattro in moneta nobile (e tale è la proporzione quando il Luigi cambiasi con venticinque lire in carta o la doppia con trenta), in tal caso da 56 milioni che è a un dipresso il valore nominale de' biglietti in corso [al 1794],*[629] *dedotto il quinto si ha il valore da essi biglietti rappresentato in 44 milioni ed 800 mila lire, che sarebbe la somma da giudicarsi necessaria alla nostra circolazione.*
>
> [Let us take as an example that the ratio between the face value of bills and the face value of gold and silver is usually four to five, so that five lire of paper are not worth more than four in noble currency (and such is the ratio when the louis is exchanged for paper at twenty-five lire or the *doppia* at thirty), in this case of 56 million, which is approximately the face value of the current bills [in 1794], minus the fifth, you get the value represented by these bills in 44 million and 800 thousand *lire*, which would be the sum considered necessary for our circulation.][630]

Hence, in 1794, the money necessary for circulation would be about 45 million *lire*. However, this figure must be adjusted for the interest-bearing bills, which hardly circulate because they are hoarded like assets, especially those with the higher interest rates. Therefore, the amount of money required for circulation is lower. On the other hand, this part is compensated by the low money supply, even if it is inflated by counterfeit coins. The same method used for paper money then (i.e., deducting the premium percentage from the money supply), is also used for low money, as follows:

> *Né però si dovrebbe portare in questo calcolo tutta la somma espressa dal valor nominale della bassa moneta, giacché torna la stessa necessità di fare un diffalco proporzionato alla perdita che soffre cotal moneta nel cambio con quella d'oro e d'argento.*
>
> [One should not, however, include in this calculation the entire sum expressed by the nominal value of the low currency, since one must again subtract a portion

[629] Fossati's note.
[630] Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 119 (editor's translation).

proportional to the loss suffered by this money in exchange for the gold and silver.][631]

Interestingly, Balbo finds here a rule that also applies to low money: since low money is token money, comparable to paper money, its appropriate amount is determined by the agio on the noble money, i.e. the agio indicates the percentage of surplus that should be deducted from the total sum. However, it is not his aim to control the low money and he continues in his argument.

Thus, the 55 million *lire* (Balbo estimates that low money is totally compensated with interest-bearing paper money that does not circulate) must be reduced even further by the paper money exchanged at the tariff:

> *[...] ragionando solo della carta monetata, questa pure o poco o assai può smaltirsi secondo il suo valore nominale senza perdita veruna in ogni pagamento all'erario pubblico, e a tutti coloro, che sono i più le cui rendite o i cui crediti si esigono per legge o per patto in somma espressa da moneta immaginaria, o da unità di moneta come noi diressimo in lire.*
>
> [...] thinking only of the paper, this too, whether little or much, according to its nominal value, can flow off without loss in any payment to the treasury, and to all those whose rents or claims are demanded by law or contract in a sum expressed by imaginary money or by monetary units, as we would say in *lire*.][632]

This part of the paper money is not exchanged for noble money and is used to pay taxes or contracts at the tariff, "less, therefore, is the real circulation of what is the appearance",[633] i.e. if this amount of paper money were exchanged for noble money, the agio would be higher, so that the condition to take this amount of agio into account is to deduct the paper money accepted at the tariff. Finally, Balbo estimates the amount of noble money required for circulation at 40 million. He then corrects the estimate downwards by revising the historical series of paper money:

> *Noi dunque sappiamo sperimentalmente, che diciotto milioni e mezzo di semplice carta monetata non portante interesse possono stare in giro senza danno, epperò con vantaggio. In marzo del 1793 si accrebbero quattro milioni, ma si attribuì agli antichi l'interesse del due per cento, nè per allora fu sensibile la perdita. | Divenne poi questa sensibilissima in maggio, allorché la somma totale dei biglietti si portò a 30 milioni.*

[631] Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 120 (editor's translation).
[632] Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 120 (editor's translation).
[633] *"...minor è dunque la circolazione reale di quello che sia l'apparente"*, in Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 120 (editor's translation).

> [So we know from experience that eighteen and a half million of plain, non-interest-bearing paper money can stand around without harm and even with advantage. In March 1793, four million were increased, but the interest of two percent was attributed to the old, and until then the loss [in terms of the agio] was not felt. | In May, the latter became very important as the total number of bills rose to 30 million.][634]

To summarise, Balbo first uses the premium on precious metals to determine the amount of noble money needed for circulation (he reduces the total amount of paper in circulation by the corresponding percentage). With the adjustments we have seen, this results in the amount of paper money needed for circulation, namely 40 million. This is therefore the limit that paper money must not exceed, otherwise it would be devalued. However, a more conservative estimate based on time series is perhaps less than 30 million, and 18 million certainly worked well. We must also note that Balbo, perhaps not satisfied and wanting to be more cautious, introduced another criterion, namely that the paper money should not exceed the annual revenue of the Treasury. So he concluded that the amount of paper money should be reduced to 15 or at most 20 million, even though a sure sign that it did not exceed the actual limit was that it was exchanged for noble money at par.[635] More interesting than the question of the right amount of paper money in this study, however, is the method used by Balbo, which can also be applied to small money. In fact, it was in practice the same method that was used at the reform of Milan to value copper when it was exchanged at the mint, as we will see in the next section.

To summarise, for both Vasco and Beccaria, Treasury bills are preferable to bank money because the government offers more guarantees than a bank. According to Vasco, bank managers "can even plunge into speculations that are too dangerous and ruin the bank and most of the citizens",[636] while the Treasury obviously has no profit objectives, i.e. does not take any risks, except for a possible "mistake" by a minister, which led Vasco to believe that a republic was safer than a monarchy because of "the slowness and publicity with which economic transactions are carried out and a certain greater stability of its principles".[637]

Beccaria, however, is only thinking of a temporary government policy of issuing Treasury bills to finance the monetary reform, which will be gradually withdrawn. When Beccaria says that "the reform of coinage is almost a great alienated royalty which the sovereign can conveniently redeem", he seems to favour *Monte S. Teresa* takes a more similar role to the

[634] Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 121 (editor's translation).
[635] Fossati A., *Contributi alla storia della carta moneta*, op. cit., p. 121 (editor's translation).
[636] *"...potrebbero anche abbandonarsi a speculazioni troppo pericolose e rovinare in un punto il banco e gran parte dei cittadini",* Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 503 (editor's translation).
[637] *"...la lentezza e la pubblicità con cui si fanno le operazioni economiche ed una certa maggiore stabilità dei loro principii"*, Vasco G., "Della carta moneta. Saggio politico", op. cit., p. 500 (editor's translation).

Wiener Stadtbank,[638] since it is after all responsible for the redemption of royalties, but the example of Turin is so shining that he and Carli consider no other solution than Treasury bills. So it is Kaunitz who stops this plan and resorts to a (smaller) loan from Vienna. He treats Milan as a province of the empire (which it is) and prevents the development of a local financial institution, be it a bank or the treasury, that can issue paper money.

7. The monetary reform in Milan

According to Kaunitz's plan, the copper money was minted in the Austrian mints and then brought to Milan. The reform was put into effect on October 25, 1778 by five decrees that enforced the final plan drawn up by two Habsburg officials, Ambrogio Forni and Hubert von Clotz, the mint master of Hal. The florin at L. 14 s. 10 for gr. 3.467 fine gold was established as the currency pattern and the *lira di Milano* (gr. 3.454 fine silver) was determined according to the bimetallic ratio of 1:14.444.[639] The plan set a higher price for national coins, which was 1.5 percent higher for gold and 2 percent higher for silver than for foreign coins.[640] Normally such a difference represents the seigniorage,[641] i.e. the price of foreign coins per mark of fine metal represents the "mint price", while the price of national coins per mark of fine metal represents the "mint equivalent", the difference being the seigniorage. For example, if you bring foreign coins to the mint to be melted down and recast into national coins, the mint buys them by weight at the mint price and recasts them at the mint equivalent, thus realising the seigniorage. As part of the currency reform, however, the mint price was set higher than the price for foreign coins in order to create an incentive for melting down foreign coins. The values are listed in the following table:[642]

[638] See para. 2.

[639] See Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, Università di Genova, vol. 1, 1984, pp. 114 - 124.

[640] As you can see in the table below, according to my calculations, these values are 1.33% and 1.97% respectively.

[641] See for example Neri's plan in Appendix 5.

[642] This table is a synthesis, the original is in Appendix 6 and it is contained in ASMI, busta 824, "Tabella delle proporzioni tra l'oro e l'argento e valore dei rispettivi marchi a norma delle risultanze del piano monetario", and reproduced in Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, op. cit., tab. 12, p. 197 (editor's translation).

tab./fig. 16 **The plan for monetary reform in Milan (1778)**

Bimetallic ratio and values of the gold and silver marks		**National money**		**Foreign money**	
		Gold	Silver	Gold	Silver
1	**Bimetallic ratio** -theoretical- **Bimetallic ratio** - actual - i.e. after the approximation of the ratio between the Milanese and the Viennese unit of account	1	14 4/9 (14.444) 14 25/56 (**14.446**)	1	14 314/609 (14.515) 14 122/227 (14.537)
2	**Foreign-coinage price (FP)** - actual - value per mark of fine metal in foreign coins			L. 966.10.2	L. 66.9.8
3	**Mint equivalent (ME)** - actual - value per mark of fine metal in national coins	L. 979.8	L. 67.15.10		
4	**Mint price (MP)** - actual - value per mark of fine metal bought by the Mint at 21.20 carats gold, 10.1 d. silver	L. 975.8	L. 66.13	L. 975.8	L. 66.13
5	**MP - FP**[643] Incentive to bring foreign coins to the mint			L. 8.17.10 **0.92%**	s. 3.4 **0.25%**
6	**MP - ME**[644] Loss for the one who brings national coins to the mint to melt them down and receive ingots	L. 4 **-0.41%**	L. 1.2.10 **-1.68%**		
7	**ME - MP**[645] Seigniorage	L. 4 **0.41%**	L. 1.2.10 **1.71%**		
8	**ME - FP** Difference between the legal value of national and foreign coins, which gives the difference in the BMR			L. 12.10.14 **1.33%**	L. 1.6.2 **1.97%**

Source: ASMI, busta 824, "Tabella delle proporzioni tra l'oro e l'argento e valore dei rispettivi marchi a norma delle risultanze del piano monetario" (editor's elaboration), see tab. 25 in the appendix.
Note: The percentages are approximate values, which leads to some discrepancies in the results.

[643] Procedure: For gold: L. 975 s. 8 = d. 234096; L. 966 s. 10 d. 2 = d. 231962; the difference is d. 2134 = L. 8 s. 17 d. 10. For silver: L. 66 s. 13 = d. 15996; L. 66 s. 9 d. 8 = d. 15956; the difference is d. 40 = s. 3 d. 4.
[644] Procedure: For gold: L. 975 s. 8 = s. 234096; L. 979.8 = s. 235056; the difference is s. 960 = L. 4. For silver: L. 66 s. 13 = d. 15996; L. 67 s. 15 d. 10 = d. 16270; the difference is d. 274 = L. 1 s. 2 d. 10. The percentage is with respect to the ME.
[645] Same procedure as above, but the percentage is with respect to the MP.

In practice, the seigniorage is 0.41 per cent for gold and 1.71 per cent for silver (see line 7 of the table), but if you have foreign coins minted, you benefit from an incentive (i.e. 0.92 per cent for gold and 0.25 per cent for silver (see line 5), so the net seigniorage (i.e. less the incentive in line 5) is 0.41 per cent for gold and 1.71 per cent for silver (see row 7). As mentioned above, the total difference between the legal value of national coins and foreign coins is 1.33 per cent for gold and 1.97 per cent for silver according to my calculations (see line 8, i.e. there is a discrepancy with the official values of 1.5 per cent for gold and 2 per cent for silver).

The plan was presented to the Italian ministers, who did not fail to express their criticism. In particular, Beccaria criticised the price of foreign coins, which was lower than that of bullion and would have resulted in foreign gold coins to be melted down and flowing away instead to be converted into national coins. Then there is the problem with foreign silver, whose rate to foreign gold is higher than 14 ½, so that silver would again be at a disadvantage to gold. Ultimately, foreign precious metals, both gold and silver, would be crowded out by arbitrage. Therefore, Beccaria proposes to abolish coinage fees and to finance the minting of precious metal money through the fund set up to finance new copper coinage, assuming that the new copper will contain half of its value as "imaginary".[646] On the other hand, Carli criticises the way coinage fees are levied on national coins. Namely, he claims that coin fees must be proportional to the size of the coin, i.e., the lower the face value, the higher the cost. However, the plan calls for an even distribution of minting fees among coins officially at 2 percent for silver and 1.5 percent for gold. In particular, he criticises the format of the *lira milanese*, which is supposed to be stronger than the current one, but he recalls that, according to the above reasoning, it should contain higher expenses. Therefore, he proposes to postpone the minting of the *lira* to further consider whether it should become stronger. As for Verri, who was against a national coinage, he criticised that after all copper coins were not even full-bodied coins.[647] Leaving aside the ideological metallistic premises that reappear in Verri and Beccaria, it can be concluded that Carli's technical criticism was dictated by disappointment that his plan was not implemented, but we have already noted that his system for levying the cost of coinage was quite controversial, so it was perhaps unfounded.

The efforts of Forni and von Clotz were aimed at creating a national coinage which, despite the numerous authorised foreign coins (above all the florin, which served as a model for the *zecchino di Milano* and was valued in the same way, i.e. as a national coin, while the *zecchino di Milano* in Florence received the same valuation as the Florentine florin),[648] was proportional in its share of intrinsic value and complete in the overall scale of denominations and which consisted of the coins listed in the following table:

[646] See Beccaria C., "Relazione sulla grida della riforma monetaria" (May 2nd 1778), in Vianello C. A., *La riforma monetaria in Lombardia*, op. cit., pp. 203 - 205.
[647] See Vianello C. A., *La riforma monetaria in Lombardia*, op. cit., pp. XX - XXI.
[648] See Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, op. cit., p. 118.

tab./fig. 17 **The Theresian coinage in Milan**

Gold	**Silver**	**Copper**
Zecchini L. 14.10	*Scudo L. 6*	*Soldi d. 12*
Doppie L. 24	*mezzo scudo L. 3*	*Mezzi soldi d. 6*
Doppie da due L. 48	*Lira L. 1*	*Quattrini d. 3*
	Mezza lira s. 10	*Sestini d. 2*
	Quarto di lira s. 5	

Source: Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, op. cit., tav. 13, p. 198.

In particular. Copper was minted in *soldi, mezzi soldi, quattrini and sestini* at 120 *quattrini* per mark (i.e. *soldi* at 30 per mark, *mezzi soldi* at 60, *quattrini* at 120, and *sestini* at 180), or 50 percent "imaginary." All copper money was to be withdrawn within 4 weeks at face value less 20 percent (i.e. the amount of the devaluation measured by the premium on noble money, i.e. the spread between the *zecchino* at L. 14 s. 10 and its abusive rate at L. 17 s. 10). During this time it could have been spent with a deduction of 20 percent and also "accepted by the royal and civil registers for the payment of duties or contributions and for the purchase of salt or other types of monopolies".[649] As for foreign copper and eroded money, it was to be delivered within 15 days after the *grida*.[650] As for noble foreign money not included in the tariff, it was prohibited within 6 months if higher than 30 *soldi*, and one month for the others. Within this period they could have been spent and accepted for the payment of taxes.[651]

According to Gianelli, the first of the most important effects of the reform is that the copper coins, issued for 1.1 million *lire*, were in surplus as he says "they began to accumulate in the public coffers, and they could not dispose of them in sufficient quantity", "they tried to remedy the situation by using them in the form of subsidised financing in factories in the

[649] *"...accettata dalle Casse Regie, e civiche per qualunque pagamento di Dazi, o Contribuzioni, e per qualunque compra di Sale, o di altri Generi di Privativa"*, in Quadrio Curzio A., Scazzieri R., *Sul disordine delle monete a Milano nel Settecento*, op. cit., p.187, second *grida* of October 25th 1778 (editor's translation).

[650] At the following value: *parpaiole doppie di Genova* 4 *soldi* (instead of 5); *parpaiole semplici* 2 *soldi* (instead of 2 1⁄2); *blutzeri* 7 *denari* (instead of 9); *marchetti Veneziani* 7 *denari* (instead of 9); *quattrini di Parma e Piacenza* 2 *denari*, see Quadrio Curzio A., Scazzieri R., *Sul disordine delle monete a Milano nel Settecento*, op. cit., p.187, second *grida* of October 25th 1778.

[651] See Quadrio Curzio A., Scazzieri R., *Sul disordine delle monete a Milano nel Settecento*, op. cit., p.187, second *grida* of October 25th 1778.

border areas. They used it to pay their employees, mostly border workers, who exported it to their places of origin".[652]

The other effect is that gold became scarcer from 1780 and the gold agio reappeared. It must be taken into consideration that the bimetallic ratio was changing throughout Europe. Spain, for example, had lowered it to 1:16, Austria raised the tariff on gold coins in 1783, and Milan did the same for the *doppie di Francia* in the same year and for the *lisbonine* and the *doppie* di Spagna in 1784. On October 30, 1785, France lowered the bimetallic ratio from 1:14 ⅝ to 1:15 ½, and on December 29, Piedmont took it from 1:14.62 to 1:15.47. On January 21, 1786, Austria lowered the ratio to 1:15.29, and immediately thereafter the Austrian monetary system was introduced in Milan and the price of gold bullion was raised.[653] The currencies of the reform of 1778 were therefore no longer issued, although they were still in circulation for a long time. The long-awaited reform thus lasted less than a decade and Giuseppe II finally imposed the currency of the Empire, including paper money (it is reported that a treasury was opened in Milan with banknotes from the Bank of Vienna worth 500,000 florins).[654]

There is now one point to consider, namely: was the reform deflationary, as some observers claimed? Let us first take a look at price and wage trends before the reform. According to De Maddalena's calculations, the purchasing power of wages in the years 1766 - 1780 decreased by almost 30 percent compared to the period 1751 - 1765, in terms of the average price of food, while the nominal value of wages depreciated by almost ten percent compared to the exchange rate of noble money.[655] The dual monetary rate between *moneta di grida* and *moneta abusiva*, which in Milan reached a spread of 20 percent or more, depending on the premium on the noble money, automatically affected prices, while wages lagged behind. According to Beccaria, the rise in the price level due to the influx of noble money would not only push up prices but also wages, as circulation in the economy increases and the economy flourishes, but this is not the case when prices rise due to the spread of low money. Thus, through Beccaria's lens, the monetary situation in Milan could be interpreted as a kind of stagflation, to be understood here in the sense that prices rose while the economy in the industrial sector did not develop as much as in other European countries, despite the improvements in the agricultural sector due to Maria Theresa's administrative reforms. The social structure remained quite underdeveloped, which is indirectly reflected in the demographic stagnation,[656] another sign that Beccaria associates

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[652] *"...cominciarono ad ammassarsi nelle casse pubbliche che non riuscivano a smaltirle in quantità adeguata", "si tentò di ovviarvi utilizzandole sotto forma di finanziamento a tasso agevolato nelle manifatture situate nei luoghi di confine. Con esse venivano pagati i dipendenti, in gran parte frontalieri, che le esportavano nei luoghi di provenienza"*, Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, op. cit., p. 121.

[653] See Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, pp. 120 - 124.

[654] See Amato M., *Il Bivio della moneta*, op. cit., p. 110, note 49; Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, op. cit., p. 122.

[655] De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860*, op. cit., pp. 336-337.

[656] See De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860*, op. cit.

with a negative balance of trade and the consequent decline in precious metals in the country.[657] It should be noted, however, that there was no lack of capital in Milan, thanks above all to the policy of redeeming royalties, which "set in motion new capital that could be used for economic or speculative investments",[658] as Caizzi says, reporting what Verri wrote to his brother in 1769:

> *I Banchi hanno restituito molti capitali; fra gli altri il Banco di S. Ambrogio ha fatto uscire dalla sua cassa per un milione, il quale si è diffuso in circolazione. Le regalie redente hanno dato alla circolazione per circa un altro milione; i beni, acquistati indebitamente dagli ecclesiastici , sono posti in vendita: ecco le ragioni le quali fanno uscire dalle casse il contante, e ne accrescono la quantità circolante; conseguentemente rendono minore la difficoltà di riceverne in imprestito, e l'interesse è scemato.*
>
> [The banks have returned many funds; among others, the *Banco S. Ambrogio* has released one million from its coffers, which has been put into circulation. The royalties repaid have put another million into circulation; the goods illicitly acquired by the clergy are offered for sale: these are the causes that make the money flow from the coffers and increase the quantity in circulation; consequently they make it less difficult to obtain credit, and interest rates have fallen."][659]

So how can the two perspectives of Verri and Beccaria be combined? Why did the economy stagnate even though capital was in circulation? Caizzi gives this answer:

> *Certamente il rimborso di tante regalie accrebbe il numero di coloro che maneggiavano contanti e scrutavano le occasioni di investimento, immobiliare o finanziario che fosse. [...] Per contro, se pare legittima l'impressione che l'attività industriale non incontrasse allora molti favori, se metallurgia e manifatture tessili continuarono a non richiamare soverchio interesse, sarebbe errore mettere tutto ciò sul conto della mancanza di capitali, anziché di una debole propensione a quel tipo di investimenti, ragionata o istintiva che fosse.*
>
> [Certainly the repayment of many royalties increased the number of those who handled cash and investigated the possibilities of investment, real estate or finance. [...] On the other hand, if it seems legitimate to have the impression that industrial activity met with little favour, if metallurgy and textile manufacture continued to fail to attract overwhelming interest, it would be wrong to attribute all this to the lack of capital rather than to a weak inclination towards this type of investment, whether by reason or instinct.][660]

[657] See Beccaria C., "Elementi di economia pubblica", op. cit.
[658] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., p. 200 (editor's translation).
[659] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., p. 200 (editor's translation).
[660] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., p. 203 (editor's translation).

According to Caizzi, the Milanese merchants and bankers invested their capital in international arbitrage on bills of exchange and exchange rates. Verri had the right intuition when he said that the balance of trade was not sufficient to capture capital flows.[661] As noted in the modern balance of payments, capital flows are actually found in the capital account, which was not captured at the time. Take the case of Antonio Greppi, the great tax farmer who controlled a trading company with branches in Cadice, Amsterdam and Amburgo, through which he conducted international business outside Milan.[662] Thus, the problem was rather how to keep the capital invested in Milan. The fact that the political centre was in Vienna and not in Milan was certainly decisive. Towards the end of the century, for example, pressure from the central government to obtain loans from *Monte S. Teresa* was certain.[663] Had *Monte S. Teresa* been able to operate along the lines of the Bank of Vienna, if not the Bank of England, it could have been the financial engine for Milan's industrial development by providing the needed currency in the form of paper money.

To come back to real wages: According to De Maddalena, the reform led to a 10-12 percent reduction in nominal wages.[664] This could mean that employers took the opportunity to further depress wages because they assumed that prices would fall to the same extent after the abolition of the premium. However, the effects on prices only became apparent a few years later, in the early 1780s, when price trends stabilised. In fact, prices rose on the eve of the copper withdrawal due to speculation on stockpiled goods. It should be remembered that the final report of the *Consiglio dell'economia* had called for a reduction in administrative prices (*mete*) and also in all credits from mid-century onwards to compensate for the loss that the population would have incurred if copper had been exchanged at the legal rate. However, the *mete* was abolished in 1781 as part of the liberalisation policy.[665] Not all historians agree with this analysis and argue that wages (when considered in their monetary and non-monetary components) generally did not fall,[666] but the deflationary nature of the reform can nevertheless hardly be negated, as Capra also says:

> *Non poche furono le proteste per la riduzione d'imperio del 20% della moneta corrente, e a Pavia venne addirittura "suscitata una popolare commozione". Il ribasso dei prezzi scontato dal Governo di fatto non si verificò, e i lavoratori a giornata presero comprensibilmente ad agitarsi per un adeguamento dei salari. Le paste d'oro e d'argento per la coniazione delle nuove lire, mezze lire, scudi e zecchini scarseggiavano, e se per le seconde si poté supplire con gli argenti confiscati agli enti ecclesiastici e con la rifusione delle monete calanti forestiere, le specie auree*

[661] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., pp. 203-206.
[662] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., pp. 206-210.
[663] Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit., pp. 189-192.
[664] De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860*, op. cit., p. 170.
[665] De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860*, op. cit., p. 192.
[666] See Mocarelli L., "What Is Wrong with the History of Wages: Or the Divide in Economic History - A Reappraisal Suggested by Eighteenth-Century Milan", op. cit.

divennero estremamente rare, tanto che a detta del Verri per i grossi pagamenti bisognava portarsi dietro un facchino.

[The protests in favour of the 20% reduction in the current currency were numerous, and in Pavia "a popular agitation was even provoked". The price drop promised by the government did not actually materialise, and the day labourers were understandably upset about a wage adjustment. The gold and silver paste for minting the new *lira*, half *lira*, *scudi* and *zecchini* was in short supply, and if for the latter it could be made up with the silver confiscated by the ecclesiastical institutions and with the recasting of the foreign *monete calanti*, the golden kind became extremely scarce, so much so that, according to Verri, it was necessary to carry a porter for the large payments.][667]

When Capra speaks of a reduction of the currency by 20 percent, he refers to the loss suffered by the population in exchanging copper. This mainly affected the population who owned the most *quattrini*. Additional pressure was exerted on the workers to lower the money wages. On the other hand, it was true that the new copper coins could be used to pay taxes. As for noble money, it was scarce, as we have seen, and any form of paper money would have helped. However, if the aim of the reform was to break the inflation mechanism, then it was successful after a few years when the price trend stabilised.

As for the role of imaginary money in the reform, we can hardly say that it is discarded, for it is precisely the pivot that allows different values for precious metals. In this, the reform differs from the plan of the *Consiglio dell'economia* and also from Neri's theory, in which the value of the precious metal is clearly defined and then the cost of coinage is added, whereas in the reform, as was actually customary, the cost of coinage is included in the value of the metal. The reform therefore does not deviate from tradition; the imaginary is still the unit of account that determines the prices of metals. It is true, however, that the manoeuvre of the tariff is almost abandoned, as Bloch says: "the money of account, in a word, remains, distinct from the real currency; but the scale of equivalence is no longer touched", until the next step, namely, the harmonisation of the coin with the unit of account, which took place in 1803 with the coining of the French franc according to the metric system.[668] However, if in England the parity with gold was definitively fixed in 1717 until the demonetization of silver in 1814, in France there was still room for manoeuvre after the stabilisation of 1726, such as the adjustment of the bimetallic ratio to 1:15 1⁄2 in 1785 (which was followed by Turin), but in principle the possibility of changing the ratio was also established in 1790. In Milan, the tariff manoeuvre is often rejected for practical rather than theoretical or ideological reasons. Take, for example, the plan of the *sestini*, which was finally rejected by Kaunitz in 1776 because it was feared that part of the population would not respect the

[667] Capra C., *La Lombardia austriaca nell'età delle riforme*, op. cit., pp. 309-310 (editor's translation).

[668] Bloch M., "Esquisse d'une histoire monétaire de l'Europe", op. cit., pp. 79-80. He wrote: *"la monnaie de compte, en un mot, subsiste, distincte de la monnaie réelle; mais on ne touche plus au barème d'équivalence"* (editor's translation).

decree due to the custom of counting in *soldi* of 4 *quattrini*, but this is a problem related to low denomination coins. With higher denominations, the problem is different. In this case, the tariff is used to account for foreign noble money, and for this it is necessary, even indispensable, but for national coins the solution of maintaining the tariff and changing the metal content of gold coins rather than silver coins to adjust the bimetallic ratio prevails. After the reform of 1778, for example, the rate was adjusted for the *doppie di Francia* in 1783 and for the *lisbonine* and the *doppie di Spagna* in 1784 (i.e. foreign coins).[669] In Piedmont, the tariff for the *luigi* (i.e. foreign coin) was changed in 1785, but not for the *doppia*, which was withdrawn and re-minted with a lower weight.[670] From this we can conclude that the possibility of adjusting the tariff is fundamental in a monetary system where there is no complete national coinage, but loses importance as long as it is built up. In fact, Verri's strategy of a system in which the tariff is changed to revalue all foreign money is based on the idea that minting in a small state like Milan without mines makes no sense. But this is not the historical trend in the formation of nation states. The other examples cited by Verri of Hamburg and Frankfurt refer to municipalities that were part of the Holy Roman Empire. The situation is perhaps similar to Milan until Vienna wants to tighten control over its territories and introduce a national coinage, with the prospect of withdrawing foreign coins from circulation as long as it retains control over its borders and acquires a sufficient amount of precious metal or even ensures an adequate money supply by offering paper money.

8. Conclusion: the enforcement of the old value of the sequin through a deflationary reform and the establishment of a national coinage

The debate on the monetary reform in Milan lasted almost 30 years. It was initiated by Pompeo Neri and Gianrinaldo Carli in 1751. The solution they envisaged to solve the "monetary disorder", i.e. a mixture of inflation and scarcity of sound money, especially silver, with the agio on the gold sequin exchanged at 17 *lire* instead of 14, 10 s. of the legal rate, was a recoinage to rebalance the intrinsic value of the coins in relation to the face value. Due to a lack of financial resources (and political will), the reform was postponed. While Pietro Verri and the young Beccaria proposed to adjust the legal tariff to the intrinsic value of the coins and to use foreign coins for internal circulation, the proposal of recoinage was promoted by Carli in the *Consiglio dell'economia*, with the support of Beccaria, who later joined, and the latent opposition of Verri, who stuck to his original ideas. The final phase of the debate was led by Kaunitz, chancellor of the state, and finally Vienna

[669] See Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, op. cit., p. 121.
[670] See Felloni G., *Il mercato monetario in Piemonte nel secolo XVIII*, op. cit., pp. 50, 72.

implemented the reform in 1778. In the later years, the debate centred on the possibility of abating the legal value of copper money, which was hugely debased. But as the population was used to reckoning with copper *quattrini*, this solution was rejected by Kaunitz. Eventually, the reform was carried out according to the basic principles established by Neri, as was the Turin reform, which had been issued in 1755, i.e. a national coinage that was proportional in its subdivision to the metal content of the noble money, while the low money was considered a token and reduced in quantity. However, Neri starts from the silver *filippo* as the standard, while in both the Turin and Milan reforms the gold coin is the pattern, i.e. the *doppia* and the *zecchino* respectively, so that the bimetallic ratio leads to the silver coin, which in both cases is the *scudo* (a new coin modelled on the French *écu*). The standard is thus an international coin like the gold *zecchino*, and silver is adjusted according to a new bimetallic ratio. Copper is reduced to a token, but a certain intrinsic value (i.e. 50 percent) is retained to disincentive counterfeiting. In Milan, however, low money is exchanged at the tariff, i.e. with a 20 percent discount on the face value of the coin, and foreign low money is forbidden. The 20 per cent revaluation of the new copper coins against the older ones pushed entrepreneurs to reduce wages by the same percentage, on the assumption that prices would also fall by the same percentage, which did not happen until a few years later. The result was indeed deflationary.

As for the use of imaginary money in the new framework, it can be said that the tariff is still used in both Milan and Turin to change the value of foreign gold coins in order to adjust the bimetallic ratio, and in Milan it is used to establish three classes of silver. If the adjustment of the bimetallic ratio reflects a “naturalistic” approach, the establishment of three classes reflects a “political” approach, so that with regard to the monetary reforms in Turin and Milan it cannot be said that imaginary money was abandoned as a naturalistic or political instrument, even if on the horizon the tendency to build a nation-state with its own coinage led to the abandonment of imaginary money.

IV. The Alternative of Ferdinando Galiani

1. The Kingdom of Naples: The development of the public banks and the monetary reforms

The Kingdom of Naples, which comprised southern Italy with the exception of Sicily, was under Spanish rule since the 16th century, so that the kingdom was administered by viceroys appointed in Madrid. With the War of the Spanish Succession and the Peace of Utrecht in 1713, the Bourbons succeeded the Habsburgs in Spain in exchange for some concessions, such as the cession of Milan and Naples to Austria. However, Charles of Bourbon reconquered Naples in 1734 and became king before succeeding to the Spanish throne as Charles III in 1735. The Bourbons ruled Naples in the person of Ferdinand IV until the Republic of 1799 and subsequent French rule, and were restored after Napoleon until the unification of Italy. The period we are particularly interested in in this chapter extends from the foundation of the public banks to the publication of Ferdinando Galiani's book On Money in 1751.

1.1 Neapolitan public banks and the monetary reform of 1622

Larry Neal wrote that Kindleberger made an "omission" when he (1991) presented the first public banks (see chapter one), as he forgot to mention the banks of Naples, which were mainly founded between 1584 and 1600.[671] However, we can argue that the banks of Naples did not belong to the same group as the banks of Genoa, Venice, Amsterdam, Hamburg and Nuremberg as Kindleberger meant them to be, namely a group of public financial institutions with the aim of currency stabilisation. In fact, the banks of Naples were not exchange banks like the others mentioned above; they pursued different objectives from the time of their foundation.

François Velde makes a useful distinction between public banks of the “first generation” and public banks of the “second generation”.[672] For the former he means the earlier banks, among which, in addition to the banks of the above-mentioned group, he also includes the

[671] Neal. L., “The variety of financial innovations in European war finance during the thirty years’ war (1618-1648)”, in Costabile L., Neal L. (eds.), *Financial Innovation and Resilience. A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, Palgrave Studies in the History of Finance, Palgrave-Macmillan, 2018, p. 133; Kindleberger C. P., “Currency Debasement in the Early Seventeenth Century and the Establishment of Deposit Banks in Central Europe”, op. cit. in chap. 1 para. 2.

[672] See Velde F. R., “Neapolitan banks in the context of early modern public banks”, in Costabile L., Neal L. (eds.), *Financial Innovation and Resilience . A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, op. cit.

Taula de' Canvi of Barcellona and the *Casa di S. Giorgio* of Genoa in the 16th century. Then the public banks of the second generation, which were founded in monarchical states such as Sweden, England and later Austria, France (i.e. the *Caisse d'Escompte* and the Bank of France) and Prussia. While the former "provided means of payment on their ledgers", the latter were "characterised by liabilities circulating hand to hand (notes)".[673] This seems to be the main difference between the two types of public banks (i.e. they are generally considered public because they were all chartered, even if some of them were private in terms of ownership, e.g. the *Casa di S. Giorgio* and the Bank of England).[674] Velde claims, however, that the public banks of Naples "chronologically lie between the two generations".[675] In fact, it seems that the collocation of the Neapolitan public banks is more than just chronological. First of all, Naples was part of a great monarchy, such as the public banks of the second generation. Moreover, the public banks of Naples did not use ledger money like the public banks of the first generation, but for the first time in the Western world paper money in the form of *fedi di credito*, which differed from banknotes in that they were not anonymous. Another important point is the financing of the government, because the public banks of the second generation had the clear task of financing the government, while the public banks of the first generation were not supposed to do so, even if they did so under political pressure, especially in times of war. The public banks of Naples were indeed allowed by the charter to finance the government and were indispensable for this task.

Velde mentions another distinguishing feature between the public banks of the first and second generation, namely the fact that the "payment function was not a motivation" for the public banks of the second generation, as "the problems with coinage had largely been solved".[676] Velde refers to technical improvements that guaranteed counterfeit-proof coinage and enabled the "standard rule" (see chapter 2) in the issue of divisional money in England from 1821.[677] However, as we have already seen, the technological factor was not as decisive as the ideological stance behind Locke's revolution, which neutralised imaginary money and created the conditions for the gold standard in England.[678] This revolution, although made possible by technological improvements, was a political decision. But to return to Naples, the main purpose of public banks was not to stabilise the currency, but rather to increase the money supply through private and public lending and through the issue of *fedi di credito*, which increased the velocity of circulation and at the same time provided an instrument for private lending. In that the Neapolitan banking system resembles the public banks of the second generation.

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[673] Velde F. R., "Neapolitan banks in the context of early modern public banks", op. cit., p. 202.
[674] See Ugolini S., *The Evolution of Central Banking: Theory and History*, op. cit.
[675] Velde F. R., "Neapolitan banks in the context of early modern public banks", op. cit., p. 202.
[676] Velde F. R., "Neapolitan banks in the context of early modern public banks", op. cit., p. 209.
[677] See Sargent T. J., Velde F. R., *The big problem of small change*, op. cit.
[678] See chap. 2, para. 4.

Finally, Velde recalls that the Neapolitan banking system was the first or second largest among the public banks of the first generation (it surpassed for some time the more important Bank of Amsterdam) and that among the public banks of the second generation, although surpassed by the Bank of England, it was still a third larger than the latter in 1788.[679] Returning to the earlier period, Lilia Costabile provides some data showing the extent of the services provided by the Neapolitan public banks, which were located in strategic places in the city (the second largest in Europe after Paris in the 17th century): "In 1611, 35,345 people held accounts in the seven public banks, about 13 percent of an estimated population around 270,000 people. Assuming four dependants for each customer, these figures mean that the public banks provided their services to about 52 percent of the Neapolitan population. Bank accounts held by women were 2920, about 8 percent of total accounts."[680] In contrast to the other early public banks, which only offered their services to a narrow clientele, mostly merchants, the public banks of Naples were thus more widely dispersed among the population.

Let us now see how the public banks came into being. The first was a pawnshop, the *Monte di Pietà*, founded in 1539 in the midst of an agricultural crisis to help the needy part of the population. This period was also characterised by the various wars of Charles V, which Naples had to finance. According to Luigi De Rosa, between 1541 and 1559 Naples sent about 7 million ducats abroad (i.e. to Madrid, Genoa, Milan, Flanders and Rome), which led to a significant deficit in the balance of payments every year.[681] The result was a shortage of species in the kingdom. There is another element that must be taken into account, namely the increase in the price of silver (from 8.635 ducats per pound in 1503 to about 10.5 ducats in 1550, i.e. by about 22%). As a result, there were many clipped coins in circulation, so that in 1552 the viceroy ordered that coins should be accepted by weight. Another consequence was that "the increasing flight of silver coins from the country and the increased import costs of silver [...] prompted the government to give the *fedi di credito* of the *Monte* the value of money", and in 1553 it was given the value of legal tender as it was accepted for the payment of taxes, even by illiterate people, if a notary legitimised the *fede di credito*.[682]

As we shall see, the *fede di credito* unfolds its full potential within the public banking system, which consists of eight banks in 1640. It differs from the *fede di deposito*, which was a receipt for a deposit, while the former was a "negotiable instrument" issued at the request of the depositor. It "circulated by endorsement (*girata*) with signatures by both the

[679] Velde F. R., "Neapolitan banks in the context of early modern public banks", op. cit., pp. 211-213.
[680] Costabile L., Nappi E., "The public banks of Naples between financial innovation and crisis", in Costabile L., Neal L. (eds.), *Financial Innovation and Resilience . A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, op. cit., p. 19.
[681] De Rosa L., "Gli inizi della circolazione della cartamoneta e i banchi pubblici napoletani", in Id., ed., *Gli inizi della circolazione della cartamoneta e i banchi pubblici napoletani nella società del loro tempo, 1540-1650*, Istituto Banco di Napoli Fondazione, Napoli, 2002, pp. 440-442.
[682] De Rosa L., "Gli inizi della circolazione della cartamoneta e i banchi pubblici napoletani", op. cit., pp. 446-447.

payer and the payee".[683] It was also divisible since the depositor could issue *polizze* from the original *fede di credito* (then became *madrefede*). Both *fedi di credito* and *polizze* were called *bancali*. "On receiving a *bancale*, the endorsee would simply go to the issuing bank, or to any other bank in the system, to have them converted into cash or credited in their own accounts; alternatively they may make another *girata*". *Fedi di credito* differed from bills of exchange or cheques because they were issued by the public banks, while the latter were only later accepted by a bank. They were therefore based on personal trust between creditor and debtor, while *fedi di credito* were based on trust in the system. It is therefore clear that the efficiency of this means of payment grew as long as the number of public banks increased and functioned as a system. In fact, "the bank's acceptance of each other's notes and their interbank clearing system (*riscontri*) reduced costs for their customers, as they were free to choose their bank according to convenience and location".

The public banks were set up by the Neapolitan government in search of funds between 1584 and 1600 (the *Pietà* was officially founded in 1584), apart from the *Salvatore* that was set up in 1640.[684] They were called "banks of the charities", because they originated from charitable organisations, i.e. two pawnshops (*Monte di Pietà* and *Monte dei Poveri*), four hospitals (*Incurabili, S. Eligio, S. Giacomo e Vittoria, Santissima Annunziata*), a charity centre for needy young women (*Casa dello Spirito Santo*). In the meantime, the (mostly Genoese) private banks went bankrupt due to the shortage of money, as they did not have the privilege of issuing *fedi di credito* and the government publicly supported public banks "to supplement coins and save on the resource cost of the monetary system".[685] Indeed, the fractional reserve in the system was quite low, especially in the second half of the 17th century, mainly due to the issuance of uncovered, partially covered *fedi di credito* as a form of private credit. Later, in 1640, also the *Salvatore* was founded. It was the only profit-oriented public bank founded by flour- tax farmers.

The silver *carlino* (2.9 g with a fineness of 92.9), which was equivalent to just one mason's daily wage, and the silver *ducato* (29.9 g with the same fineness), which was worth ten *carlini*, were the most common coins in circulation. In 1578, minting activity fell sharply due to the aforementioned problem of the undervaluation of silver coins compared to silver bullion, which made the supply of silver to the mint unprofitable. Coinage was resumed in 1580, but on a different basis: no more free coinage, i.e. minting was decided by the

[683] For this part see Costabile L., Nappi E., "The public banks of Naples between financial innovation and crisis", in Costabile L., Neal L. (eds.), *Financial Innovation and Resilience . A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, Palgrave Studies in the History of Finance, Palgrave-Macmillan, 2018, pp. 22-26.

[684] See De Rosa L., "Gli inizi della circolazione della cartamoneta e i banchi pubblici napoletani", op. cit.; Costabile L., Nappi E., "The public banks of Naples between financial innovation and crisis", op. cit.; Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, unpublished.

[685] Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, op. cit., p. 8.

government, and no more ducats, only small coins. The *carlino* was the unit of account and only half and quarter *carlini* were minted with a debasement of 9 - 9.5 percent in order to fund the purchase of silver, arriving, according to De Rosa, at a 30 percent debasement in 1621.[686]

The enormous importation of silver in the second half of the 16th century and the first two decades of the 17th century was then financed by an increasing seigniorage, but also by new loans, which implied the creation of new taxes whose revenues were given as repayment according to the treaty of *arrendamento* (from the Spanish *arrendar*, i.e. lease). The fact that the once imported silver disappeared from the country was a clear sign of a deficit in the balance of payments, which led to a devaluation of the exchange rate.[687] However, from 1605 onwards, a debate developed in Naples about the causes of the flight of silver, which developed three positions: 1. The exchange rate, defined in terms of domestic currency units per unit of foreign currency,[688] was kept artificially high by the merchants and should be capped. 2. The high exchange rate was due to the poor state of the Neapolitan coinage and a recoinage was necessary. 3. The high level of the exchange rate was due to the deficit in the balance of payments.[689]

The first position that led to the failed reform of 1607 was held by Marco Antonio De Santis, who believed that the exchange rate of the Neapolitan currency as determined on the exchange market compared to the legal rate (i.e. 13 *carlini* per ecu)[690] was artificially high, i.e. beyond the specie points, so that Neapolitan merchants were better off paying in specie than in bills of exchange, while the opposite was true for foreign merchants, which would have explained why the precious metal flew out of Naples.[691] The second position was held by the Anonymous Genovese, who claimed that the Neapolitan currency was either debased or paper money, i.e. below standard, which implied a premium on the exchange rate in favour of foreign money. This position was reaffirmed in 1621 by the Genoese consul in Naples, Cornelio Spinola, and led to the currency reform of 1622, which reintroduced the currency standard of 1554 in Naples. The result was deflation, as foreseen by Gian Donato

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[686] See Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, op. cit., pp. 3-6; De Rosa L., "Gli inizi della circolazione della cartamoneta e i banchi pubblici napoletani", op. cit., p. 454.

[687] See De Rosa L., " Rivoluzione dei prezzi, guerre e banchi pubblici", in id., *Il Mezzogiorno spagnolo tra crescita e decadenza*, Il Saggiatore, 1987, pp. 89-105.

[688] See Rosselli, A., "Early views on monetary policy: The Neapolitan debate on the theory of exchange", op. cit., p. 65.

[689] See Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, op. cit.

[690] The ecu was actually a *scudo di marche*, the unit of account used at the Genoese fairs, which was based on the *scudo delle cinque stampe*, a gold ecu minted to the same standard in Castile, Naples, Florence, Genoa and Venice. See Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, op. cit., p. 9; Roberds W., Velde F. R., "Early Public Banks I: Ledger-Money Banks", op. cit., p. 12; Cipolla C. M., *Moneta e civiltà mediterranea*, op. cit.

[691] For an explanation of how the exchange rate works, see chap. 2, para. 3.1 and Rosselli, A., "Early views on monetary policy: The Neapolitan debate on the theory of exchange", op. cit..

Turbolo, a senior official at the mint, who claimed that the actual problem was the balance of payments deficit. Neapolitan authors such as Turbolo, but also Antonio Serra and Fabritio Biblia, favoured the circulation of paper money and correctly identified the balance of payments as the main reason for the outflow of silver.

According to Costabile and Velde, in 1621 the new Spanish King Philip IV ordered that the old standard of Neapolitan currency be restored in order to maintain dignity in international relations, while, paradoxically, inflationary copper coins were minted in Spanish territory (and we have only one example in seventeenth-century Milan, which was under Spanish law).[692]

The monetary reform of 1622 was then enacted to guarantee creditors, especially Genoese merchants who had invested in the debts of the Neapolitan kingdom, that they would receive their income in carlini, which were undervalued at legal parity with the ecu,[693] thus granting them a premium in relation to real parity.

It is worth noting that the recoinage of 1622 bears many similarities to the Great Recoinage in England.[694] In both cases there was a large amount of clipped coins and a recoinage was necessary, but the central question was whether the silver coins should be raised in line with the market price of bullion or whether the old standard should be restored. In both cases, the latter solution was chosen to protect creditors, in both cases with deflationary effects that were mitigated by the circulation of paper money. In Naples, however, this reform was not a pillar on which the monetary and financial system could be built. On the contrary, it was criticised by the Neapolitans, mainly because it was not in their interests, and at the end of the century a reform of a different kind followed, albeit a controversial one. Interestingly, Velde wonders why the agio was not levied between bank money and current money, as in Amsterdam, Genoa, Venice and Hamburg, and answers that the restoration of the old standard would have prevented its emergence.[695] In fact, the absence of an agio is also evidence that bank money was not introduced in Naples as a complementary means of payment for international transactions and the settlement of bills of exchange, not to stabilise the exchange rate, but rather "to supplement coins",[696] providing a substitute for metal coins as in England.

The recoinage of 1622 put the public banks under pressure and threatened their bankruptcy if the government had not intervened. In fact, the government asked the banks to bring

[692] See Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, op. cit.,pp. 12-13; for the situation in Milan see chap. 3, para. 1.
[693] See note above on the *scudo di marche*.
[694] See Velde F. R., "Neapolitan banks in the context of early modern public banks", op. cit., p. 222.
[695] See Velde F. R., "Neapolitan banks in the context of early modern public banks", op. cit., p. 236; Roberds W., Velde F. R., "Early Public Banks I: Ledger-Money Banks", op. cit.
[696] See the above quotation from Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, op. cit., p. 8.

their reserves to the mint and was surprised, not only because these were small, but above all because the intrinsic value was incredibly reduced in relation to the nominal value (e.g. a loss of 69 per cent in the case of *Spirito Santo*), mainly because of the severe shortage of silver in small coins (notwithstanding the obligation to receive coins by weight). The government then bailed out the banks. It froze the deposits and wrote them down by a third. It then levied taxes to back bonds to recapitalise the banks. New books were opened to accept deposits in new money and the old deposits were slowly made redeemable.[697]

The crisis of 1622 is due to the fact that the first period of public banks, from 1587 to 1622, is characterised by an enormous growth in activity, especially since 1611, when the circulation increased 4.5 times compared to the previous period, with 0.62 million ducats in reserves and 3.94 million ducats in circulation and a leverage ratio of more than six. After the crisis, the banks switched to more cautious management, but with the War of the Spanish Succession, the reserves fell again and the *Annunziata*, the largest bank, went bankrupt in 1701. In the 18th century, the banks' activities gradually recovered and accelerated with the expansionary policy of Ferdinand IV after 1770, to increase sharply in 1794 when the banks were nationalised due to the war with France (Ferdinand IV merged them into the *Banco Nazionale di Napoli*). At this time, the *fedi di credito* were issued uncovered, with some similarities to the paper money inflation in Piedmont (see chapter 3).[698] Under French rule, the *Banco* was transformed into the *Banco delle due Sicilie* and this in turn into the *Banco di Napoli* in the Kingdom of Italy, where it was also a bank of issue for a time.

The reason why the government bailed out the banks in 1622 is quite clear if you look at the asset side of their balance sheet. As Velde synthesises, in addition to loans to private individuals, “they held a variety of government debt, mostly debt assigned on direct taxes (the *fiscali*) or indirect taxes (the *arrendamenti*), both fairly liquid instruments or shares in tax farming partnerships (*partite di arrendamenti*). They also lent to the city of Naples or to other municipalities of the kingdom, transacted with the mint and with foreign exchange dealers”.[699]

In the following, we provide a classification of the investments made by public banks:[700]

1) Loans granted against pawns

[697] See Velde F. R., “Neapolitan banks in the context of early modern public banks”, op. cit., pp. 222-223.
[698] See Balletta F., Balletta L., Nappi E., “The investments of the Neapolitan public banks: a long run view (1587-1806), in Costabile L., Neal L. (eds.), *Financial Innovation and Resilience . A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, op. cit., pp. 104-109. For the Piemontese case see chap. 3, para. 3.
[699] Velde F. R., “Neapolitan banks in the context of early modern public banks”, op. cit., pp. 233.
[700] See Balletta F., Balletta L., Nappi E., “The investments of the Neapolitan public banks: a long run view (1587-1806), op. cit., pp. 111-118.

These were the so-called Lombard loans, which also characterised the lending of the Bank of Hamburg.[701] These were short-term debts against the pledging of objects such as jewels, plate or cloth. However, Velde reports that foreign coins were also accepted as regular deposits (i.e. the same coins had to be returned), "subject to a haircut to protect the bank from exchange rate variations."[702] The public banks were free to dispose of the foreign coins after one year or earlier upon notice. Also the Bank of Hamburg granted loans against foreign coins as a regular activity of the bank, but in the case of the Neapolitan public banks this was considered a favour to the merchants and no receipt was issued. After the crisis of 1622 (i.e. 1628), all public banks were officially authorised to lend at interest to cover the cost of holding deposits, for which no fee was charged.

2) Compre e ricompre di annue entrate

It is a long-term investment, the public bank buys a rent (*compra*), i.e. of land, housing, taxes, against a future repurchase (*ricompra*) at a higher price, the difference being the interest rate.

3) Prestiti

While the interest rate is implicit in the above transactions in order to circumvent the ban on charging interest that was in force when public banks were founded, interest is explicit in *prestiti*, which developed mainly in the second half of the 18th century. These were long-term loans that were repaid in instalments, such as the *mutui* (i.e. mortgages) and the *terze*, which were secured by the proceeds from fiefs, houses and land, the administration of direct taxes (*fiscali*) and tax farming (*arrendamenti*). These loans were intended for the nobility rather than for financing economic activity.

4) Loans to institutions

These were loans in the form of overdrafts on accounts open to public institutions such as the *Regia Corte*, the Viceroy, the King (after 1734), the *Eletti della Città*, the administrators of the city of Naples (e.g. for the *annona*, i.e. the provision of food to the population - in this case lending was obligatory -), or private institutions such as hospitals or charities (even their own corresponding charities) and the governors of the *arrendamenti*.[703] The public banks also invested in *partite di arrendamenti*, as we have already mentioned. The *annona* was abolished in 1804 and the *arrendamenti* in 1806.

The public banks also had accounts with the mint, in which they registered the transfer of coins for which they were responsible in the event of recoinage, as was the case from 1621

[701] See Appendix 6.
[702] See Velde F. R., "Neapolitan banks in the context of early modern public banks", op. cit., pp. 235.
[703] The governors of the *arrendamenti* could be *consegnatari*, if they administered the collection of taxes and paid the rent to the government, or *assegnatari*, if they were the owners of the *arrendamento*. In fact, 56 *arrendamenti* were sold in 1649 and the *consegnatari* became *assegnatari*.

to 1624 and from 1688 to 1691. They also maintained accounts with each other for the mutual acceptance of *fedi di credito*, whose debits and credits were regularly balanced. The *fedi* of other banks were registered among the assets, which the government tried to prevent by prohibiting the acceptance of *fedi* in 1635, but the public banks ignored this. According to Balletta et al., this independent attitude (perhaps due to the general support and trust based on the fact that they were expressions of non-profit institutions),[704] alongside their function as a system and the public management of major crises, is the factor that allowed the public banks to thrive for so long. When they were nationalised by Ferdinand IV, they increased the *prestiti* over the Lombard loans, and also increased the issuance of uncovered *fedi*, which put them at risk. Indeed, the Annunziata had gone bankrupt (1701), probably because of the higher proportion of *prestiti* to Lombard loans compared to the other banks.

1.2 The monetary system under Charles of Bourbon and the monetary reforms of 1689-1691

According to Gianrinaldo Carli, the Neapolitan monetary system in the mid-18th century dates back to the monetary reforms of 1689-1691 by the Marquis del Carpio and the Marquis de San Esteban, viceroys. We have combined Carli's description, which is based on the work of Cesare Antonio Vergara,[705] with that of Carlo Antonio Broggia and Ferdinando Galiani.[706]

First of all, we must say that in Naples the system based on the *lira* (pound), which we have found in northern Italy, was not in force. Here the units of account are the copper *grana* coin, which corresponds to 12 *cavalli* (i.e., the *cavallo* is imaginary), while 20 *grana* correspond to 1 silver *tarì*. These coins therefore reflect the pound-schelling-penny scale as *tarì-grana-cavallo*, whereby the penny in northern Italy is just as imaginary as the *cavallo* in Naples. Then there is the silver *ducato* (i.e. 100 *grana*), with its subdivisions, the *patacca* (i.e. 50 *grana*), the *tarì* (i.e. 20 *grana*) and the *carlino* (i.e. *10 grana*). The *oncia* (i.e. equal to 6 *ducati*) was the unit of account for larger transactions and was imaginary at the time Galiani wrote *Della Moneta*.[707] From 1749, all gold coins were minted, including the *oncia*.[708]

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[704] See also Costabile L., Velde F., *From commodity money to fiduciary money. The Kingdom of Naples in 16th-17th century*, op. cit.

[705] See Vergara C. A., *Le monete nel regno di Napoli da Ruggiero I sino all'augustissimo regnante Carlo IV, imperatore e III re cattolico, raccolte e spiegate*, Napoli, 1715.

[706] See Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia*, vol. II, op. cit., pp. 376-384; Broggia C. A., "Trattato delle monete", vol 4, op. cit., pp. 331-332, 339; Galiani F., *Della moneta*, op. cit., Bk 2, ch.3.

[707] See Galiani, *Della moneta*, op. cit., p. 95. The oncia was also a unit of weight: *1 libbra = 12 once = 30 trappesi = 20 acini,* see See Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia*, vol. II, op. cit., pp. 376-384.

[708] In a note in the 1780 edition of On Money, Galiani indicated which gold coins were minted from 1749, i.e. the *oncia*, the *doppia*, and the Neapolitan *zecchino*, Id., *Della moneta*, op. cit., p. 325, note XV.

So before 1749 there were copper and silver coins, no alloyed money minted, and gold was foreign, e.g. *zecchini di Venezia* and *dobble di Spagna* were authorised for circulation.

tab./fig. 18 **Neapolitan coinage in the first half of the 18th century**

metal	**coin** (in bold the money of account)	**value**
copper	*cavalli tre*	*3 cavalli*
copper	*tornese*	*6 cavalli*
copper	***grana***	*12 cavalli*
copper	*pubblica*	*18 cavalli*
silver	***carlino***	*10 grana*
silver	*tarì*	*20 grana*
silver	*Mezzo 12 carlini*	*60 grana*
silver	*mezzo ducatone*	*66 grana*
silver	*patacca (mezzo ducato)*	*50 grana*
silver	***ducato***	*100 grana* or 10 *carlini*
silver	*12 carlini*	*120 grana*
silver	*ducatone*	*132 grana*
gold	*Zecchini di Venezia*	*25 carlini**
gold	*dobble di Spagna*	*45 carlini*
gold (from 1749)	*Zecchino napoletano*	*2 ducati (20 carlini)*
gold (from 1749)	*doppia*	*4 ducati (40 carlini)*
gold (from 1749)	***oncia***	*6 ducati (60 carlini)*

Sources: Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia*, vol. II, op. cit., pp. 376-384; Broggia C. A., "Trattato delle monete", vol 4, op. cit., pp. 331-332, 339; Galiani F., *Della moneta*, op. cit., Bk 2, ch.3.
*The *zecchino* was indeed traded at a premium when Broggia wrote in 1743, it was valued at 26 *carlini* and a half.

Carli claims that Neapolitan coinage does not suffer from the monetary disorder prevalent in the other Italian states, for there is no eroded (i.e. alloyed) money, and copper and silver coins are well balanced in terms of intrinsic value. If anything, silver is slightly undervalued

compared to gold, making it profitable to exchange gold for silver in Naples and take it abroad. According to Carli, the problem was solved with the issue of the silver *moneta nuova* (i.e. the coin of 12 *carlini*) by Charles of Bourbon, which rebalanced the gold-silver ratio by reducing the silver content (i.e. the fineness) of the coin. Carli praises the mint in Naples for not compromising on the properties of the coins. Galiani agrees with this judgement and is also against alloyed money (*billon*) because it puts good money to flight according to Gresham's law.[709]

Let us now consider currency reforms. If you look at the coin table, you may notice the small difference between the *ducato* (100 *grana*), the coin of 12 *carlini* (120 *grana*) and the *ducatone* (132 *grana*), as well as in the subdivisions. All these coins were originally ducats. To explain this difference, we must refer to the currency reforms at the end of the 17th century. We have seen in the section above that the currency reform of 1622 brought the metal content of silver coins back to the standard of 1554, so that silver coins rose in value, which made them undervalued at the legal parity (i.e. both within the borders compared to the other metals and abroad). Giuseppe Galasso, relying mainly on the chronicle of Antonio Bulifon and reporting on the reforms of 1689-1691,[710] says that the undervaluation of silver coins was seen as both the cause of the silver outflow and the raising of the exchange rate (i.e. the exchange rate in Naples is defined as "uncertain for certain", i.e. the number of *ducati* for one Roman *scudo*).[711] However, Galasso does not explain what he reports. As far as the outflow of silver is concerned, it may be due to arbitrage under Gresham's law as well as to the settlement of debts abroad. It seems that in the latter case an exchange rate above par beyond specie points would have required payment in specie, and the cause of this was attributed to too low a legal parity. However, there was also a problem with clipped and counterfeit coins, which was seen as the cause of the exchange rate depreciation. The Marquis del Carpio, viceroy since 1683, decided to tackle the problem. A *giunta* of experts was formed, made up of high officials, representatives of the public banks and the city of Naples. It was decided to remint *ducati, mezzi ducati, tarì and carlini*. In order to buy the precious metal, a salt tax was levied and a lump sum tax was also levied on foreign nobles with fiefs in Naples and Neapolitans living abroad, justifying this decision by the fact that they would have benefited from an appreciation in the exchange rate (i.e. a stronger currency would have ensured their transfer of money outside the borders).[712] By 1688,

[709] Galiani F., *Della moneta, op. cit.,* p. 151 (Bk 2, Ch. 6).

[710] For this part see Galasso G., *Napoli spagnola dopo Masaniello*, Vol. I, Sansoni Editore, 1982, pp. 291-293, 303-307, 326-330, 338-343 .

[711] For the definition of the exchange rate in Naples see Rosselli, A., "Early views on monetary policy: The Neapolitan debate on the theory of exchange", op. cit.. However, we have seen that in 1622 the exchange rate was calculated in terms of the *scudo di marchi*, i.e. the unit of account of the Genoese fairs. In 1689, the exchange rate was instead calculated in terms of the Roman *scudo*. It must also be taken into account that the legal parity of the exchange rate is the par, then it fluctuates below or above par on the market of bills of exchange, depending on the current account.

[712] The exchange rate in Naples is defined in terms of domestic currency units per unit of foreign currency (see above).

when the Marquis del Carpio died, 3,042,916 ducats had been issued in various coins. However, as the exchange rate did not reverse, he had decided, against the will of the *Piazze* of the nobles (i.e. the *Piazze* were representative institutions in the city of Naples) and in agreement with the *Piazza popolare* and with Madrid, to increase the face value of the coins by 10 per cent in the hope that the new legal parity, which was in itself a devaluation, would appreciate the exchange rate on the exchange market. The Marquis de San Esteban, his successor, this time supported by the *Piazze* and Madrid, decided to continue the reform planned by the Marquis del Carpio. The 3,042,916 ducats of silver coins minted by the Marquis del Carpio were raised by 10 per cent, and a further 2,246,602 ducats were issued between 1688 and 1690. According to Broggia,[713] the ducats of the Marquis de San Esteban were lighter ducats at the tariff of 100 *grana* with their subdivisions in proportion, in order to provide a money of account, as the Marquis del Carpio's ducats with subdivisions were raised to 110 *grana*. The exchange of the old clipped coins for the new coins (i.e. the lighter coins of the Marquis de San Esteban, at par, and the coins of the Marquis del Carpio with a charge of 10 percent) began in 1689. In fact, this was largely carried out using the deposits of the public banks, and the government also provided *fedi di credito* for the exchange. In order to avoid liquidity problems for the public banks, the forced circulation of *fedi di credito* and a limitation on withdrawals from the public banks was authorised for a few months. The operation was completed in June. 4.574,110 ducats of the old coins were withdrawn and 5,593,809 new ducats, in part enhanced by 10 per cent and in part debased by the same percentage, were issued with 240,834 pounds of new silver in addition to the old silver from the withdrawn coins.[714]

However, the new coins were again clipped and melted down, so that this time an enhancement of 20 per cent was set (1691). The *ducato* of the Marquis del Carpio, now *ducatone*, was valued at 132 *grana*, and the subdivisions accordingly. The *ducato* of the Marquis de San Esteban, now "coin of 12 *carlini*", was valued at 120 *grana*, and the subdivisions accordingly. A lighter ducat was issued at a value of 100 *grana* with corresponding subdivisions. The seigniorage generated by the enhancement was to be made available in part to the mint to continue minting and in part to repay the *arrendamento* of the salt tax that had been levied to finance the new coins. Contrary to the expectation put forward in favour of the enhancement, the exchange rate rose. The *Piazze* complained, also because prices were rising and it was surmised that the real aim of the increase was to repay the government's debt to the public banks and to finance the war in Milan (i.e. Spain had entered the Nine Years' War). In fact, the capital intended for the repayment of the *arrendamento* on the salt tax was diverted to finance the war.[715] We will discuss the *alzamento* in Naples further in the debate between Broggia and Galiani, but only after we have set out Galiani's thought and his major work *Della Moneta*.

[713] See Broggia C. A., "Trattato delle monete", vol 4, op. cit., pp. 355-360.
[714] See Galasso G., *Napoli spagnola dopo Masaniello*, op. cit., pp. 291-293, 303-307.
[715] See Galasso G., *Napoli spagnola dopo Masaniello*, op. cit., pp. 326-330, 338-343.

2. The position of Ferdinando Galiani

In the chapters above, we have already introduced the Neapolitan Ferdinando Galiani (1728-1787) as one of the "monetarists" who intervened in the money debate in the mid-18th century. We have also said that his position was rejected by his contemporaries in central and northern Italy, in particular because of the policy of money enhancement (*alzamento*) that he envisaged in his major work On Money, published in 1751. We have also recalled that the same Franco Venturi, in his famous chapter on the money debate, criticises Galiani for his conservatism. In fact, even in his later work, the *Dialogues sur le commerce des bleds* (Paris, 1770), he opposed the physiocratic stance of free trade and advocated a more mercantilist approach to economic issues, which also inspired his attitude as an official of the Kingdom of Naples after his return from his long stay in Paris (1759-1769).[716] Why did Galiani maintain a seemingly conservative position in political economy vis-à-vis the new tendencies developed by the Enlightenment movement? In the following we will try to understand the author's original approach and place it correctly in the landscape of economic thought.

2.1 Historicism and money as a credit to society

First of all, we must say that On Money is the most studied Italian work on money of the time due to its deep insights into monetary theory and political economy as well as the clever and brilliant prose of the 23-year-old Galiani. It was the subject of particular attention in the middle of the 20th century, first by Luigi Einaudi (1936, 1944) and then by Joseph A. Schumpeter (1954). We have already discussed Einaudi's work on imaginary money,[717] but it is interesting to begin now with Einaudi's specific work on Galiani.[718] In this contribution, Einaudi emphasises what he considers to be the most important features of Galiani's economic thought. In particular, with regard to methodology, he claims that Galiani followed a historicising approach, which he adopted from the Neapolitan philosopher Giambattista Vico (1668-1744). In fact, Galiani did not believe in the conventionalism that many authors (e.g. Aristotle) use to explain the origin of money and he reacts to it sarcastically:

> *Sono da ridere invero tanti, che dicono essere gli uomini tutti un tempo convenuti, ed aver acconsentito ad usar questi metalli, per sé di niun uso, come moneta; e così aver dato loro il valore. Dove sono mai questi congressi, queste convenzioni di tutto il genere umano? quale il secolo, quale il luogo, quali i deputati, per mezzo del quali gli*

[716] See De Majo S., "Galiani Ferdinando", *Dizionario biografico degli Italiani*, vol. 51, Treccani, 1998.
[717] Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", op. cit.
[718] Einaudi L., "Galiani economista" (1944), in *Saggi bibliografici e storici intorno alle dottrine economiche*, Edizioni di Storia e Letteratura, 1953.

Spagnuoli, e i Cinesi, i Goti, e gli Africani così stabilmente convennero, che per tanti secoli dopo, quando finanche un popolo ignorò l'esistenza dell' altro, mai non si mutarono d'idea? I Barbari, che distrussero l'Imperio, e i Romani, che lo difendevano, mentre in ogni altra cosa erano ostinati nemici e contrari, in questo solo rimasero d' accordo, che l'oro e l'argento come ricchezza valutarono. Eh! che bisogna pur dire, che quando tutti gli uomini convengono in un istesso sentimento, ed in quello per molti secoli durano, non è già questo la deliberazione dei congressi tenuti a piè della Torre di Babilonia, o in sull'uscita dell'Arca; sono le disposizioni dell'animo nostro, e le costituzioni intrinseche delle cose: perché queste sono veramente sempre le medesime, e sempre le medesime sono state in ogni tempo.[719]

Men are truly laughable when they say that all men agreed, at the same time, to use those metals which were of themselves of no use as money, thus bestowing value upon them. Where are these meetings, these conventions of all the human race? In what century did they occur — at what place? Who are the delegates through whom the Spanish, the Chinese, the Goths, and the Africans agreed with such conviction that for so many centuries later their ideas would never change — even at some future time, when people whose existence was not yet known would be involved? Barbarians who destroyed the empire and Romans who defended it were resolute foes, were opposed to each other in every respect but one; they were in agreement in this alone: that they would value gold and silver as wealth. Need one add that despite the concurrence of all men on this single sentiment (and their persistence in it for many centuries) that this still did not constitute the will of the congresses held at the foot of the Tower of Babylon or at the exit of the Ark, but that this represents the dispositions of our minds and the intrinsic constitution of things? This is why they are always the same and have always, and at all times, been so. [720]

The last sentence in particular is reminiscent of the Vichian theory of historical courses and recourses (*corsi e ricorsi storici*), according to which all phenomena in history appear again and again. Galiani thus seems to provide historical models that can be applied in different phases of history. In fact, as Einaudi states, he uses "types and models with which he attempts to explain the facts surrounding him" according to the "method of successive approximation".[721] Einaudi takes as an example what we will call the "model of the warehouse" (*magazzino*), described by Galiani in book 2, chapter 1. In ancient times, the warehouse is the place where people bring the goods obtained through their labour, first in a small virtuous community (e.g. religious orders) to take what they need in exchange, then in a larger community (e.g. the society) in exchange for a receipt (*bullettino*) to take from the warehouse a bundle of goods for the same value. Einaudi notices how Galiani moves through "successive approximations" to the real world in which people use precious metal

[719] Galiani F., *Della moneta*, op. cit., pp. 67-68; Id., *Della moneta. Edizione seconda*, stamperia simoniana, Napoli 1780, pp. 65-66.
[720] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, ed. Toscano P., University Microfilms International, Chicago, 1977, pp. 65-66.
[721] See Einaudi L., "Galiani economista", op. cit., pp. 276-282 (editor's translation).

as money. However, we suspect that, as we have just said, Galiani is attempting to create a historical model based on sparse and fragmentary information from the past, as we will explain in a moment. It is worth noting, however, that the above example also presents a conundrum for those who have tried to interpret Galiani's thought.

In the History of Economic Analysis (1954), Schumpeter announced the well-known criterion for distinguishing the monetary approach into a metallist or chartalist stance. Schumpeter defined the two concepts, which he borrowed from Knapp's State Theory of Money (1895), by dividing them into a theoretical and a practical standpoint and explaining them as follows:

> By Theoretical Metallism we denote the theory that it is logically essential for money to consist of, or to be 'covered' by, some commodity so that the logical source of the exchange value or purchasing power of money is the exchange value or purchasing power of that commodity, considered independently of its monetary role. It is true that in principle any commodity can be chosen to serve as money. But the term Commodity Theory of money has also another meaning. [...] By Practical Metallism we shall denote sponsorship of a principle of monetary policy, namely, the principle that the monetary unit 'should' be kept firmly linked to, and freely interchangeable with, a given quantity of some commodity. Theoretical and Practical Cartalism may best be defined by the corresponding negatives. Thus, we shall speak of theoretical cartalism wherever we find denial of the proposition that it is logically essential for money to consist of, say, gold, or to be promptly convertible into gold; of practical cartalism wherever we find sponsorship of the principle of policy that the value of the monetary unit 'should' not be tied to the value of any particular commodity.[722]

Schumpeter says of Galiani, "one of the ablest minds that ever became active in our field",[723] that he was such an "uncompromising metallist".[724] This assumption has sparked a debate in Italy about the true nature of Galiani: Is he a metallist or a chartalist?

Cesarano (1990) claims that while Galiani emphasises the properties of precious metals that made them a natural means of payment, he also provides a chartalist model in which a note is a means of payment (i.e. the *bullettino*), so that he can claim that Galiani is a theoretical chartalist and a practical metallist.[725] Patalano and Realfonzo (2001) came to the same conclusion.[726] Then, Rosselli (2001) questions Schumpeter's criterion to define Galiani: "Any attempt to classify Galiani as a chartalist or a metallist is clearly doomed to failure, either because the terms of classification are too poor or because his representation of the

[722] Schumpeter J. A., *History of Economic Analysis*, op. cit., pp. 274-275.
[723] Schumpeter J. A., *History of Economic Analysis*, op. cit., p. 279.
[724] Schumpeter J. A., *History of Economic Analysis*, op. cit., p. 286.
[725] See Cesarano, F., "Law and Galiani on money and monetary systems", op. cit.
[726] Patalano R., Realfonzo R., "On money by Ferdinando Galiani: notes, social accounting and confidence", *History of Economic Ideas*, IX (3), pp. 61-94, 2001.

economy is too rich".[727] Costabile (2014) claims that both models are present in Galiani because he can find either of them in reality, depending on the actual circumstances. She claims, for example, that the chartalist model is present, not because of the "parable of the tickets (*bullettini*)", which she considers, following Schumpeter, a "pitfall" that leads nowhere, but because of book 4, chapter 4, in which Galiani praises the system of public banks in Naples and the paper money that circulates within the system thanks to the "trust" that the public places in them. The precondition for the functioning of a chartalist model is therefore public confidence, and the limit is the state, i.e. paper money cannot circulate abroad.[728]

All these positions are reasonable. However, the debate seems to have developed into an ambiguous solution, i.e. both models, the chartalist and the metallist, are present in Galiani. We would therefore like to propose an interpretation based on the main outcome of the debate, starting with the *bullettino* in the "warehouse model", which in our opinion is a historical model. In fact, it seems that Galiani had a great intuition when he imagined an economic and monetary system similar to that of the Bronze Age, as we will understand taking into account historical studies such as that of Michael Hudson.[729]

Hudson explains the origin of money in the temples of Sumer by saying that money emerged as a unit of account to record the transactions of a managed economy. The Sumerians did indeed introduce various units of measurement:

> An administrative calendar based on uniform 30-day months led to the sexagesimal system of counting and dividing into 60ths, and a matching sexagesimal set of weights and measures to allocate rations to the workforce for monthly and daily use. Mutual price equivalencies were assigned for key commodities and the rental rate for land. These prices served as coefficients to form a grid of equivalencies in which barley and silver emerged as the basic reference prices or "money-of-account." Setting these two commodities as a joint standard of value enabled disparate transactions to be organised into an integrated system in which an overall balance could be struck to measure the net gain or loss.[730]

The "imaginary money" was thus the linchpin of the system: it was the general unit of account that corresponded to both the *shekel* of silver (a unit of weight) and the bushel (*gur*) of barley (a unit of volume), thus making them equal. Most transactions were recorded

[727] Rosselli, A., "The role of the precious metals in Della Moneta by Ferdinando Galiani", in *History of Economic Ideas*, IX (3), pp. 43–60, 2001.
[728] Costabile L., "The value and security of money. Metallic and fiduciary media in Ferdinando Galiani's Della moneta", *The European Journal of the History of Economic Thought*, 2014
[729] Hudson M., Wunsch C., ed., *Creating Economic Order. Record-Keeping, Standardization, and the Development of Accounting in the Ancient Near East*, CDL Press, 2004.
[730] Hudson M., "Introduction: The Role of Accounting in Civilization's Economic Takeoff", in Id., Wunsch C., ed., *Creating Economic Order*, op.cit., pp. 2-3.

in the ledgers and obligations "were settled on seasonal occasions such as the harvest for crop debts [...] or, in the case of commercial silver debts, on the return of the sea voyage or overland caravan".[731] In fact, barley was used as a means of payment in the agricultural economy and silver in the palace economy, which was linked to the production of handicrafts and trade with merchants. In this way, silver became money as long as the temple issued silver ingots to pay merchants for imported goods, and the merchants in turn used silver (which they imported) to buy handicrafts from the palace. Hudson argues that the way in which money came into being is well illustrated by Knapp's chartalist theory, for silver became money because the temple accepted it as a means of payment.[732] However, the argument is controversial, because he also says that silver was precious because "it was the epoch's most widespread prestige commodity, used for the sacred objects that adorned the temples as well as for personal wealth in the form of jewellery", so "silver and gold traditionally were sanctified as religious contributions",[733] then he adds:

> At first silver fulfilled the money-of-account function interchangeably with copper, tin, gold and other commodities, but gradually it emerged as the dominant monetary medium. Its emergence as the dominant monetary metal stemmed in large part from its desirability as temple contribution as noted above, and from merchants who obtained it in the course of their trade and used it to repay their suppliers - initially the temples - that had consigned handicrafts to them. By the third millennium it therefore was natural for silver to be designated as the standard monetary medium to value these commodities.[734]

So it "was natural for silver to be designated as the standard monetary medium", but what is the meaning of the adjective "natural"? Actually, it seems that the value of silver is due to religion, but did it acquire its value because of this very sanctification, or because it was valued by people as prestigious jewellery, or even because it was already used as an international medium of exchange? Regarding the latter hypothesis, it is reported, for example, that since 2500 BC the network of foreign trade connected the Indus Valley, the Persian Gulf, Mesopotamia, Egypt and the eastern Mediterranean and "exotic and precious materials played an important role in conferring status and prestige upon the community and/or the individual capable of commanding such resources".[735] The process of the creation of money is complex and fascinating and certainly requires further research, but it is similar to the mystery of whether the egg or the chicken was born first. However, the role

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[731] Hudson M., "The Development of money-of-Account in Sumer's Temples", in Id., Wunsch C., ed., *Creating Economic Order*, op. cit., p. 314.
[732] Knapp argues that money is such insofar as it is accepted by the state as a means of payment.
[733] Hudson M., "The Development of money-of-Account in Sumer's Temples", in Id., Wunsch C., ed., *Creating Economic Order*, op. cit., p. 311.
[734] Hudson M., "The Development of money-of-Account in Sumer's Temples", in Id., Wunsch C., ed., *Creating Economic Order*, op. cit., pp. 311-312.
[735] Mederos A., Lambert-Karlovsky C.C., "Weight Systems and trade Networks in the Old World (2500-1000 BC)", in Id., Wunsch C., ed., *Creating Economic Order*, op. cit., p. 200.

of temples is crucial: "In third-millennium Mesopotamia the temples supplied silver as a by-product of their role in foreign trade being paid for their consignments of goods in silver as the most general and abstract measure of obligations".[736] Later, it was the temples that minted silver (and other metals), even in Greek and Roman times, as the etymology of the word "money", which comes from the Roman temple of *Juno moneta*, shows.

Galiani, of course, could not have known what was happening in Mesopotamia in the Bronze Age, but he had read Homer and the Old Testament, and in book 1, chapter 1, he tries to find out the characteristics of money at the time of the Trojan War (about 1200 BC), and he makes two points:

1. The money was an uncoined weight of precious metal; he says:

> *[...] i Sicli d'argento rammentati fin dal tempo d'Abramo, e i Talenti d'oro, che sempre nomina Omero son certamente nomi di pesi fra' Greci, e fra gli Ebrei. Ma questo non pruova, che anche monete non fossero allora, come poi lo furono, perché e la libbra, o sia lira, e l'oncia sono fra noi nomi di pesi, che pure si appropriano alle monete.*[737]

> [...] Silver shekels, for example, named in the time of Abraham, and golden talents were surely names of weights among the Greeks and Hebrews. Note that this does not prove that money did not also exist at that time, as it did later. For though the *libbra*, or the *lira*, and the *oncia* are names of units of weight among us, the terms also have monetary uses.[738]

2. Money is a unit of account that combines a weight of a precious metal (e.g. the gold talent in Greece and the silver shekel in the Near East) with a commodity that was central to their economy (e.g. the ox in Greece and the sheep in the Near East); he says:

About the Greeks,

> *Usarono inoltre per moneta di conto la voce βός, che dinota il bue; sia che co buoi ogni cosa valutassero, o che, come io mi do a credere, sia questo un nome di moneta. [...] Nè manca chi crede, che questo nome si fosse dato alla moneta, perchè avea per impronta l'immagine del bue. La quale opinione a me non piace, e sono più inclinato a credere, che sulle prime questa moneta, che forse era lo stesso Talento, al prezzo d'un bue corrispondesse: e che i Greci antichi, come poi i Sassoni nelle loro leggi usarono, apprezzassero la stessa moneta co' bestiami; ma poi fatto più abbondante il metallo, non corrispose più al valor del bestiami.*[739]

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[736] Hudson M., "The Development of money-of-Account in Sumer's Temples", in Id., Wunsch C., ed., *Creating Economic Order*, op. cit., p. 310.
[737] Galiani F., *Della moneta*, op. cit., p. 25; Id., *Della moneta. Edizione seconda*, op. cit., p. 10.
[738] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 9.
[739] Galiani F., *Della moneta*, op. cit., pp. 25-26; Id., *Della moneta. Edizione seconda*, op. cit., p. 10.

> Money of account was otherwise referred to as βός, which is the same as the word for ox, whether everything was valued in terms of oxen, or whether this was just a name for a coin, as I tend to believe. [...] And yet, there is no lack of those who believe that this name was given to money because the coin was stamped with the image of an ox. This is an opinion I do not share; I am more inclined to believe that the first coins of this type, perhaps these very same talents, corresponded to the price of an ox, and that the ancient Greeks, and later the Saxons, valued money itself, in their laws, in terms of cattle. In due course as the metal became more abundant, money ceased to correspond, in value, to cattle.[740]

In the Near East,

> *I sicli erano d'argento, e quella voce Ebrea Kesita che nel Genesi al c. 53, si trova, e che per agnello è spiegata, più verisimile è che fosse una moneta d'argento così detta dall'antico suo valore, che era eguale a quello d'una pecora, e non già dalla immagine impressavi. E certamente vivendo gli Arabi, e gli Asiatici in gran parte allora con vita pastorale, i prezzi delle cose a quello de' loro bestiami avranno comparato.*[741]

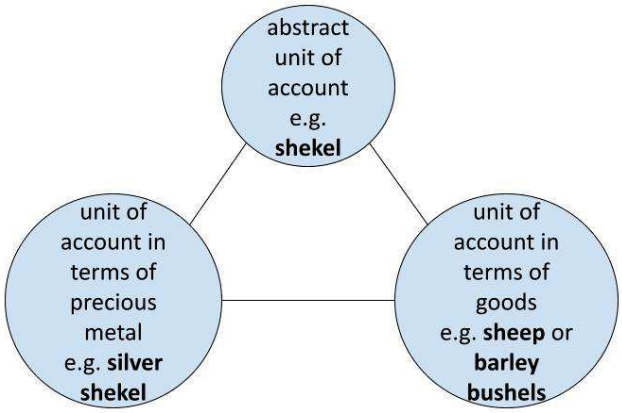
> Shekels were made of silver and the Hebrew word *Kesita*, which is found in chapter 53 of Genesis, is rendered by our *agnello*. It is, therefore, even more probable that a silver coin was referred to in this manner because its ancient value was actually equivalent to the value of a sheep, and not because of the image imprinted upon the face of the coin. Asiatics, who for the most part lived a pastoral life at that time, surely compared the prices of different things to the prices of their livestock.[742]

Thanks to the study of the Iliad and Genesis, carried out as part of a preliminary work on money at the time of the Trojan War,[743] Galiani discovers the mechanism linking the unit of account to precious metals and commodities, as had been envisaged in Mesopotamia since the time of the Sumerians, with the difference that there the commodity linked to silver was barley and not cattle. As can be seen in the table below, the abstract unit of account, i.e. imaginary money, corresponded on the one hand to the unit of weight of silver and on the other to the unit of account used either in the livestock or agricultural market, such as the sheep or the bushel of barley used by the Hebrews and Sumerians respectively.

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[740] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 10.
[741] Galiani F., *Della moneta*, op. cit., p. 26; Id., *Della moneta. Edizione seconda*, op. cit., p. 11.
[742] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 10.
[743] Galiani F., "Sullo stato della moneta ai tempi della guerra troiana", Documento I, in *Della moneta*, op. cit., pp. 351-379.

tab./fig. 19 **The unit of account in Galiani**



According to Galiani, the *shekel* is first the silver ingot with the weight of a *shekel* and then the coin with this intrinsic value, the *kesita* is the coin representing the price of a sheep with the proportional intrinsic value in silver, according to the table of all prices of commodities with the numeraire of the *shekel*. Note that the word "numeraire" is not used here in the sense of Walras, because in that case it is the commodity that is chosen as the medium of exchange and that plays the role of money in the market, which corresponds to the same metallist approach of Adam Smith and Carl Menger (see below). Galiani does not say that the sheep is a medium of exchange, but that its price is a reference standard. This is also clear when Galiani talks about the ox, which is also not a medium of exchange, but a coin that originally had the same value as an ox. So in Galiani's case, the precious metal is used to physically represent the unit of account and then issued on the market as a medium of exchange and means of payment, although he also says that the imaginary money comes from a coin that was once in use:

> *Resterebbe che io dicessi di que' della moneta ideale misuratrice del prezzi; della quale però, siccome il solo nome, e numero basta a costituirla, così non parrà a molti, ch'ella abbia necessaria connessione co' metalli. Ma da così credere si rimarrà chi riflette, che non si può in un paese introdurre moneta ideale, se non per mezzo della reale; ed ovunque la moneta immaginaria usasi per contare egli è da aversi per certo, che un tempo questa moneta era reale, come per esperienza si conosce. Non sono gli uomini capaci d'avvezzarsi sulla prima a compiere sopra un numero astratto, e non significante alcuna materia, che gli corrisponda; ma se dalla vicenda delle cose insensibilmente vi son tratti, vi si accomodano assai bene: di che si dirà più a lungo nel seguente libro. Ora io farò brevemente conoscere, che la misura delle cose con niun genere si può far meglio, che co' metalli.*[744]

[744] Galiani F., *Della moneta*, op. cit., p. 80; id., *Della moneta. Edizione seconda*, op. cit., p. 84.

> It remains for me to say something about ideal money, which measures prices. Because only name and number suffice to create them, they do not appear to many to have any necessary connection with the metals. But, whoever believes this will, on reflection, be forced to agree that it is not possible for a country to Introduce ideal money, instead by means of real money. All imaginary money used for counting was certainly real at one time, and this is known to us from experience. Men are not able to accustom themselves to compute, from the outset, on the basis of abstract numbers which do not correspond to any specific material. Only when removed, by insensible degrees, from the scene of actual events, do people become very comfortable with the abstract. This will be discussed at length in the following book. For the present, I will briefly explain why the measure of things cannot be accomplished better than with the metals.[745]

This argument is to be understood in the sense that man values things by comparing them with a measure of value, which is a commodity representative of the economy and also used in exchange, like the ox, the sheep or the bushel of barley, but which is ultimately identified with a piece of metal because the latter has the property of serving as a unit of account, in particular its divisibility into homogeneous parts. The coin is therefore initially a unit of account and can retain this function even after its disappearance as a "ghost" (e.g. ghost money was a synonym for imaginary money).

Based on this discovery, which Galiani cannot verify and which he calls a "conjecture" in his preliminary work, he ventures an intrepid guess to explain the "nature of money" in a dynamic historical model that summarises the phases from its origins to the present day (Book 2, Chapter 2). Let us adopt Einaudi's division of the "model of the warehouse" into five "moments" and reinterpret them historically:[746]

I Moment: In a small community, such as a religious order, where people are "select and virtuous", everyone can share the product of their labour by depositing it in an open and public storehouse. The small community - as an abbot, Galiani must clearly have had monasteries in mind - is therefore the best alternative to a barter economy, which Adam Smith used as a basis for speculating about the origin of money. In contrast to Smith, as we will see, Galiani elaborates a state theory of money.

II-III Moment: In a large society the model should be adapted, because on the one hand the lazy would live on the shoulders of others, and on the other the industrious would have no incentive to produce more. Therefore, in order to take into account the labour of all, once the goods produced have been placed in storage, a note (*bullettino*) would have to be issued for the value of the same goods, representing a credit against society (II moment); in order to exchange them for other goods of the same value, a common unit of account is

[745] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 60.
[746] Einaudi L., "Galiani economista", op. cit., pp. 278-280.

introduced to price each good, thus introducing the innovation of the Sumerian palaces (III moment):

> *Per ciò fare era necessario, che il Principe costituisse una valuta a tutte le cose, o sia su d'una comune misura regolasse la valuta d'ogni cosa; dichiarando per esempio, che lo staio del grano corrisponde a tanto vino, tanta carne, olio, vesti , cacio ecc.; secondo la quale misura, e tariffa si saprebbe poi quanto si appartiene ad ognuno di ricevere per quel che egli ha fatto, e quando è che il suo credito è pareggiato.*[747]
>
> This could only be accomplished if the prince assigned a value to each thing. That is, the value of each thing would be regulated by a common measure declaring, for example, that a bushel of grain corresponds to so much wine, or so much meat, or oil, or clothes, or cheese, et cetera. Exactly how much belonged to each person for what he had done would then be known by means of this measure and this schedule. It would also indicate when his credit had been exhausted.[748]

IV Moment: The bureaucratic apparatus is introduced into the model. In order to pay the "ministers of society", each citizen is to bring a quota of goods to the warehouse free of charge, so that the principle of taxation is introduced.

V Moment: In order to avoid any possible fraud in the distribution of the *bullettini*, they should be issued by the prince in standard units, corresponding for example to a pound of bread, and the storekeepers should distribute them in proportion to the value of the goods received in the warehouse and in turn take them back when a corresponding value of other goods is withdrawn from the warehouse:

> *Or per assicurarsi da ciò* [the fraud]*, perchè in molte maniere vi si potesse riparare, mi parve che la migliore sarebbe se il solo Principe segnasse una determinata quantità di bullettini, tutti d'uno stesso prezzo, come a dire col prezzo d'una libbra di pane, e di questi, che in carta o in cuoio potrebbero segnarsi, se ne distribuissero le convenienti somme ai custodi delle robe, i quali a chi immette gli dessero, ripigliandogli da chi estrae.*[749]
>
> But this [the fraud] could be avoided in many ways, the best of which would seem to be for the prince to sign only a fixed quantity of notes, all of the same denomination — say the price of a pound of bread — printed on either paper or leather. Some convenient sum would be distributed among the custodians of the commodities who would, in turn, give them to persons who had deposited or would take them from persons who had withdrawn goods.[750]

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[747] Galiani F., *Della moneta*, op. cit., p. 88; Id., *Della moneta. Edizione seconda*, op. cit., pp. 91-92.
[748] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 68-69.
[749] Galiani F., *Della moneta*, op. cit., p. 89; Id., *Della moneta. Edizione seconda*, op. cit., p. 93.
[750] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 69.

The currency unit thus corresponds to a unit of weight of a basic commodity (e.g. the pound of bread), just as in the Sumerian system the shekel corresponds to the bushel of barley, in Greek to the ox and in Hebrew to the sheep. But then Galiani moves from the historical analysis to the current one, noting that the *bullettino* is now represented by a coin:

> *Vidi essere le monete i bullettini, le quali in somma sono una rappresentanza di credito, che uno ha sulla società, per cagione di fatiche per essa sostenute o da lui, o da altri, che a lui le ha donate. Non vi sono, è vero, fra noi quel magazzini comuni , ma ad essi corrispondono le private botteghe, e con assai miglior consiglio i bullettini, cioè le monete, non si danno, e prendono da generali custodi, ma ognuno delle sue fatiche ha cura; e per empir la sua bottega dà la moneta con cui negozia, e ripigliasela vendendo.*[751]
>
> Coins are the notes discussed here, because in the end these are the representations of credit which one has against society, either directly, by reason of the work done by him, or indirectly because of coins donated to him by others. In reality, there are no common warehouses among us, there are only private stores which correspond to them. Notes - really coins - are not paid to and collected from general custodians. With much greater wisdom, each person cares for his own labour and tries to fill his own store, giving up money which he receives by trading, or acquires by selling, merchandise.[752]

Galiani is looking for historical evidence to support his model ("I sought to determine whether any difficulties remained to be surmounted and whether historians or travellers had ever discussed examples drawn from other nations, which tended to confirm my ideas"),[753] but we have just seen that his intuition is based on historical evidence, and it is also possible that he has heard of warehouses and receipts for the goods deposited, for Braudel says:

> *Très tôt, sans doute avant le XV siècle, la Sicile possède près de ses ports des* caricatori*, énormes magasins où le blé s'entasse, le possesseur obtenant un reçu* (cedola) - *les* cedole *se négocient.*
>
> Very early on, probably before the XV century, there were *caricatori* in Sicily near the harbours, huge warehouses in which wheat was stacked and the owner received a receipt (*cedola*) - *cedole* were traded.[754]

[751] Galiani F., *Della moneta*, op. cit., p. 90; Id., *Della moneta. Edizione seconda*, op. cit., p. 94.
[752] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 70.
[753] Ibid.
[754] Braudel F., *Civilisation matérielle, économie et capitalisme*, op. cit., p. 64 (editor's translation).

Be that as it may, we have tried to show that the “warehouse model" can be considered the result of a great intuition on the historical development of the economic system and related institutions. It emerges as a centralised model with an administered economy, similar to the Sumerian system of palaces and temples, but in modern times it takes the structure of the market economy. According to Hudson, the market economy in Mesopotamia develops around the palaces for the exchange of handicrafts and is fuelled by the issuance of money by the palace, with the money being coined by the temple. Galiani initially sees the money in the form of *bullettini*, i.e. notes. In fact, he knows that money is not coined from the beginning, but is a unit of account that combines the unit of weight of the precious metal with the unit of weight of a basic commodity and thus with all commodities in a tabular system of tariffs. In the preliminary work on money at the time of the Trojan War, he says that at this stage, the role of money can be played by any commodity, such as "stones, leather, barks, shells, fruits... and finally written notes", but he adds, "if the latter could offer all the conveniences and securities found in metals".[755] In fact, since Galiani comes to the present, he considers money in the form of coins, for:

> *[...] ogn'incommodo, che i bullettini, di qualunque materia si facessero, aveano, gli ha emendati la moneta di metallo. In lei la qualità, il conio, e la struttura assicurano dalla frode de privati, e la intrinseca valuta ci assicura dall'abuso, che mai ne potesse fare il Principe; essendoché se la materia non contenesse tutto il valore, che ha la moneta come se di cuoio, o di carta si facesse uso, il Principe potria stampare un numero eccessivo di bullettini; e questo solo dubbio ch'egli potesse farlo basta a toglierne, o diminuirne la fede, e troncarne il corso.*[756]

> [...] every disadvantage which notes might have, whatever material they might be made of, has been eliminated by metallic money. The quality, coinage, and structure of the latter provides for its intrinsic value a protection against private fraud, an abuse which even the prince might commit; for if the material did not have to contain the full value of the money, then the prince could always print an excessive number of notes. The doubt alone which he could cause in this way would be sufficient to take away from, or reduce their price [i.e. the confidence in them, ed.], and inhibit their circulation.[757]

It seems, then, that Galiani moves from a chartalist to a metallist approach, or that he is a theoretical chartalist and a practical metallist, as Cesarano (1990) and Patalano and Realfonso (2001) say. However, as the latter say, Galiani’s ontology of money is quite chartalist in the sense that money is seen as a credit to society and not as a commodity: "money is essentially the unit of account in social book-keeping, the unit of measurement

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[755] *“...pietre, cuoio, cortecce, conchiglie, frutti, … ed infine biglietti scritti”, “se in essi potessero essere tutte quelle comodità e sicurezza che s’incontrano ne’ metalli”*, Galiani F., “Sullo stato della moneta ai tempi della guerra troiana”, op. cit., pp. 372-373.

[756] Galiani F., *Della moneta*, op. cit., p. 91; Id., *Della moneta. Edizione seconda*, op. cit., p. 95.

[757] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 71.

conventionally (and therefore arbitrarily) equated with the value of a given commodity or of a basket of commodities".[758] Indeed, Galiani defines money as "a common measure used to denote the price of each thing".[759] Thus, he uses a state theory to explain the nature of money, in contrast to Adam Smith, who saw money as a medium of exchange on the market, as Smith says:

> The butcher has more meat in his shop than he himself can consume, and the brewer and the baker would each of them be willing to purchase a part of it. But they have nothing to offer in exchange, except the different productions of their respective trades, and the butcher is already provided with all the bread and beer which he has immediate occasion for. No exchange can, in this case, be made between them. [...] In order to avoid the inconveniency of such situations, every prudent man in every period of society, after the first establishment of the division of labour, must naturally have endeavoured to manage his affairs in such a manner, as to have at all times by him, besides the peculiar produce of his own industry, a certain quantity of some one commodity or other, such as he imagined few people would be likely to refuse in exchange for the produce of their industry.[760]

Precious metals were ultimately chosen as a general medium of exchange due to their special properties. This view was then further developed by Menger:

> The reason why the precious metals have become the generally current medium of exchange among here and there a nation prior to its appearance in history, and in the sequel among all peoples of advanced economic civilisation, is because their saleableness is far and away superior to that of all other commodities, and at the same time because they are found to be specially qualified for the concomitant and subsidiary functions of money.[761]

On the other hand, a tradition that views money as credit was developed after Knapp, for example by Innes, Keynes, Schumpeter, Lerner, and Minsky, and more recently by Goodhart and Ingham.[762] Knapp's assumptions were also further developed by sociologists such as Simmel and Weber. In particular, Georg Simmel expresses himself like Galiani when he says that "money is only a credit upon society",[763] while Galiani says: "Coins are the notes

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[758] Patalano R., Realfonzo R., "On money by Ferdinando Galiani: notes, social accounting and confidence", op. cit., p. 289.
[759] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. Cit., Bk. 1, Ch. 4 , p. 49; id., *Della moneta*, op. cit., p. 68; Id., *Della moneta. Edizione seconda*, op. cit., p. 67.
[760] Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, op. cit., Book 1, Ch. 4, pp. 23-24.
[761] Menger K., "On the Origin of Money", *The Economic Journal*, vol 2, no. 6, 1892, pp. 239-255.
[762] See Wray R., "From the StateTheoryof Money to Modern Money: An Alternative to Economic Orthodoxy", in Fox D., Ernst W., ed., *Money in the Western Legal Tradition*, p. 632.
[763] Simmel G., *The Philosophy of Money* (1907), Routledge, 1978, p. 176.

discussed here, because in the end these are the representations of credit which one has against society".[764]

2.2 External constraint and universal money

We have said that Galiani moves from a "theoretical chartalism" to a "practical metallism" when he drops the *bullettino* in favour of the coin. The reason is that an exogenous money is safer than an endogenous one, because the sovereign could abuse his power and issue too many *bullettini*, and "the doubt alone" would be sufficient to reduce the confidence in them, "and inhibit their circulation". Hence the problem is trusting the money issuer, which makes Galiani opt to metallism. It is interesting in particular what he says about the coinage:

> *E quanto al conio è necessario avvertire, ch'egli non è già sul metallo quello stesso, che sono le firme sulle cedole, o su bullettini: perché queste costituiscono tutto il valore alla cedola, e la carta su cui si fanno è ugualmente atta a ricevervi i caratteri di maggiore, o di minor somma a piacimento altrui. Quindi non hanno i bullettini altro valore che l'estrinseco; né si può dire, che abbiano d'intrinseco più di quel mezzo soldo, che vale la carta. Nelle monete la cosa procede diversamente. Il conio dimostra quel valore, che già esse hanno in se, non lo produce; e quando il conio ne dimostrasse un altro, questo non distrugge quello, ma restano ambedue insieme; e quello del conio, e della legge, che perciò dicesi estrinseco, corre fin là dove la legge si stende ed ha forza d'operare; l'altro, che è nella natura, e nel metallo contenuto, e perciò chiamasi intrinseco, resta ed ha luogo dovunque non può averlo il primo.*[765]
>
> As for coinage, permit me to point out that this is not really the same thing for metals as signatures are for notes or receipts. The latter constitutes all the value a note has; and the paper on which it is made is equally able to secure for one a greater as a smaller amount of another's pleasures. Thus, notes have only an extrinsic value; one cannot say they have any intrinsic value beyond the half penny the paper of which they are made is worth. This is not true of coins. Coinage manifests value which coins actually have intrinsically; the value is not created. When [the coinage] shows some other value, this does not destroy the other; both exist simultaneously. [The value of the coinage, or the legal value, which is called extrinsic, is valid as far as the law reaches and is strong enough to be obeyed, ed]. The other, which is inherent in its nature and is embodied in the metal, is therefore called intrinsic and endures and prevails where the first cannot.[766]

[764] Galiani F., *Della moneta*, op. cit., p. 90; Id., *Della moneta. Edizione seconda*, op. cit., p. 94; Id., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 70.
[765] Galiani F., *Della moneta*, op. cit., p. 137; Id., *Della moneta. Edizione seconda*, op. cit., p. 158.
[766] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 117-118 (with corrections by the editor in brackets).

This shows the limit of *bullettino* (i.e. paper money), i.e. it only has an "extrinsic value" represented by the signature, and the extrinsic value, whether in the case of paper or coins, is only valid within the limits (and we have seen that it is also jeopardised there when there is a lack of trust in public institutions). The intrinsic value inherent in the metal, on the other hand, accompanies it beyond borders. It is the exogeneity of the metal that gives it value, i.e. its scarcity. According to Galiani's theory of value, the value of a commodity is determined on the one hand by scarcity (*rarità*), i.e. by the "proportion between the quantity of a thing and the use which is made of it",[767] which is determined by natural factors and the labour required to produce such a commodity (i.e. the costs that determine supply), and on the other hand by (marginal)[768] utility (*utilità*) or the "ability a thing has to provide us with happiness",[769] which determines demand. The value of the precious metal is therefore not fixed (it is "an extrinsic relationship that varies according to person, time, and place"),[770] and in this respect Galiani's point of view coincides with that of John Law, but, unlike Law, the value of precious metal is quite stable because the conditions of supply and demand are rather stable. The value of the precious metal is therefore not due to its use as a coin, but to its use as a commodity, as he shows by estimating that the amount of silver in the form of artefacts is higher than that in the form of coins in the kingdom of Naples. The intrinsic value, so determined, allows the coin to be accepted abroad. But this was precisely the attitude of Davanzati, who says that "when a prince [...] were to make a coin of iron, lead, wood, cork, leather, paper, salt, as they were made, or of anything else, it would not be accepted outside the state, as outside the generally agreed matter, nor would it be a universal money, but a special size, a token or bill, or hand-written paper of the prince, obliging him to return to the giver the same amount of real money" (i.e. gold, silver or copper).[771] As we have seen in the previous chapters, "universal money" is also the money of John Locke, from whom Galiani adopted the doctrine of sound money based on intrinsic value.[772] Indeed, when he speaks of real money as opposed to imaginary money, he says in

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[767] Galiani F., *Della moneta*, op. cit., p. 46; Id., *Della moneta. Edizione seconda*, op. cit., p. 38; Id., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 28.

[768] See for example Einaudi L., "Galiani economista", op. cit.

[769] Galiani F., *Della moneta*, op. cit., p. 39; Id., *Della moneta. Edizione seconda*, op. cit., p. 28; Id., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 22.

[770] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 98; id., *Della moneta*, op. cit., p. 119; id., *Della moneta. Edizione seconda*, op. cit., p. 38; Id., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 133: " *…una relazione estrinseca, che in ogni luogo, tempo, e persona si muta*".

[771] See Ch. 2, para. 3.1.

[772] Galiani translated part of Locke before Pagnini and Tavanti in 1744, at the age of 16, even if he did not complete the work, as he explains in a note in the 1780 edition of On Money; see note II, in id., *Della moneta*, op. cit., p. 307.

particular that its function is that of a "pledge" and a "security" for the one who accepts it for credit settlement, as Locke claimed.[773]

Now, it is worth answering the question of whether metallism in international relations is a choice or a compulsion, because in the latter case we have no choice but the "universal money". In fact, the practice of bills of exchange in international trade cannot speak in favour of chartalism, since they are papers fully backed by the metal, with the only restriction being a deferral of payment. Nor can bank money be considered as such, according to Schumpeter:

> The practice of the epoch, especially the practice of the four great clearing and deposit banks [Schumpeter refers to Amsterdam, Hamburg, Genoa and Venice, ed.] had familiarised economists with the idea of a money of account which was defined by quantities of metal and which existed only as a bookkeeping device for the purpose of facilitating large-scale trade and finance in a world of numberless and ever-changing currency systems. In this sense the money of account also entered monetary theory of the metallist type.[774]

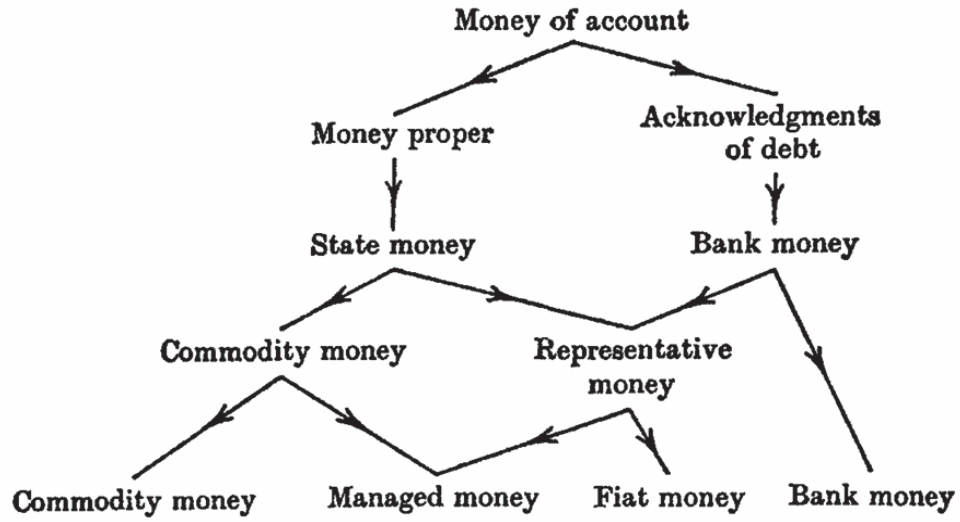
If we can make a reservation for bank money in the case of quasi-fiat money in Amsterdam and Venice, as the same Galiani did (see next section), then it is generally true what Ingham claims: "the creation of monetary space defined by geographical extent of a money of account is an act of sovereignty".[775] The first instances of a unit of account being enforced abroad without the necessary backing of gold can thus be traced back to the sterling system in the British colonial empire, as Marcello de Cecco shows in Money and Empire,[776] where he explains that despite the general assertion of an international gold standard (in the period from 1890 to 1914), the money used was the pound sterling. For example, de Cecco shows that India was obliged to hold its surplus against Britain in units of account, while the latter kept the gold in the vaults of the Bank of England. Does this analysis leave room for Galiani's chartalism? In the following sections we will look at the space for the autonomy of the nation-state, which is also an issue for Keynes, so we will try to read Galiani through his lens.

[773] Locke J., "Some of the Consequences that are likely to follow upon lessening of interest to 4 per cent," in Kelly P. H., *Locke on Money*, op. cit, vol. 1, p. 202; also quoted in Eich S., "John Locke and the politics of monetary depoliticization", op. cit., p. 14.
[774] Schumpeter J. A., *History of Economic Analysis,* op. cit., p. 283.
[775] Ingham G., *The Nature of Money*, Polity Press, 2004, pp. 45-46.
[776] See de Cecco M., *Money and empire: The international gold standard, 1890-1914*, Blackwell, 1975.

2.3 Representative money and the case of fiat money in republics and monarchies

In the Treatise of Money, Chap. 1, Keynes makes a classification of money. He opens with the money of account, "namely that in which debts and prices and general purchasing power are expressed",[777] at the top of the pyramid. Then he divides state money, i.e. the currency or "money proper", and bank money, which is the acknowledgement of a private debt in money of account. The bank money, however, can be state money when issued by a central bank: it is the case of "representative money", which represents "commodity money", i.e. the coins. Representative money, i.e. central bank money, can be either "managed money", when it is backed by commodity money, or "fiat money", when it is unpegged.

tab./fig. 20 **Keynes' classification of money**



Source: Keynes J. M., "A Treatise on Money", op. cit., p. 8.

In particular, fiat money is "representative (or token) money (i.e. something the intrinsic value of the material substance of which is divorced from its monetary face value)", it is "not convertible by law into anything other than itself", and it has "no fixed value in terms of an objective standard". Managed money is "similar to fiat money, except that the State undertakes to manage the conditions of its issue in such a way that, by convertibility or

[777] Keynes J. M., "A Treatise on Money" (1930), 1. The pure theory of money, *The Collected Writings of John Maynard Keynes*, vol.5, ed. E. Johnson, D. Moggridge, A. Robinson, Cambridge University Press for the Royal Economic Society, 2013, p. 3.

otherwise, it shall have a determinate value in terms of an objective standard".[778] To summarise, the main difference between fiat money and managed money is that the latter corresponds to an "objective standard" (e.g. a commodity) and the former does not.

"Representative money" (*le rappresentazioni della moneta*) is the topic that Galiani deals with in book 4, chapter 4:

> *Le rappresentazioni della moneta altro non sono che manifestazioni d'un debito. Dalla difficile imitazione nasce la loro sicurezza; dalla fede e virtù del debitore la loro accettazione. E perciò il loro valore composto dalla certezza del debito, dalla puntualità del debitore, e dalla veracità del segno, che si ha in mano. Quando tutti i tre sopraddetti requisiti sono al sommo o sicuri, la rappresentazione eguaglia il valore della cosa rappresentata, giacché gli uomini tanto stimano il presente, quanto un futuro, che certamente ad ogni atto di volontà divenga presente. Perciò tali rappresentazioni, trovando agevolmente chi le prenda, diventano monete, che si potriano dire in tutto eguali alle vere, se non fosse, ch'elle divengono cattive e false subito, che perdono alcuno del sopradetti attributi, i quali non essendo intrinsechi alla natura loro, non vi stanno così fermi addosso, come la bellezza, e lo splendore a' metalli componenti la vera moneta.*[779]
>
> Representations of money are nothing but manifestations of debt. Their security rests on the difficulty of imitating them; and their acceptance depends on faith and on the good name of the debtor. For this reason, their value is composed of the certainty of the debt, on the punctuality of the debtor, and on the veracity of the token that is on hand. When all three of these requisites are filled to the greatest degree of safety, the representation is equivalent to the value of the things it represents, because men value the present as much as the future which, of course, becomes the present with every act of will. Such representations become money because they are found to be agreeable to those who accept them, and they could be regarded as equal in all respects to the thing they represent, but for the fact that they become poor and false representations as soon as they lose any of the above attributes. Because these attributes are not intrinsic to their nature, they do not endure as much as do the beauty and the splendor of the metals comprising actual money.[780]

Thus, if we follow Keynes' classification of money, Galiani can consider representative money as "state money" (i.e. equivalent to a currency) provided that three conditions are met: the certainty of the debt, the punctuality of the debtor (i.e. the faith and good name) and the veracity of the token. He analyses some examples of token or paper money to assess whether they can be considered "state money". In particular, he analyses two cases,

[778] Keynes J. M., "A Treatise on Money", op. cit., p. 7.
[779] Galiani F., *Della moneta*, op. cit., pp. 265-266; Id., *Della moneta. Edizione seconda*, op. cit., pp. 319-320.
[780] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 235.

namely that of government tokens or notes and that of bank money. As far as the former is concerned, he first looks at money "of necessity" and "obsidional", i.e. tokens used by the sovereign or the commander in case of necessity or siege and enforced by law, i.e. cases of fiat money, which, according to Galiani, could not be maintained for long, apart from exceptions such as the paper money of the British colonies in North America. In fact, Galiani reports on an account from Pennsylvania and concludes that the circulation of paper money was possible there because: 1. The neighbours could not counterfeit the money, as they were "sauvages"; 2. Pennsylvania only traded with England, the motherland, so there was no need for a suitable trade currency (what we have called "universal money"); 3. The inhabitants, belonging to the Quaker religious sect, thanks to their "fanaticism", supported the belief in state banknotes, which makes the trust in banknotes absolute, but cannot be generally imitated in this particular case. It is worth noting, however, that Galiani in Book 2, ch. 3 includes copper among the representative monies, for although clipped and worn, it is still accepted at face value for a "common deception".[781]
As far as bank money is concerned, Galiani only considers that of "public institutions", i.e. public banks and the government, because private representative money is a simple promissory note whose faith is limited to the person of the debtor, whom few people trust, so that the note cannot circulate widely and on an equal footing with coins.

Galiani traces back the history of banking to Italian merchant bankers:

> *Non si può dubitare, che tali Banchi fossero utili, e buoni, mentre i mercatanti senza i pagar grosse usure trovavano quanto denaro volevano: e il denaro non si fermava ozioso nelle mani degl'inesperti a muoverlo, e trafficarlo. Quindi era dagli uomini, mediante la fede, e l'onestà, raddoppiata la moneta colla creazione d'un altrettanta quantità di moneta di carte, che non costavano mercanzie mandate all'Indie, come i metalli preziosi.*[782]
>
> There is no doubt that such banks were most useful and good as long as tradesmen found as much money there as they wished without having to make usurious payments for it, and as long as money did not rest idly in the hands of those inexperienced at moving and trading it. Thus, men doubled the volume of money on the basis of faith and honesty, by the creation of an equal quantity of paper money, which did not involve incurring the cost of sending goods, such as the precious metals, to the Indies.[783]

Then, according to Galiani, the use of paper money (i.e., he refers to the *fedi di credito*, which were initially issued by private bankers in Naples in the first half of the 16th century)

[781] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 101; id., *Della moneta*, op. cit., p. 122; id., *Della moneta. Edizione seconda*, op. cit., p. 137; see also Rosselli, A., "The role of the precious metals in Della Moneta by Ferdinando Galiani", op. cit.
[782] Galiani F., *Della moneta*, op. cit., p. 270; Id., *Della moneta. Edizione seconda*, op. cit., pp. 325-326.
[783] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 239-240.

even makes it possible to double the money supply at no cost thanks to "faith and honesty". However, paper money was often irredeemable due to the frequent bankruptcies of the private bankers, so public banks were founded, starting with the *Banco di Rialto* in Venice, then the public banks in Amsterdam and Hamburg, the Bank of England (Galiani is actually talking about the Exchequer, but he should be referring to the former) and finally John Law's General Bank in France. Galiani does not mention the Neapolitan banks here because he considers them to be private, even though they are worthy of public trust, as he says, because of the special nature of charitable institutions:

> *Il governo loro è in mano di privati onestissimi, i quali riguardando giustamente la cura del ben pubblico come opera pia e divota, usano un disinteresse sommo, e dirò quasi miracoloso. Il danaro depositato vi si conserva religiosamente; e sebbene noccia il ristagnamento, pure poichè nuocerebbe più la perdita de' Banchi, e l'una cosa con l' altra in una Monarchia non possono essere, è bene il restare il danaro nel Banco .*[784]
>
> Their management is in the hands of the most honest individuals who, in properly regarding the care of the public welfare as a pious and devout work, have demonstrated a total and, I should say, almost miraculous disinterest. Money deposited in them is kept religiously. And although the resulting immobility is harmful, failure of the banks would be even more harmful. The full advantages of both are not possible in a monarchy and it is, therefore, better for the money to be kept in banks.[785]

As we will see further, Galiani does not attribute to the banks in a monarchy the same function they have in a republic, for the latter can have public debt on the asset side of the balance sheet:

> *Perciocchè è da aversi per fermo, che siccome prima i privati Banchieri non lasciavano oziosi i loro depositi, così le Repubbliche col danaro de' Banchi hanno soccorse le loro gravi necessità: e così gran parte dell'oro depositatovi n'è stato tratto fuori. Sicché il danaro de' Banchi loro ha mutata natura, e da deposito è divenuto imprestito fatto al pubblico; ma imprestito, a differenza degli arrendamenti, gratuito, e senza frutto d'interesse.*[786]
>
> It is to be taken for granted that since merchants would not leave their deposits hidden, republics cared for their serious needs with the money of banks. Thus, a large part of the gold deposited with them was withdrawn. In consequence, the nature of the bank's money changed, and from a deposit has become a loan to the

[784] Galiani F., *Della moneta*, op. cit., p. 280; id., *Della moneta. Edizione seconda*, op. cit., pp. 340-341.
[785] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 249-250.
[786] Galiani F., *Della moneta*, op. cit., p. 271; Id., *Della moneta. Edizione seconda*, op. cit., p. 328.

> public, although a loan different than the *arrendamenti*, one that was free and without any interest yield.[787]

Galiani recognises, even if he is inaccurate in some historical details, the financial innovation that came from the Bank of Amsterdam and to a lesser extent from the *Banco del Giro* in Venice. With the introduction of receipts for cash withdrawals in the 1680s and the concomitant creation of unencumbered deposits (i.e. the cash deposited before the introduction of the receipt, which became irredeemable), the Bank of Amsterdam was able to use cash to finance the city of Amsterdam and at the same time put fiat money (i.e. the unencumbered deposits) into circulation. In the case of Venice, fiat money was put into circulation during the period of irredeemability, as cash was used to finance government spending, which Galiani also points out. Thus Galiani can recognise the financial revolution that was partly anticipated in the case of some early public banks and then exploded in the case of the Bank of England. He also sees the difference between the former and the latter, for he says that the Bank of England (which, as we have seen, he thinks agrees with the Exchequer) differs from the other public banks in that "it constituted a loan made by private individuals" to the sovereign, and he adds, that the return of the loan is not certain, so that "these credit instruments are bought and sold at a larger or smaller value depending on the probability that they will be redeemed",[788] by which he probably means the Exchequer Bills, the government bonds which the Bank of England discounts and puts into circulation. Again, Galiani is vague on the historical details, but the concept is clear. In fact, he manages to define money as credit in the modern sense, which includes the concept of public debt:

> *Ma la Repubblica assicurando il Banco, e rendutasene mallevadrice, fa, che non si cerchi riavere quel denaro, che non esistendo nel Banco dovrebbe dalla Repubblica darsi: e poiché la Repubblica distinta da privati è un ente chimerico, non si può da lei sperar altro, che veder le sustanze de privati al bisogno pubblico convertite. E perciò i privati sono creditori di loro medesimi senza avvedersene: e questo non avvedersene fa che si sia potuta moltiplicare la moneta rappresentandone più centinaia di milioni di fiorini senza doverla scavare.*[789]
>
> By ensuring the bank, making itself its guarantor, the republic has provided that it would not seek to recover that money which, because it did not exist in the bank, would be given by the republic. Since the republic, distinct from private individuals, is a chimerical entity, it cannot hope to do anything but convert the patrimony of private individuals into the needs of the public. Hence, without their being aware of

[787] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 241.

[788] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 242; id., *Della moneta*, op. cit., p. 272; id., *Della moneta. Edizione seconda*, op. cit., p. 329: *"il Banco Reale, non si rassomiglia a già detti, se non in quanto le sue fedi ſono in libero commercio; ma nella sua origine egli fu un imprestito fatto al Principe da privati, donde si percepisce frutto. Ma siccome non è sempre certo il giorno del pagamenti, né sempre sicuro, di tale probabilità si fa un commercio, e secondo la maggiore, o minore probabilità varia il valore di cotesti crediti."*

[789] Galiani F., *Della moneta*, op. cit., p. 272; id., *Della moneta. Edizione seconda*, op. cit., pp. 327-328.

> it, private individuals are their own creditors. And this unawareness has made it possible for the money to be multiplied, representing with it more than 100 million florins, without having to unearth it.[790]

"Private individuals are their own creditors", this is the concept of modern money based on public debt, which Galiani sees in the bank money of republics, and not in that of monarchies. However, when it comes to the monarchy, he responds to the criticism of Montesquieu, who claims that in a monarchy the existence of a banking system is not possible, since the sovereign can expropriate the deposits, and cites the successful case of the banks in Naples, even if, as we mentioned above, the banks have a different function in a monarchy than in a republic:

> *Ed ecco la differenza tra i Banchi delle Repubbliche, e que' delle Monarchie. Quelli sono atti a moltiplicar la moneta, e a soccorrer lo stato, e sono sostenuti dalla pubblica fede: perciò l' esserne la suprema potestà mallevadrice è buono. Questi sono unicamente buoni a custodire, e meglio raggirar la moneta. Gli rende sicuri la virtù de privati, e il rigore delle leggi, l' allontanamento d' animo del Sovrano, e l'esistenza del danaro depositato sempre pronto ad esser renduto: e perciò chiunque ardirà proporre (come taluno v'è stato) di togliere il danaro da' Banchi, dopo che gli avrà garantiti il Principe, e rimetterlo nel commercio, sarà da me liberamente chiamato inimico della patria, e della pubblica tranquillità.*[791]
>
> And this is the difference between banks in a republic and banks in a monarchy. The former are capable of multiplying the quantity of money and of being of some assistance to the state. They are maintained by public faith and, for this reason, it is wise for the supreme power to be the guarantor of the money. Those in a monarchy are uniquely suited to the protection of money and the facilitation of its proper circulation. It is made secure by the virtue of individuals, by the strictness of laws, by the maintenance of a mental aloofness on the part of the sovereign, and by the ready availability of the money which has been deposited and which should always be on hand for withdrawals. This is why I would properly regard, as an enemy of the state and of the public tranquillity, anyone who dares propose (as some have) that the money be taken from the banks and placed back into circulation, even after the prince has guaranteed the bank's deposits.[792]

Although the historical analysis is flawed because, as we have seen, the public banks in Naples were born to increase the money supply while the public banks of the republics were to stabilise the currency, Galiani, probably referring to recent years, sees the Neapolitan public banks as pure deposit banks whose money is absolutely not fiat money, while the public banks in Amsterdam and Venice can expand their balance sheet. This is consistent

[790] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 241.
[791] Galiani F., *Della moneta*, op. cit., p. 280; id., *Della moneta. Edizione seconda*, op. cit., pp. 340-341.
[792] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 249-250.

with their history in the 18th century (in particular, the Banco del Giro in Venice suspended convertibility from 1714 to 1739, and the Bank of Amsterdam lent extensively to the East India Company and to a lesser extent to the municipality of Amsterdam).[793]

In summary, Galiani recognises the introduction of fiat money in the public banks of republics as legitimised by public faith, whereas in a monarchy the personification of power seems to prevent this possibility. In addition to the Neapolitan case, we can also consider that of John Law in France, where Galiani appreciates the experiment of fiat money developed by Law, but only up to a point. Galiani indeed notes that the creation of paper money by the *Banque Générale* would have been useful to redeem the discredited state notes (i.e. those issued by the Treasury). However, the new banknotes would in turn have had to be redeemed when the species returned to France:

> *Ecco l' aspetto utile e bello del Sistema di Law. Aveansi ad estinguere i biglietti di Stato già decaduti dalla fede pubblica. Doveasi crear nuova moneta, in cui si avesse fede, sicché richiamasse argento ed oro straniero in Francia. Quando poi era la Francia bastantemente ristorata, anche le nuove carte doveano aver la sorte delle prime.*[794]
>
> This was the usefulness and beauty of Law's system. France had to rid itself of notes which had already lost the public's faith. She had to create new money in which people had enough faith, so that foreign silver and gold coins could be recalled.[when France was sufficiently restored, the new paper should have suffered the same fate as the original paper, i.e. it should have been withdrawn. Ed.][795]

Summarising, Galiani compares two types of fiat money, namely state and bank notes in monarchies on the one hand and bank money in republics on the other. While the former can only be temporary, the latter can be maintained. The republic actually seems to be the system most similar to the abstract model of the warehouse (even if Galiani speaks of a prince at the head of the warehouse). Indeed, if the republic is the "chimerical entity" in which citizens are their own creditors (whereby fiat money is backed by public faith), then this is the realisation of the central idea of the warehouse model, that money is a credit to society.

After the currency, defined as coinage or representative money, Galiani adds other forms of money or near-money, such as the Exchequer bills in England, as well as other titles representing the public debt, such as the *arrendamenti* in Naples (although they cannot

[793] See Ch. 1, para. 2.
[794] Galiani F., *Della moneta*, op. cit., p. 273; id., *Della moneta. Edizione seconda*, op. cit., p. 331.
[795] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 243 (editor's corrections in brackets).

circulate as money for legal reasons), or shares in the *monti*,[796] such as the *luoghi* of the *Casa di S. Giorgio* in Genoa:

> *Sebbene i fondi o sia capitali, (che in molte parti sono dette azioni, per lo dritto, che danno a conseguire i frutti) sieno, come ho detto fruttiferi, pure nel commercio prendono, una co' frutti e colla probabilità loro un valore certo e noto; e così vengono dati e comprati quasi come moneta.*[797]
>
> [Although the funds or capital (which in many places are called *azioni* [shares], because of the right they confer to income) are, as I said, profit-sharing. Ed.] Even in trade they actually yield such an income with its probability of a known and certain value, and as a result, they are bought and sold almost like money.[798]

In defining a monetary hierarchy[799] that also includes government bonds and shares (he also mentioned the shares of trading companies such as the East India Company), Galiani agrees with John Law, although he retains the species at the top of the hierarchy, whereas Law had replaced it with paper.

2.4 Managed money: The alzamento *and the debate with Broggia*

We have seen that the currency Galiani has in mind is mostly specie or managed money in the Keynesian sense. But even in a system of managed money, Keynes argued for the autonomy of the nation state from the international standard because of the credit cycles in which it participates.[800] Of course, Galiani has nothing to do with credit cycles, but he nevertheless envisages a theory for the management of money that can solve some internal problems, albeit within a framework in which "universal money" (i.e. precious metal) forms the basis. With regard to coinage, we quoted Galiani, who said that the coinage can divide the value of a coin between the intrinsic and extrinsic value, i.e. it cannot cancel the value of the metal content, but it can prescribe by law a different value that is maintained within the borders of the country, while the other runs outside. Changing the face value of coins, which is possible thanks to imaginary money, is a feature of the ancient monetary system that Galiani wishes to maintain as a feature of the flexibility of the system and the autonomy of

[796] The *monti* were companies that lent to the government in exchange for the revenues of taxes, so that each loan earns an interest rate obtained by discounting the revenues. However, the capitals invested in the *monti* did not earn an interest but a share of profit. See also ch. 3, para. 1.3.
[797] Galiani F., *Della moneta*, op. cit., p. 276; id., *Della moneta. Edizione seconda*, op. cit., p. 335.
[798] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 245-246 (editor's correction in brackets].
[799] See Mehrling P., "The inherent hierarchy of money", op. cit.
[800] Keynes J. M., "A Treatise on Money" (1930), 2. The applied theory of money, *The Collected Writings of John Maynard Keynes*, op. cit., pp. 302 et seq.

the government. We are talking in particular about *alzamento*, which was the subject of a debate with Broggia in Naples.

Carlo Antonio Broggia (1698-1767) was a Neapolitan merchant who had also lived in Venice as a youth, which shaped his understanding of money and finance. In 1743, he published the *Trattato de' tributi, delle monete, e del governo politico della sanità* [Treaty on taxes, money and the political administration of health, ed.], in which he criticised the monetary reforms of 1689-1691. Broggia's main argument is the reduction of money (*riduzione della moneta*), which means either the enhancement of the nominal value (*alzamento di prezzo*) or the debasement of the metal content (*diminuzione dell'intrinseco*). He does not explain explicitly why he calls these manoeuvres *riduzioni*, but one can understand it, since they are both forms of devaluation. However, he claims that only the change of extrinsic value can be a reasonable policy, while the debasement is always harmful:

> *Questo termine di riduzione abbraccia qualunque provvidenza che la polizia risolva sull'affare delle monete, allorquando si mutano le medesime del solito prezzo e bontà. E siccome questa seconda sorta di riduzione che si fa nel valore intrinseco è sempre malefica, come vedrassi a suo luogo, così di essa non ne parleremo che per rifiutarla, e solo dovremo fondare sulla prima tutto il ben stare delle monete.*
>
> This concept of reduction includes any provision that the government decides to make when issuing coins if it changes the usual price and quality. And since this second kind of reduction, which is made in intrinsic value, is always evil, as I would see in its place, we shall not speak of it except to reject it, and only we shall have to base all the good of the coins on the first.[801]

Broggia takes a "naturalistic"[802] approach in that he proposes changing the face value of coins "when there is a shortage of the usual quantity of the metal" which they are composed of.[803] So when he comments on the 10 per cent enhancement in silver money by the Marquis del Carpio in 1689, he is in agreement with this policy. He was not, however, when the Marquis de San Esteban issued a lighter silver money to create the account money (i.e. the ducat of 100 *grana* with its subdivisions in proportion). As for the second reform of 1691, he judged the further enhancement of 20 percent to be excessive. This was not done to rebalance the value of the silver, but to devalue the government's debt to the public banks. But the stronger criticism he makes is the new debasement of money in order to issue a ducat of 100 *grana* again.

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[801] Broggia C. A., "Trattato delle monete", vol 4, op. cit., p. 321 (editor's translation).
[802] See ch. 2 para. 2.
[803] Broggia says: *"…allorché cessa in qualche conto l'abbondanza solita del metallo, alzar il prezzo della moneta composta dal metallo che scarseggia",* id.., "Trattato delle monete", vol 4, op. cit., p. 325 (editor's translation).

According to Broggia, the debasement of a coin, which acts as money of account and a reference for the exchange rate, is harmful because it causes a devaluation of the exchange rate and an increase in prices. The money changers immediately notice the change in the intrinsic value of the reference money for the exchange rate (*moneta dei cambi*) and devalue the exchange rate. For this reason, according to Broggia, the nominal exchange rate rose after the currency reforms.[804] It must be said, however, that both a change in nominal and intrinsic value are decisive for determining the exchange rate, there is no difference, at least not in theory, between the enhancement and the debasement. It is true, however, that a "trade coin" should always keep the same characteristics in order to be successful, as was the case with important silver coins, such as the Venetian ducats and the Austrian thalers to which Broggia refers. To summarise, according to Broggia, the debasement of the *moneta dei cambi* leads to the devaluation of the exchange rate, to inflation, both through the exchange rate and through the simple realisation that the parity between the intrinsic value of the coin and the goods purchased with it is violated, and finally to the detriment of government revenue, which arrives in lighter coins, and of all private creditors.

Broggia is therefore only in favour of changing the nominal value of money in order to adjust it to the market value of the precious metal, and not to create an extraordinary seigniorage to be used to reduce debt, as happened in Naples (and also in France).[805] The enhancement of silver coins, in case of silver scarcity, has to be done by increasing the real money of account, i.e. copper money, which he calls "fundamental money" because it is "the most inferior among the other monies, which gives the price and is not priced",[806] and he believes that it should be chosen as account money in every state. Broggia develops an interesting point of view. Firstly, he argues that if we need to increase the nominal value of silver or gold, we must use copper, as happened in Naples when the ducat rose from 100 *grana* to 110 and then to 132 *grana*. However, if the nominal value of copper has to be adjusted because it becomes scarcer, because there is no inferior money, the intrinsic value has to be changed, and this was precisely the reason why the Romans debased copper money (i.e. the *asse*). After the Romans an innovation was introduced. In order to reckon with copper, but maintain a standard against all monetary changes, a "compromise" was found. An imaginary money was created, says Broggia, without intrinsic value and with the extrinsic value in a fixed number of copper coins:

> *Ciò fu risoluto per le solite accidentali ristrettezze del metallo accadute per motivo di commercio, le quali astringevano ad alzare il prezzo delle monete composte di un tal metallo, oppure a diminuirle di peso. E per non averle a diminuir di peso a rispetto almeno alla moneta dei conti, giacché avevano sempre sperimentato che ciò apportava gravissimi mali e discapiti, stabilirono che una tale moneta de' conti e*

[804] See para. 1.2.
[805] See Broggia's discussion of Melon in Appendix 8.
[806] *"...la più inferiore delle altre monete la quale apprezza e non è apprezzata", Broggia C. A., "Trattato delle monete"*, vol 5, op. cit., p. 99 (editor's translation).

contratti privati quanto alla denominazione ed all'intrinseco di argento fosse ideale e non reale, e quanto al prezzo o sia all'estrinseco fosse realmente effettiva e quindi esistesse in moneta di rame, per essere appunto il rame prezzo della moneta d'argento.

This was determined by the usual accidental narrowing of the metal, which happened for the sake of trade and which made it necessary to increase the price of coins of such a metal or to reduce their weight. And in order not to allow it to fall, at least in the case of the currency of account, as they had always experienced that this entailed very serious evils and disadvantages, they decided that such a money was ideal and not real for private accounts and contracts, both as regards the denomination and intrinsic value of silver, and as regards the price or extrinsic value, it was really effective and therefore existed in the copper currency, copper being precisely the price of the silver coin.[807]

According to Broggia, imaginary money is an innovation introduced to establish an immutable money, with always the same price in copper. Immutability was achieved by creating two complementary types of money, a full-weight one that changes in number but not in metal content, and an imaginary one that has no intrinsic value and a fixed price, i.e. is unchangeable:

E così da una sola denominazione ne son nate due monete; l'una fissa per sempre nel suo peso e bontà e mutabile nel solo prezzo secondo le vicende del commercio, e l'altra fissa nel prezzo ed in altro non mutabile per essere immaginaria.

And so two coins were created from a single denomination; one that is fixed forever in its weight and quality and whose price changes according to the events of trade, and the other that is fixed in price and cannot be changed because it is imaginary.[808]

The solution for Naples would therefore have been to introduce an imaginary ducat of 100 *grana* instead of minting a debased real ducat of 100 *grana*. And here the experience in Venice shows a great influence on Broggia, who sees the Venetian *ducato di banco* as the model for a Neapolitan *ducato di banco*. He praises both the public banks in Naples and in Venice (and in Amsterdam), claiming that "it is not the species in the *banco* that constitute the *banco*, but it is the credit that mainly constitutes it", and he adds that the "good *banco* is the one that does not pay",[809] referring to the bank money of Venice or Amsterdam, which is traded at a premium, so that the holders prefer to exchange it on the market rather than withdraw the specie from the *banco*, since in the first case they make a profit, while in

[807] Broggia C. A., "Trattato delle monete", vol 5, op. cit., p. 104 (editor's translation).
[808] Broggia C. A., "Trattato delle monete", vol 5, op. cit., p. 113 (editor's translation).
[809] *"... non è il denaro racchiuso nel banco il quale faccia il banco, ma è il credito che massimamente lo fa". "...il buono e vero banco che riesce più vantaggioso allo stato ed al commercio è quello che ordinariamente non paga"*, Broggia C. A., "Trattato delle monete", vol 5, op. cit., p. 284 (editor's translation).

the second they exchange at par. He calls this premium *aggio di dignità* (dignity agio), which is due to the fact that the *banco* in Venice is guaranteed by the government. In fact, a *magistrato* was in charge of managing the *banco* and was directly responsible for the shortage of cash, but that is not the reason why agio increased, but the fact that bank money was the legal tender for the settlement of bills of exchange and the payment of taxes. Broggia identifies then another type of agio, the agio of equilibrium (*aggio di pareggio*), so that he can claim:

> *Abbiamo dunque a concludere che il banco può avere due aggi; l'uno di pareggio, l'altro di dignità; l'uno, che per il mezzo di certa misura ricavata dall'alzamento della moneta, oppure dallo scarso di essa fatto dall'uso pareggia il valore della moneta di banco colla moneta fuori di banco, e l'altro che fa correre il primo valore un poco di più della stabilita e ritrovata intrinseca misura.*
>
> We must therefore conclude that the bank can have two agios: one of equilibrium and one of dignity; the one which, by a certain measure resulting from the enhancement of money or the lack of its metal content, equalises the value of bank money with money outside the bank, and the other which ensures that the first value is a little above the established and rediscovered intrinsic measure.[810]

The *aggio di dignità* makes sense, as does the *aggio di parità*, but only in the case where it is meant to compensate for the bad currency in circulation with respect to the *ducato di banco*. It does not possibly reflect the enhancement. In fact, as we saw in the first chapter, the reason for the creation of public banks in Amsterdam and Venice is the problem of bad money, i.e. clipped coins or the inhomogeneous coinage as for the relationship between nominal value and intrinsic value, so that bank money, which guaranteed a fixed relationship with silver, was exchanged at a premium to compensate for the lack of precious metal in current money. This is also the reason why the 20 per cent premium first appeared in Venice, because the bank money represented the old ducats, which were 20 per cent heavier than the new ducats in circulation. Broggia is therefore wrong when he says that in Naples, after the reform of 1691, a 20 per cent premium would have arisen on a *ducato di banco* (i.e. the imaginary ducat of 100 *grana*), since the unit of account is the same (i.e. *grana*), whereas in Venice two units of account arose between bank money and current money, namely the *lira di banco* and the *lira di piccoli* respectively, so that the premium arose between these two imaginary monies.[811]

This point is also reminiscent of Velde's question as to why the agio was not created on Neapolitan bank money, as was the case with the bank money of other first-generation public banks. As already mentioned, the reason may be that the public banks in Naples were created to solve a different problem, namely not the competitive currency debasement

[810] Broggia C. A., "Trattato delle monete", vol 5, op. cit., p. 305 (editor's translation).
[811] See Ch. 1, para. 2.

typical of northern regions (i.e. northern Italy, the Holy Roman Empire, the Netherlands), but the shortage of noble money due to the deficit in the balance of payments, which in turn was partly due to the trade balance and partly to financial outflows. The solution was found in Naples through the use of paper money. However, it is true that the problem of clipping recurred and, according to Broggia, the public banks should have complied with the decree that obliged them not to accept clipped coins. However, it is also possible that this regulation prevented the formation of the agio, because if the public banks did not comply with it, perhaps because it was too strict, as good coins were very scarce, they did not even demand a premium so as not to show that they had violated a decree.

The most important point in Broggia is the demand for imaginary money, which is expressed in copper so that it is stable. If real money could change nominally, the imaginary money would be the stable account money. On the other hand, Galiani rejects Broggia's advice to keep copper stable to have it as money of account, because "a constant and immutable measure need not be desired, nor even be sought after. A slow and less sensitive change has been substituted for it",[812] which means that neither copper nor silver were stable because they changed in price, and he remarks: "still, there are some individuals who, though wise and large in numbers, are persuaded that imaginary money is a stable and firm measure. On this basis, they exalt and glorify it and would use only imaginary money as a money of account", Instead, "a common measure which has little variation may be employed with benefits which are roughly equal to those of a stable one, since a stable-one does not exist"[813]. Galiani suggests using coins for reckoning, since "it will always be found that the unit of account and that in which one pays are the same thing, whether one uses goods or metals for the purpose".[814] This assertion shows a vision of imaginary money that is intrinsic to commodities or species, which is consistent with the concept of the shekel, which is both a unit of account and a unit of weight of silver and corresponds to the bushel of barley, and with the fact that there is no imaginary money in Naples, but for the copper *cavallo* (i.e. the equivalent of the denarius) and the *oncia* until 1749 (i.e. equal to 6 ducats). Indeed, Galiani seems to distinguish between "imaginary money" (i.e. " which does not correspond exactly

[812] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 75; id., *Della moneta*, op. cit., p. 94; id., *Della moneta. Edizione seconda*, op. cit., p. 99: *"Perciò una misura coftante ed immutabile non occorre sperarla, né ricercarla. A lei si è softituita una lenta mutazione , e meno sensibile."*

[813] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 75; id., *Della moneta*, op. cit., pp. 94-95; id., *Della moneta. Edizione seconda*, op. cit., p. 100: *"Adunque, come io ho detto di sopra, una comune misura, che ha lenta variazione, si può usare quasi egualmente bene che la stabile, dappoiché questa non v'è. Sono però certuni, anzi essi sono molti, e savi uomini, i quali sonosi persuasi, che la moneta immaginaria sia una stabile e ferma misura, e perciò la esaltano, e glorificano, e di lei sola vorrebbero, che si facesse uso ne' conti."*

[814] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 99; id., *Della moneta*, op. cit., p. 120; id., *Della moneta. Edizione seconda*, op. cit., p. 134: *" …questa cura sulla moneta di conto non merita esser tale, e tanta, quanto ella si vuole; e sempre si troverà che quello, in che si paga, è quel medesimo, in cui si conta sia merce, o sia metallo".*

to any piece of metal to which it is equivalent in value")[815] and "ideal money" (i.e. "that which measures prices").[816] The two can coincide, but the latter is originally inherent in a coin and can only become imaginary later, when people have learnt to reckon with it. He uses the word "ideal money" in this sense in Book 1, chapter 4 on the definition of money, and says "money is of two sorts: ideal and real. It is adopted for two different uses: to evaluate things and to purchase them. For the purposes of evaluating things, ideal money is as useful as real money, perhaps even more useful", and then he adds "whenever money is used to express the value of anything, ideal money is considered. That is to say, a single word, just a number suffices to evaluate each thing, since price merely consists of a proportion which is admirably explained and understood by numbers".[817] Galiani thus describes ideal money as a unit of account that is inherent to real money and can be managed through it. For example he says:

> *Alzare ed abbassare sono termini relativi: dunque quando s'alza il prezzo all'argento a qual cosa s'abbassa? Non ai commestibili, né agli altri generi, il prezzo de' quali è lasciato in libertà di chi vende: dunque al rame, e all'oro. Sicchè sempre, che s'alza l'argento, s'abbassa il rame.*[818]
>
> [...] to raise and to lower are relative terms. For example, when the price of silver is raised, what other price is lowered? It is not the prices of provisions, nor those of other commodities whose prices are at the mercy of the sellers. It is the prices of copper and gold which are lower. Thus, whenever silver is raised, copper is lowered.[819]

Thus, if we consider the enhancement of the silver ducat by the Marquis de San Esteban from 100 to 132 *grana*, one can calculate in ducats as before, i.e. it is not necessary to create an imaginary money of 100 *grana*, as Broggia suggested, one can simply calculate in ducats when paying with silver and in *grana* when paying with copper. So if silver is enhanced, you need more *grana* to buy silver coins. However, if the contracts are concluded in ducats, it is necessary, as we shall see, to recast the ducat with a lower intrinsic value so that the *alzamento* achieves the effect of a debt devaluation.

Like Broggia, Galiani is in favour of changing the proportions between the metals to adjust to market value. However, in book 3, chapter 1, Galiani claims that the proportions between the different metals should be directly determined by the market and not by the law, which often sets a false value that is the cause of arbitrage. In this he follows Locke, but unlike

[815] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 73; id., *Della moneta*, op. cit., pp. 92; id., *Della moneta. Edizione seconda*, op. cit., p. 97.
[816] Galiani F., *Della moneta*, op. cit., pp. 80; id., *Della moneta. Edizione seconda*, op. cit., p. 84.
[817] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 49; id., *Della moneta*, op. cit., pp. 68; id., *Della moneta. Edizione seconda*, op. cit., p. 67.
[818] Galiani F., *Della moneta*, op. cit., p. 120; id., *Della moneta. Edizione seconda*, op. cit., p. 135.
[819] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 135.

Locke he does not say that the price of silver should be irrevocably fixed and the other metals should fluctuate around it. He simply suggests sticking to the market price, which the law should formulate in a legally non-binding way (e.g. with the *voce*). Then the contracting parties are free to adhere to the *voce* or choose a different value, so the market price can change in the market and the law should follow again. This would be the right way to equalise a possible disproportion (*sproporzione*) in the value of coins made of different metals (Bk 3, ch. 2). A different thing is the *alzamento* (book 3, chapter 3). According to Galiani, the *alzamento* is "the policy of augmentation by the prince, of the prices of all coins, either by proclamation or by reminting all coins simultaneously, with their weight or fineness, in carats, diminished."[820] However, following Broggia's thinking, he advises against the latter because the coins "would be diminished in size, discredited, and shunned".[821] He then specifies: "The means are three in number: namely, the markings, new coinage, and the simple edict on the prices of coins."[822] The first was used in antiquity, he says, but it was also used in France by Louis XIV (i.e. calling the coins to the mint to have them marked). The second (i.e. recoinage) is the one used, for example, in France in 1718 (but also in 1709 and 1715), as Galiani acknowledges, but he says that this system reduces the profit for the sovereign due to the cost of reintegrating the metal content of the currency to reintegrate clipped and worn coins. The third system would be best in the case of Naples, where there are public banks, so that the sovereign could even expropriate the seigniorage on the total deposits. As the same Galiani acknowledges, in France the *alzamento* concerned only noble money.[823] However, as we have just said, Galiani theorises *alzamento* as the enhancement of all money and not just part of it, for in this case he speaks of a "change of proportions" (*mutarsi la proporzione*).[824] Theoretically, the Marquis de San Esteban's *alzamento* should be seen as a change of proportions, but for both Broggia and Galiani it is partly a change of proportions (the first step) and partly a "real" *alzamento* (the second step), as Galiani says, distinguishing the two stages:[825]

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[820] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 165; id., *Della moneta*, op. cit., p. 187; id., *Della moneta. Edizione seconda*, op. cit., p. 221: *"…alzamento di tutta la moneta, il quale da Principi si fa o con una legge, o con rifondere tutta la moneta, e diminuirne il peso o la bontà del carati."*

[821] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 158; id., *Della moneta*, op. cit., p. 181; id., *Della moneta. Edizione seconda*, op. cit., p. 212: "*Quanto alle monete non bisogna punto diminuirle di peso, o di bontà; ma farne soltanto un alzamento. Nel primo caso s' impiccoliscono, si discreditano, si schifano [...]"*

[822] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 188; id., *Della moneta*, op. cit., p. 213; id., *Della moneta. Edizione seconda*, op. cit., pp. 254-255: *"… Tre ſono i mezzi; quanto è a dire il merco, la nuova coniata , ed il ſemplice editto dei prezzi delle monete."*

[823] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 158-159; id., *Della moneta*, op. cit., p. 182; id., *Della moneta. Edizione seconda*, op. cit., p. 214: *"In Francia gli alzamenti si sono fatti de soli metalli preziosi , fra quali si è conservata una costante proporzione, poco curando se si cambiava col rame."*

[824] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 146; id., *Della moneta*, op. cit., p. 170; id., *Della moneta. Edizione seconda*, op. cit., pp. 196-197.

[825] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 162-163; id., *Della moneta*, op. cit., p. 185; id., *Della moneta. Edizione seconda*, op. cit., p. 219.

1. the Marquis del Carpio made a mistake in minting the new ducats (now *ducatoni*) and a correction was needed:

> *Il Marchese nel rifondere la moneta d'argento avea desiderato farla eguale alla Romana, sicché non si avesse a studiar tanto sul cambio. Desiderio inutile, e forse anche pernicioso. Non avea avvertito quanto la nostra moneta di rame fosse inferiore alla Romana in quantità di metallo. Facendo i ducatoni di 100 grana, egli dava alle grana un valore estrinseco superiore al vero di quasi un 50 per 100. Ciò facea stravasare l'argento e restare il rame. Convenne adunque cambiare tal proporzione, e sbassare il prezzo al rame: ed ecco quanto si fece.*
>
> In reminting the silver coins; the marquis had wished to make them equal to those of Rome, so that it would not be necessary to study them so much when trading [i.e. with regard to the exchange rate, ed.]. But, perhaps, this is a useless and possibly also a pernicious ambition. For he failed to point out how inferior our copper coins were in metallic content, to those of Rome. Making the ducatoni of 100 grana, he gave the grana an extrinsic value superior to its true value by some fifty per- cent. This caused silver to be drained out and only copper to remain. It was then necessary to change the proportions and to lower the price of copper. This was done.

According to Galiani, the Marquis del Carpio wanted to bring the Neapolitan ducat into line with the Roman ecu in terms of intrinsic value in order to have an exchange rate of 1:1 without taking into account the differences in copper, which meant that Neapolitan copper was overvalued at 100 *grana* per ducat and silver was consequently undervalued and flowed away according to Gresham's law. The minting of a new, lighter ducat of 100 *grana* was then the correction of the previous error.

2. The *alzamento* was carried out:

> *Se insiememente non si fosse mutata la moneta di conto, non vi sarebbe stato alzamento; ma avendo mutato il valor delle grana, e fattele divenire la 132° parte di quel ducato d'un'oncia, un trappeso, e 15 acini d'argento, di cui esse erano la 100°; ed avendo ciò non ostante sostenuto il ducato a sole 100 grana, ne seguì un alzamento [...]*
>
> If the money of account had not changed at the same time, there would have been no augmentation of the currency. But once the value of the grana had been altered, and allowed to become equal to 1/132 part of the ducat of one ounce, a trappeso and 15 acini of silver, — of which they were actually 1/100 part, and having nevertheless maintained the ducat at only 100 grana — an augmentation followed it.

While stage 1 led to a change in proportions, stage 2 is a true *alzamento*, for the value of the *grana* in silver is reduced to 1/132 of the weight of the old ducat (*ducatone*), while the 100-*grana* ducat is retained, which means a debasement of the ducat to obtain the same value of the *grana* in silver (it is worth recalling that in Naples silver can only be enhanced against gold and copper, as there is no imaginary money with which to enhance all money). Galiani agrees with Broggia with regard to the two stages, but he considers a regular operation the debasement of the ducat in the context of the *alzamento*. The result was the nominal increase in prices and the exchange rate and the realisation of seigniorage.

The other historical example that Galiani takes into account is the monetary reform of the Duchy of D'Orleans in 1718 (Book 3, chapter 4). As we know, there were several cases of monetary augmentation in France at the time of Louis XIV.[826] In particular, after the money augmentation of 1709, i.e. from 1713 to 1715, the *contrôleur général* Desmarets made several diminutions. After the Peace of Utrecht in 1714 and the death of Louis XIV, the Duchy d'Orléans took over the regency during the minority of Louis XV and, through the president of the *Conseil de Finance* duc de Noailles, carried out another money augmentation in December 1715 by raising the *louis* again from 14 to 20 *livres* and the *écu* from 3 *livres* 10 *sols* to 5 *livres*. This measure was also welcomed by Melon, as it made it possible to reorganise the finances for the coming years. In 1718, however, a recoinage with a further augmentation of about a third was ordered by the Minister d'Argenson.[827] This is the measure that Galiani is considering. In particular, reading La Motte's book on the life of Philippe d'Orléans, Galiani focuses on the conflict between the regent and the Parisian parliament over the decree of money augmentation. He reports and comments on the debate between the two subjects, quoting part of it from La Motte's book.[828] However, this conflict was more about the political role of the parliament than about the augmentation itself, and the regent was able to fend off the parliament's attack, which was praised by Galiani. On the other hand, the General Bank had just been founded at this time and John Law was its director. So, according to Murphy, it is quite unlikely that Law had nothing to do with the 1718 augmentation. Rather, it seems that the augmentation in this case was for debt management, i.e. to reduce the amount of government notes (*billets d'état*) in circulation (i.e. it was more convenient to exchange the notes for the devalued coins than to trade them on the market) and not the realisation of seigniorage.[829]

In contrast to Law, for Galiani the purpose of *alzamento* is mainly fiscal, as he says:

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[826] See chap. 1 para. 4.

[827] See Murphy A. E., *John Law*, op. cit., pp. 150-153; Melon J. F., *Essai politique sur le commerce*, op. cit., pp. 194-202; Velde F. R., "Chronicle of a Deflation Unforetold", in *Journal of Political Economy*, Vol. 117, No. 4, August 2009, p. 596.

[828] La Motte Y. J., *La vie de Philippe d'Orléans, petit-fils de France, régent du roi pendante la minorité de Louis XV*, tome I, seconde édition, Londres, 1737, pp. 265-291; see also Galiani F., *Della moneta*, op. cit., pp.217-222 notes 5,6,7,9,11,12.

[829] See Murphy A. E., *John Law*, op. cit., pp. 176-185. See also Ch. 1, para. 4.

"Alzamento della moneta è un profitto, che il Principe, e lo Stato ritraggono dalla, lentezza, con cui la moltitudine cambia la connessione delle idee intorno a prezzi delle merci, e della moneta." [...] Ei non produce mutazione alcuna di cose, ma di voce: quindi è che i prezzi delle merci, per rimanere gli stessi nella cosa, debbonsi mutare anch' essi quanto alle voci. Se questo seguisse nel giorno istesso, in cui si fa l'alzamento, e seguisse in tutto, ed in tutto proporzionatamente, l'alzamento non avrebbe affatto conseguenza niuna; come non l'avria quella legge, con cui si costituisse, che le monete in vece di nominarsi co' nomi Italiani, si avessero a dinotare con nomi o Latini, o Greci, o Ebraici.[830]

[...] augmentation of the currency denotes a profit which the prince and the state enjoy because of the slowness with which the multitudes change the relationship between the prices of things and of money.[...] It only produces verbal changes in things. Thus, in order for the real prices of things to remain the same, their nominal prices must change. If this should follow on the very same day on which the augmentation of the currency takes place, for example, and if it would take place proportionately in all things, and then the rise in money will not have any effect whatever, just as nothing would be changed by a law naming all coins in Latin, Greek or Hebraic, instead of in Italian.[831]

The effect of the *alzamento* lasts for the time required for the price adjustment. The price adjustment takes place via the exchange rate, which automatically increases the price of imports. This in turn has an effect on national goods:

Rincarite le merci straniere, coloro, che non possono più comprarle, cercano trar profitto dalle rendite loro, che sono le produzioni natie del luogo, e le vendono più care non meno a cittadini, che agli stranieri.[832]

Foreign wares having become more dear, those who can no longer purchase them, seek to take a profit from their stocks (that is, from products native to their country) and to sell them at a higher price, not only to foreigners but also to their own citizens as well.[833]

However, since the price adjustment takes time, the *alzamento* can take effect: "The only real effect produced by augmenting the currency is to free debtors from payment of some amounts owed before the change in the price of money".[834] And the prince, "who is the greatest debtor of all, also frees himself from any obligation", and "if by this means he

[830] Galiani F., *Della moneta*, op. cit., p. 188; id., *Della moneta. Edizione seconda*, op. cit., pp. 222-224.
[831] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 166-167.
[832] Galiani F., *Della moneta*, op. cit., p. 197; id., *Della moneta. Edizione seconda*, op. cit., p. 235.
[833] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 174.
[834] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 173; id., *Della moneta*, op. cit., p. 196; id., *Della moneta. Edizione seconda*, op. cit., p. 233: *"Il solo effetto reale, che fa l'alzamento è il liberare il debitore di alcuna somma anteriore alla mutazione del prezzi della moneta, dal dover restituire quell' istesso, ch'egli ebbe."*

renders some poor, it cannot be said that this is a loss to him; at worst it brings him no gain. It diminishes the yield of his taxes by as much as the debt is reduced."[835] Galiani thus answers those who regard *alzamento* as a loss for the sovereign, such as Davanzati, Muratori, Dutot, Abbaye de Saint Pierre, who say that he receives less precious metal if nominal taxation remains unchanged. In fact, when in the temporal unit the tax inflow corresponds to public expenditure, there is a balance between the loss and the gain caused by the money enhancement. If expenditure is higher, i.e. there is a deficit, this is even enough to generate a profit for the state. However, Galiani says that the case of *alzamento* occurs when the sovereign is in an emergency situation, i.e. when it is highly indebted, and this is where the real advantage lies, when it amortises its debt, to which the seigniorage of the recoinage is added. In fact, he says, the *alzamento* is like a bankruptcy of the public debt, which prevents the introduction of new taxes and makes it possible the withdrawal of the royal notes:

> *I biglietti regi sono uno sforzo fatto dallo Stato sopra la somma de' dazi; e sono perciò un dazio anticipatamente preso. L'alzamento è un fallimento di questo debito. Sicché egli non è dazio; ma un rimedio per non accrescerne, e pagare nel tempo stesso quei debiti, o sia quell'uso di forze non reali, tempo prima fatto.*[836]
>
> Royal notes are a power created by the state on the basis of the total amount of taxes collected and are, therefore, a tax collected in advance. Augmentation of the currency represents a repudiation of this debt. Consequently, it is not a tax but a device to prevent raising any tax and simultaneously, payment of those debts: [or the use of imaginary powers made before, ed.].[837]

What Galiani wants to avoid is the danger of excessive indebtedness either to foreigners or to the "*agioteurs*", both of whom speculate on the needs of the state:

> *Ma di tanti danni il gravissimo è quando lo stato contrae debiti dopo le sciagure di lunga, e grave guerra. Trovandosi allora i sudditi esausti di danaro, gl'imprestiti sono fatti per la maggior parte da popoli confinanti, o al più da coloro, che in mezzo alla universale miseria sono arricchiti.*[838]
>
> Of the many possible difficulties of debt, however, the greatest arises when the state incurs debt after suffering the disastrous effects of prolonged and grave warfare. As

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[835] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 173; id., *Della moneta*, op. cit., p. 196; id., *Della moneta. Edizione seconda*, op. cit., p. 233: *"Il principe, che è di tutti il maggior debitore, anche egli si disobbliga; e se per questa via egli rende alcuno povero, non si può dire, che questo gli dia perdita, ma al più non gli darà guadagno; diminuendosi il frutto dei tributi di tanto, di quanto si diminuisce il debito."*

[836] Galiani F., *Della moneta*, op. cit., p. 203; id., *Della moneta. Edizione seconda*, op. cit., p. 242.

[837] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 179-180 (editor's correction in brackets).

[838] Galiani F., *Della moneta*, op. cit., p. 298; id., *Della moneta. Edizione seconda*, op. cit., p. 361.

> its subjects find themselves without money, loans are, for the most part, made from the people of neighboring states or, at best, from those who, in the midst of universal misery, are thus personally enriched.[839]

This was also an issue for Law, who wanted to disempower the rentier class. Law's plan was more complex, however, as he succeeded in first taking over part of the public debt (i.e. the *billets d'état*) on the asset side of the General Bank's balance sheet and then converting the remaining state bonds into shares in the Mississippi Company. We have seen that for Galiani, the first operation was useful to replace the discredited *billets d'état* with fresh paper money, which would have served the purpose of increasing the money supply until the species returned to the nation. For Law, on the other hand, the transition to paper money was to be final, which was in turn heavily criticised by Galiani.

However, the benefits of *alzamento* were not limited to the treasury. In view of the French situation in 1718, Galiani was aware of the concentration of money in a few hands and the scarcity of money in circulation. It was therefore of the utmost importance to redistribute money in order to finance the productive classes and restore the balance of trade. The *alzamento* achieved both objectives. Contrary to Melon, who said that the *alzamento* favours the debtors, who are always the poorest, Galiani claims that in general the rich are the debtors of money, while the poor are the debtors of labour and the state is the greatest debtor. In times of crisis, however, the sovereign becomes poor in money, so the *alzamento* reduces its spending, which affects the entire economic chain, but in favour (relatively) of the farmers:

> *Ma, quando lo Stato è travagliato, il Principe, che per essere la più ricca persona, è il maggior debitore di danaro, diviene povero di danaro; e perciò gli giova l'alzamento a farlo restar creditore delle medesime fatiche da ministri, non ostante, ch'ei non soddisfi lo stesso debito di mercede. All'utilità del Principe, che è il centro della società, dovendo cedere quella d'ognuno, ancorchè restasse aggravato il povero, non converrebbe dolersene. Ma il fatto è, che il povero ne trae sollievo, non assolutamente (come ha creduto il Melun) ma relativamente, in quanto del nuovo peso tocca a lui la minor parte. Imperciocché tutto quel risparmio, che fa il Principe sui suoi ministri, non possono questi farlo sugli altri, che alzano subito il prezzo alle loro fatiche; onde conviene loro tollerar qualche perdita per cagione del valore della moneta cambiato. Coloro, a quali la danno, anche essi perdono, e così di grado in grado la perdita si distribuisce sopra tutti, finchè perviene a contadini; da quali nel nuovo pagamento de' pubblici pesi è renduta al Principe.*[840]
>
> When the state is unhappy, the prince, who is its richest person and the greatest debtor, in money, becomes money poor. For this reason, augmentation of the

[839] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 269.
[840] Galiani F., *Della moneta*, op. cit., p. 207; id., *Della moneta. Edizione seconda*, op. cit., pp. 246-247.

> money helps to enable him to remain a creditor of the same work from his ministers, notwithstanding the fact that it no longer satisfies the same debt in merchandise [the precious metal, ed.]. What benefits the prince, who is the center of the society, must be believed to benefit all, even if the poor should end up worse off, in which case it is not appropriate to complain of it. In fact, the poor get relief from it, not absolutely (as Melon believed) but relatively, because a small part of the new weight is theirs. For, all the saving which the prince makes on his ministers cannot be made by the ministers on others, who quickly increase the price of their labor. Thus, it is necessary for them to tolerate some loss because of the change in the money. Those to whom it is given also lose; in this way and, by degrees, the loss is distributed over everyone, until it reaches the peasants, from whom it is passed on to the prince in the next payment of taxes. Because of the circuit of expenditures the prince makes, he is at one extreme and the peasants are at the other. The circuit of the revenue soon goes from peasant to prince. From this it follows that savings on expenditures are, as far as peasants are concerned, less harmful than for others; and, in the same way, they enjoy the greatest benefits from reductions in excises.[841]

According to Galiani, farmers are the productive class and at the same time bear the brunt of taxation. In a deflationary economy they are at a severe disadvantage:

> *Quando si vuota il sangue, le vene capillari e più utili disseccansi, e il rimanente si raccoglie tutto nelle cavità maggiori, donde non viene nutrimento veruno. Così la scarsezza del denaro costringe i coloni a vendere in erba co' prezzi della futura "voce" i loro frutti: onde si espongono a soffrir tutto il danno delle calamità, senza gustare il profitto del prezzi cari.*[842] *Perciò s'impoveriscono, e allora restringono la coltivazione in minor terreno, danneggiando così all'intiero stato per salvar sé medesimi. Intanto la moneta si congrega tutta in mano dei negozianti, quanto è a dire del tiranni del commercio, de quali è il guadagno maggiore, sebbene essi sieno i meno utili allo stato, come quelli, che né coltivano, né lavorano, né producono alcuna vera comodità.*[843]
>
> In the same way, a scarcity of money forces farm operators to sell the fruits of their labors prematurely, at future prices. In this way they expose themselves to the endurance of all the evils of the worst disasters, without enjoying the profits of high prices. This impoverishes them and causes them to restrict cultivation to a smaller land area, heaping harm upon the entire state in order to save themselves. In the meantime, money is all gathered into the hands of tradesmen, which is to say, of the tyrants of commerce, whose gains are greater, despite the fact that since they

[841] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 182-183.
[842] The *contratti alla voce* are based on future prices, which are in fact low when the needy farmers are forced to sell their produce before the harvest and high after the harvest due to the shortage, but they cannot benefit from these high prices because they have just sold their product.
[843] Galiani F., *Della moneta*, op. cit., pp. 234-235; id., *Della moneta. Edizione seconda*, op. cit., pp. 279-280.

> neither cultivate, labor, nor truely produce any commodity, they are of the least use to the state.[844]

The consequence of deflation is therefore a sell-out at low prices, which makes the tenants (and the craftsmen) poor. They in turn pay their labourers in kind at high prices and with poor quality goods. Therefore, the real tax cut for farmers is an appropriate redistribution, and they are also favoured by the reduction in rent to the landlord. Reducing the tax burden on the productive class makes more money available for investment in the economy:

> *Il solo effetto suo [dell'alzamento, ed.] è diminuire la quantità di danaro, che circola tra i sudditi, e il Principe, pagata dagli uni, spesa dall'altro: ma ciò quando è poca la moneta è utile grande, e singolare. Quando un fiume per la poca acqua non è navigabile, se gli rallenta il corso, e si vede divenir gonfio e maestoso. Se i canali del commercio languono inariditi di moneta; diminuita quella, che togliendosi dal commercio ha da correre precipitandosi dal popolo al Sovrano, nel commercio ne spazierà maggior quantità, e vedrassi risorgere, e ristorare.*[845]

> The only effect of augmentation is to diminish the quantity of money which circulates between the subjects and the prince: paid by one, spent by the other. But this is a great and singular benefit when the amount of money is small. When a stream is not navigable because of the small amount of water it contains, its course is slackened, and it is seen to become proud and majestic. In like manner, if the channels of trade languish, exhausted for lack of money, they begin to take a long and useless course, only to be filled again soon, as money moves once more, albeit at a slow and deliberate pace.[846]

As far as the balance of trade is concerned, Galiani claims that the increase in the price of foreign goods caused by the *alzamento* leads to a restoration of equilibrium in the balance of trade: He says:

> *[...] le [merci] straniere rincarano. Meno danaro dunque va fuori: meno si spossa uno stato: più merci e manifatture proprie sopravanzano da vendere agli stranieri. L'economia degli stati è appunto, che si venda più del comprato, o sia, che più si estragga, che non si immetta. E se ciò è utile sempre, e negli stati ben governati (come poco fà fece Benedetto XIV [...]) levasi ogni dazio all' estrazione delle merci natìe, fuorché delle non lavorate; e pongonsi sulla immissione delle estranie, fuorché dei materiali da lavoro: chi mai si persuaderà esser danno d'un principato il rincarare i generi stranieri in tempi stretti e angustiati?* [847]

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[844] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 208.
[845] Galiani F., *Della moneta*, op. cit., p. 204; id., *Della moneta. Edizione seconda*, op. cit., pp. 243-244.
[846] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 180.
[847] Galiani F., *Della moneta*, op. cit., p. 204; id., *Della moneta. Edizione seconda*, op. cit., p. 244.

> [...] foreign goods become dearer. And in that is not harmful case, less money goes abroad; a state is less depleted of it; more goods of their own manufacture are left to be sold to foreigners. The economy of nations is exactly concerned then: that more is to be sold than is bought; or, more is exported than is introduced into the state. And if this is always useful in well governed states, all duties should be removed from exported native goods (as was done a short time ago by Benedict, the fourteenth [...]) except for those duties on raw materials and those placed on imports from abroad, excluding the materials of labor. Who could ever be convinced, therefore, that raising the price of foreign goods is harmful to the principality in times of shortage and disasters?[848]

The *alzamento* is thus part of a more general mercantilist policy aimed at reducing imports and promoting exports, also by differentiating tariffs according to the type of goods, protecting domestic primary goods and favouring capital goods from abroad. However, a depreciation of the exchange rate generally reduces imports and favours exports (although Galiani does not attribute the latter to the exchange rate, but to the fact that more domestic goods are available for export due to the increase in domestic prices and the corresponding decrease in domestic demand).

To summarise, *alzamento* is based on the unit-of-account devaluation, with the legal consequence that debts can be settled with a lower metal content, i.e. a lower real value. It is an instrument of debt management and seigniorage, but, according to Galiani, it also has wider implications, such as increasing the liquidity in the economic system and distribution of wealth in favour of the more productive class in society, such as farmers, and it is also an instrument for rebalancing the balance of trade (or even achieving a surplus). Its effect lasts until prices have adjusted to the nominal change in money. In the *Dialogues sur le commerce des bleds* (1770), however, Galiani reconsiders the *alzamento* and acknowledges that prices are rigid and that certain values such as wages do not adjust, so that its effect can last for a very long time. However, the *alzamento* is measurable, so that at least theoretically all values could be adjusted.[849]

3. Conclusion: the particular chartalism of Galiani

We have seen that the monetary system in Naples is well proportioned, i.e. the ratio between the different metals corresponds to both intrinsic and extrinsic value. According to Carli, this is mainly due to the discipline of the royal mint, which, unlike Milan where the

[848] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 181.
[849] Galiani F., "Dialogues sur le commerce des bleds" (1770), in Custodi P., SCIEP, op.cit., parte moderna,vol. VI, pp. 140-147.

mint was contracted, was directly managed by government officials. This situation probably explains why there is no imaginary money in Naples, apart from the extremes of the monetary system, i.e. the *oncia* for large transactions and the *cavallo* as the smallest money, equivalent to the penny. In fact, we have seen that imaginary money arises when there is a decoupling between the market value of coins and their tariff, so that the unit of account becomes imaginary when the value of the actual coin shifts. In fact, Broggia had envisaged the introduction of imaginary money in Naples to prevent the debasement of the ducat. Since the unit of account in wholesale trade and on the international market was the silver ducat, the *alzamento* of silver carried out by the Marquis de San Esteban in 1691 would have led to the establishment of imaginary money if a proportional debasement of the ducat had not be made. Galiani praised the reform and rejected the need for imaginary money, which Broggia rightly saw as the only way to avoid the debasement of the *moneta dei cambi*, i.e. the reference coin for calculating the exchange rate. However, stabilising the imaginary money with copper, as Broggia suggested, was not a solution for Galiani, as copper, like other precious metals, is not stable. Galiani was therefore not concerned about stability, as he knew that the evolution of value could be controlled by the management of the unit of account. This would mean that the face value of coins (measured in units of account U) can be adjusted to the intrinsic value (e.g. in silver S) in order to stabilise the nominal price (P) of commodities (e.g. commodity value A) according to the following equation:[850]

PA = U / A = **(U / S)** X (S / A)

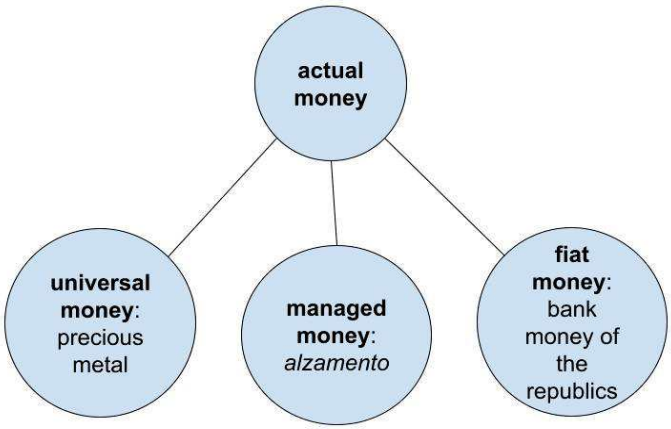
If you change U in the bold relationship (but S, the intrinsic value, can also be changed), a reduction in the face value of the coins, for example, would lead to a reduction in the price of the commodity. However, the potential of the unit of account is not developed in this direction, partly because inflation as a result of an inflow of precious metal is generally regarded as a sign of prosperity. Galiani instead imagined a theory of *alzamento* of the face value of coins as a lever of monetary policy with multiple effects. Firstly, the enhancement of the coin devalues the public debt and leads to extraordinary seigniorage (debt management and fiscal policy); secondly, it devalues all debts, which particularly favours the peasants who pay the taxes and are at the same time the backbone of the productive class (redistribution of wealth); thirdly, the devaluation of debt increases liquidity in the economic system. And finally, it favours the rebalancing of the current account. Ultimately, this is a policy that makes it possible to overcome solvency and liquidity problems and drive the economy forward.

So when Galiani, on the one hand, favours precious metal as the highest form of money, since it represents a “pledge” and a “security” and is thus “universal money”, he is following

[850] See Rosselli, A., “The role of the precious metals in Della Moneta by Ferdinando Galiani”, op. cit., pp. 55-56.

the metallistic tradition from Davanzati to Locke, but he envisaged the possibility of managing commodity money through the *alzamento*. This particularity, following Rosselli's approach,[851] can be characterised as chartalist, especially considering that Galiani is open to fiat money in certain cases, i.e. he justifies it only in republics where bank money is backed by government debt. The key concept for Galiani is that in republics the government is the expression of the citizens, so that the public debt is mutualised by them, who have become "creditors of themselves". This cycle legitimises fiat money in the republic, whereas in monarchies the personalised exercise of power carries a number of risks that prevent the building of public trust. For example, the ruler could issue too many banknotes or fall into a kind of debt trap with foreigners or speculators, as was the case in Naples in the 17th century with the Genoese financiers and with Louis XV (under the regency of Philippe d'Orléans) with the *agioteurs* and finally with John Law's "system" (but Galiani did not fully understand the English case, where the monarchy was controlled by Parliament after the Glorious Revolution).

tab./fig. 21 **Galiani's chartalism**



Galiani can therefore be seen as an alternative to the Milan school, which joined the new monetary orthodoxy coming from England. At the same time, he also represents an alternative to the unscrupulous finances of John Law. However, this does not mean that Galiani is not modern. He sees the potential of bank money, but he is prudent and pragmatic in basing money on precious metals. On the other hand, he retains some mercantilist traits that keep him away from the new theories of "metal standards" and free trade that were spreading in Europe.

[851] See Rosselli, A., "The role of the precious metals in Della Moneta by Ferdinando Galiani", op. cit.

V. Conclusion

1. The interpretation of imaginary money in 18th century Italy

1.1 Introduction

According to Marc Bloch,[852] the monetary system based on imaginary money dates back to Charlemagne, who, in the 9th century, chose the *libra* (pound) as the monetary standard, divided in 20 *solidi* (shillings) and 240 *denarii* (pennies), but issued neither the *libra* nor the *solidus*, but the silver *denarius*, the *libra* being "imaginary." This was actually the case until the 13th century. This period was characterised by a state money, because Charlemagne had centralised the minting of coins. However, the princes and bishops maintained the minting of coins, albeit on behalf of the king. This facility was necessary to satisfy the demand for money at the local level, but it led to a discrepancy in the monetary standard of each local administration, and from the 11th century onwards, different units of account were created depending on the specific weight and fineness of the actual *denarius* (e.g. the *livre tournois, parisis, provinois* in France). Thus the pound-based accounting system spread throughout Europe, albeit with many differences in terms of the metal standard, i.e. the penny coin varied in weight and fineness of the silver. Nevertheless, the imaginary money system was used everywhere to value actual coins or alternative means of payment such as goods or livestock.

From the 13th century onwards, the increase in market transactions on the one hand and the devaluation of small coins on the other, whether for reasons of profit (i.e. seigniorage) or to counteract the shortage of money, created a need for higher-value coins. Higher denominations were then minted, e.g. the silver *grosso* in Venice (i.e. worth 2 s.), until gold was minted again after the end of the Roman Empire, first in Florence in 1252 (i.e. the gold florin), then in Genoa and Venice and in the rest of Europe. On the other hand, the constant "debasement" of small coins at the mint led to small money being minted in less valuable metals such as copper and alloys, while the *denarius* was no longer issued. The most important effect of the debasement was the devaluation of the unit of account and the resulting shift in the value of the larger coins. These were revalued in relation to the unit of account, so that gold coins issued at the value of 1 lira, such as the Florentine florin or the Venetian sequin, rose in market value until the government ratified the revaluation, with the result that the lira disappeared as real money and reappeared as imaginary money.

[852] See Bloch M., "Esquisse d'une histoire monétaire de l'Europe", op. cit.

In the literature, the function of imaginary money is defined as follows. Since the unit of account is separate from the coin, whose value is defined either as the face value, i.e. the tariff, or as the intrinsic value, i.e. the value of the metal content, the ruler can change the face value of the coins via the tariff while keeping the metal content stable, on the one hand, and change the metal content in the mint while keeping the face value stable, on the other. He can change the metal content of the coins, either through a "reinforcement" (to strengthen the coinage) or a "debasement" (to weaken the coinage), or he can change the face value of the coins, either through an "enhancement" or "augmentation" (to raise the money) or an "abatement" or "diminution" (to lower the money).[853]

If we look at specific historical cases, the manoeuvring of imaginary money was in fact not as simple as it must appear to the reader after the above introduction. In fact, there were often debates about the possibility of such manoeuvres, which depended on the interpretation of imaginary money by the respective party. As Franco Venturi first reconstructed,[854] there was a great debate in 18th century Italy that is worth analysing in order to examine the various interpretations of imaginary money. We will analyse this debate, first in Naples between Broggia and Galiani in section 2, then in Milan in the implementation of a monetary reform in section 3 and the same monetary reform in section 4, to conclude in section 5. It is worth noting that imaginary money was definitively discarded with the introduction of the Napoleonic monetary system (which combined the unit of account with real money). We will therefore try to find out whether there were theoretical reasons for this revolution, if any, in addition to the political ones.

1.2 *The debate in Naples*

The *Treaty on Money* (1743) by Carlo Antonio Broggia[855] is a milestone on which the monetary debate in mid-eighteenth-century Italy is based. Broggia provides a definition of imaginary money that takes up certain features that are appreciated by some and criticised by others.

First of all, it is important to note that for Broggia the "fundamental money" (*moneta fondamentale*) is copper because, although it is "the most inferior among the other currencies" (i.e. silver and gold), it "gives prices and does not take prices" (*"apprezza e non è apprezzata"*), so that it is like "the roots of a plant" which, although they are "the lowest"

[853] See Fantacci L., "The dual currency system of Renaissance Europe", op. cit.
[854] See Venturi F., *Settecento riformatore, Da Muratori a Beccaria*, op. cit.
[855] See Broggia C. A., "Trattato delle monete", in "Trattato de' tributi, delle monete, e del governo politico della sanità", op. cit.

and “least respected”, are “the most important”.[856] Broggia believes that copper money is the unit of account according to which all prices, both for coins and for goods, are calculated. He refers to the Roman monetary system, in which the copper coin (*asse*) was the unit of account, and claims that copper must still be used to value either gold or silver money in order to adjust their value according to their relative scarcity. The monetary reform in Naples in 1689-91, for example, when the viceroy Marquis del Carpio raised the face value of the silver ducat from 100 to 132 *grana* (i.e. copper coins), was, according to Broggia, an appreciation of undervalued silver to rebalance its ratio to copper, albeit to an exaggerated degree in the author's opinion. On the other hand, if the nominal value of copper has to be adjusted because it is becoming scarcer, because there is no inferior money, the intrinsic value has to be changed, and that, according to Broggia, was precisely the reason why the Romans debased the *asse*. The reference to the Romans was a common feature that characterised the naturalistic approach in the 18th century, namely the shared conviction that the trimetallic system should respect the value relation between gold, silver and copper, which depend on the relative scarcity (*proporzione*) of each other.

After the Roman period, according to Broggia, an innovation was introduced to reckon with copper, but to maintain a standard against all monetary changes. In fact, Broggia criticised the Marquis del Carpio’s reform in particular, because after the Neapolitan ducat was enhanced to 132 *grana*, a lighter ducat worth 100 *grana* was issued, which was the money of account for large transactions and especially for international transactions, on the basis of which the exchange rate was fixed (*moneta dei cambi*). Broggia advised against this practise of coin debasement because it had a negative effect on the exchange rate, citing as examples the Venetian silver ducat or the Austrian silver thaler, which retained their value due to the stability of the weight and fineness of the metal. This phenomenon can be explained as a problem of asymmetric information, that led to the unreliability of coins whose physical properties were altered so that the uncertainty was deducted from the exchange rate. As a solution to this problem, according to Broggia, an imaginary money was created, i.e. without intrinsic value and with the extrinsic value in a fixed number of copper coins:

> This was determined by the usual accidental narrowing of the metal, which happened for the sake of trade and which made it necessary to increase the price of coins of such a metal or to reduce their weight. And in order not to allow it to fall, at least in the case of account money, since they had always experienced that this entailed very serious evils and disadvantages, they decided that such money was ideal and not real for private accounts and contracts, both as regards the denomination and intrinsic value of silver, and as regards the price or extrinsic value,

[856] Broggia C. A., “Trattato delle monete”, in “Trattato de’ tributi, delle monete, e del governo politico della sanità”, op. cit., vol. 5. pp. 99-100 (editor’s translation).

> it was really effective and therefore consisted in the copper currency, copper being precisely the price of silver coin.[857]

According to Broggia, imaginary money is an innovation that was introduced to create an immutable money that always has the same price in copper. Immutability was achieved by the creation of two complementary kinds of money, "one that is fixed forever in its weight and quality and whose price changes according to the events of trade" (i.e. a silver coin), "and the other that is fixed in price and cannot be changed because it is imaginary".[858]

Broggia cited the example of bank money in Venice in particular. Venetian bank money was the book money of the *Banco del giro*, the public bank founded in Venice in 1619, which was denominated in *ducati di banco*. Such a unit of account is reminiscent of the units of account used to settle bills of exchange at the fairs, which reached their peak in the 15th century, and is in fact a result of commercial culture and is therefore hardly understood by those who do not come from this circle. Broggia, on the other hand, who was Neapolitan but had lived in Venice in his youth before returning to Naples, understood the function of the *ducato di banco* quite well, and recognises that it was based on silver (namely the old Venetian ducats, which weighed more than the current ones), rather than copper, which he preferred. The imaginary money in Venice was stabilised against the old ducat in order to create a standard for the exchange rate and a stable currency for the settlement of bills of exchange, with a premium (*aggio*) of 20 per cent over the current ducat, reflecting the debasement of the latter.[859] According to Broggia, there are two types of *aggio*, "one of equilibrium and one of dignity; the first, which, up to a certain degree resulting from the increase in the nominal value of money or the decrease in its metal content, equalises the value of bank money (*moneta di banco*) with money outside the bank (*moneta fuori di banco*), and the second, which ensures that the value of bank money is somewhat higher than the established and rediscovered intrinsic measure".[860] The equilibrium *aggio* (*aggio di parità*) makes sense between two units of account if one of them is more valuable than the other, which is not the case in the case of money enhancement, as Broggia mistakenly believed. It was rather the Venetian example in which a *lira di banco* (i.e. equal to 10 *ducati di banco*, i.e. bank money) was created over a *lira di piccoli* (i.e. actually the unit of account based on copper coins that Broggia proposed, i.e. current money).[861] The *aggio di dignità* also makes sense and corresponds in part to the so-called *sopraggio* that formed in 18th century Venice because bank money was more liquid than current money for several

[857] Broggia C. A., "Trattato delle monete", in "Trattato de' tributi, delle monete, e del governo politico della sanità", op. cit., vol. 5., p.104 (editor's translation).
[858] Broggia C. A., "Trattato delle monete", in "Trattato de' tributi, delle monete, e del governo politico della sanità", op. cit., vol. 5., p.113 (editor's translation).
[859] See Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. cit.
[860] Broggia C. A., "Trattato delle monete", in "Trattato de' tributi, delle monete, e del governo politico della sanità", op. cit., vol. 5., p.305 (editor's translation).
[861] See Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. cit.

reasons, i.e. it was obligatory for the settlement of bills of exchange and was the legal tender for the payment of taxes and discounted the constant devaluation of the *lira di piccoli*.[862]

In his masterpiece *On Money* (1751), Ferdinando Galiani criticises Broggia's search for imaginary money. In fact, the unit of account in Naples was not imaginary, apart from the extreme values of the monetary system (i.e. the copper *cavallo*, equivalent to the penny, and the *oncia* [until 1749], equivalent to 6 ducats), but the central units of account were real, i.e. the copper *grana* (i.e. 12 *cavalli*) and the silver ducat (i.e. 100 *grana*, with its tenth part, the *carlino*). According to Galiani, "there are some individuals who, though wise and large in numbers, are persuaded that imaginary money is a stable and firm measure. On this basis, they exalt and glorify it and would use only imaginary money as a money of account". For Galiani, "a common measure which has little variation may be employed with benefits which are roughly equal to those of a stable one, since a stable-one does not exist".[863] Galiani is not really against imaginary money, but against the belief that a stable unit of account could be found in it. On the other hand, he suggests using coins for reckoning, because "it will always be found that the unit of account and that in which one pays are the same thing, whether one uses goods or metals for the purpose".[864]

This assertion shows a vision of the imaginary money inherent in commodities or species. In fact, Galiani considers money as the relation between an abstract unit of account and either commodities or precious metal, modelled on the Hebrew shekel, which was the unit of account and the silver unit of weight and corresponded to the value of a sheep, as he says to explain the origin of the Hebrew coin *kesita*:

> Shekels were made of silver and the Hebrew word *Kesita*, which is found in chapter 53 of Genesis, is rendered by our *agnello*. It is, therefore, even more probable that a silver coin was referred to in this manner because its ancient value was actually equivalent to the value of a sheep, and not because of the image imprinted upon the face of the coin. Asiatics, who for the most part lived a pastoral life at that time, surely compared the prices of different things to the prices of their livestock.[865]

The relationship between the shekel as a unit of account for measuring the value of goods and as a unit of weight for silver comes from the Sumerian system, in which a shekel of silver was equivalent to a bushel of barley in a tabular system in which all goods were

[862] See Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. cit.
[863] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 75; id., *Della moneta. Edizione seconda*, op. cit., p. 100.
[864] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 99; id., *Della moneta. Edizione seconda*, op. cit., p. 134.
[865] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 10; id., *Della moneta. Edizione seconda*, op. cit., p. 11.

compared in value to barley and priced in shekels.[866] The "warehouse model" that Galiani uses to explain the genealogy of money in book 2, chapter 1, is reminiscent of the Sumerian system in that it is centralised. The citizens bring their products to the public warehouse and exchange them for the *bullettino*, i.e. tokens or paper money representing the units of account corresponding to the value of the goods, which the citizens bring back to the warehouse to withdraw the goods needed for the corresponding value. But the *bullettino* lacks the necessary public trust (or rather, the political authority that issues it, i.e. the prince, lacks the necessary public trust), so it is converted into coins with a recognised intrinsic value to fulfil the function of a pledge.[867] The unit of account is thus backed by a corresponding weight in precious metal, just as the shekel unit of account corresponds to the shekel unit of weight in silver. This particular vision, which can be described as chartalist,[868] legitimises the monetary enhancement (*alzamento*) of coins as a policy of flexibility in relation to the intrinsic value of the coin[869] in order to achieve fiscal goals (e.g. extraordinary seigniorage, debt devaluation, wealth redistribution) and monetary goals (e.g. increasing the money supply). In the "warehouse model", it is indeed up to the sovereign to set the unit of account, and he can also change it, provided that this is done uniformly for all goods and species, so that if there are some short-term effects due to the time needed to adjust all values uniformly, nothing changes in the long term, or it changes "in name only (*di voce*) and not in fact (*di fatto*)".[870] Thus, for Galiani, the unit of account, the "number", or "ideal money" (i.e. "that which measures prices"),[871] as he sometimes calls it in contrast to "imaginary money" (i.e. "which does not correspond exactly to any piece of metal to which it is equivalent in value"),[872] can adjust the bimetallic ratio and even enhance the money, as he says, "to raise and to lower are relative terms", "whenever silver is raised, copper is lowered",[873] but he does not recognise that an external fulcrum, i.e. imaginary money, is necessary for the realisation of a general *alzamento*.

[866] See Hudson M., Wunsh C., ed., *Creating Economic Order. Record-Keeping, Standardization, and the Development of Accounting in the Ancient Near East*, op. cit.
[867] See Locke J., "Some of the Consequences that are likely to follow upon lessening of interest to 4 per cent," in Kelly P. H., *Locke on Money*, Clarendon press, Oxford, vol. I, 1991 (1668).
[868] See Patalano R., Realfonzo R., "On money by Ferdinando Galiani: notes, social accounting and confidence", op. cit.
[869] See Rosselli, A., "The role of the precious metals in Della Moneta by Ferdinando Galiani", op. cit.
[870] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 80; id., *Della moneta. Edizione seconda*, op. cit., p. 108.
[871] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 80; id., *Della moneta. Edizione seconda*, op. cit., p. 84.
[872] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 73; id., *Della moneta. Edizione seconda*, op. cit., p. 97.
[873] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 135; id., *Della moneta. Edizione seconda*, op. cit., p. 135.

1.3 *The debate in Milan*

Pompeo Neri, who was called to Milan in 1749 by Maria Theresa of Habsburg to work on the land register reform on the one hand and to chair the monetary conference with Turin to conclude a monetary agreement on the other, was particularly concerned with monetary issues in order to understand how monetary stability could be achieved. The problem in Milan was the so-called "monetary disorder", well explained by Gianrinaldo Carli as a "disproportion" between the coins throughout Italy,[874] i.e. the "extrinsic value" (i.e. face value) of the coins did not correspond to the "intrinsic value" (i.e. metal content), which paved the way for the huge arbitrage business of the money changers, who bought a coin where it was undervalued in order to melt it down or export it to where it was worth more in order to make a profit. The most important effect in Milan at the time was the disappearance of silver coins (i.e. the *filippi*), although it was not until 1752 that the balance of trade in Milan was estimated by Pietro Verri, who emphasised the trade deficit and began to develop an awareness that the silver outflow was also caused by a deficit in the balance of payments.[875] The solution envisaged by the Milanese government was a monetary agreement with its neighbours to establish a currency standard. Neri worked on this. Following Bernardo Davanzati,[876] he analysed the devaluation of imaginary money, referring in particular to the lira in Florence, where the gold florin, which was always stable in terms of metal content, rose from one lira in 1252, the year in which it was first minted, to more than thirty by the time Neri wrote (1752).[877] This, according to Neri, is due to the devaluation of low money (i.e. the silver and copper coins used in retail trade), which in turn leads to an appreciation of noble money (i.e. the silver and gold coins used in wholesale trade and international markets, e.g. the florin).

Neri, who was a jurist, here contrasts two schools of thought, the scholastic one based on Aristotle and the Roman one based on Roman law and in particular on the text by Giulio Paolo in Justinian's Digest, which he quotes at a certain point:

> This material [precious metal], which is minted in the form approved by the state, is valuable to the owner because of its amount [*ex quantitate*] rather than its substance [*ex substantia*].[878]

The scholastics were responsible for the devaluation of money because they misunderstood Paul when he said that money is valuable by its "amount". They interpreted this as the

[874] See Carli G. R., "Dell'origine e del commercio delle monete", op. cit..
[875] See Verri P., *Considerazioni sul commercio dello stato di Milano*, op. cit..
[876] See Davanzati B., "Lezioni delle monete", op.cit..
[877] See Neri P., "Appendice alle Osservazioni", op. cit..
[878] Neri P., "Appendice alle Osservazioni", op. cit., p. 326; the english text is by Rüfner Thomas, "Money in the Roman Law Texts", in Fox D., Ernst W., ed., *Money in the Western Legal Tradition*, Oxford University Press, 2016, p. 98.

nominal value, while Neri claims that Paul meant the intrinsic value, since money, like other commodities (for example, wheat), is an exchangeable good that can be measured in quantity thanks to its property of uniformity, "for from one pound of gold to two half-pounds of gold there is not the slightest difference possible".[879] However, it has been noted that "by stressing the importance of the public authority backing the money and the fact that the value of money does not depend on its substance, Paul came close to a nominalistic conception of money",[880] indeed Paul, who died around 230 AD, "lived at a time when repeated debasement turned the Roman silver currency from commodity money into fiduciary money".[881]

The first and most important problem for Neri was that the devaluation of money threatened the rights of creditors. If contracts are fixed in imaginary money, its devaluation devalues the credit; if they are fixed in specific coins, their debasement harms creditors. For this reason, according to Neri in historical perspective, Charlemagne tried to revive the Roman tradition by tying money to the pound (i.e. unit of weight of precious metal), but imaginary money was originally based on small money, i.e. the penny, since no coin was equal to the pound. As Broggia also argued, Neri claims that "the small currency is most convenient to measure the large than the large to measure the small; the more so, as the interests of the creditors, who give the standard to the provisions, are better protected against doubtful interpretations and the uncertainty of future events, by defining the contract in small money, in the absence of a monetary standard".[882] But this type of money was particularly susceptible to debasement due to the decentralisation of minting and downward competition between mints, so the merchants agreed to tie the imaginary money directly to silver (as originally intended by Charlemagne). Copper then was no longer to be the basis for the imaginary money, as Broggia demanded, but silver, and not in coins but in bullion, so that the standard became unchangeable. Two units of account were created, on the one hand the *lira* or *ducato di banco*, which was based on silver bullion (by being tied to the old ducats), and on the other hand the *lira* or *ducato corrente*, which was based on the currency, "and so it happens that a hundred lire of a clipped currency are worth less than a hundred lire of an old and good currency",[883] i.e. the agio was formed on the *lira di banco*, as happened in Venice and Genoa.

However, the financial system in Milan differed both from that in Venice and from that in Genoa. The banks were organised as *monti*, which collected private capital to lend to the government at interest, and the Milanese merchants did not use banks to conduct their business so no bank money developed in Milan.[884] This explains why all the Milanese

[879] Neri P., "Appendice alle Osservazioni", op. cit., p. 544 (editor's translation).
[880] Rüfner Thomas, "Money in the Roman Law Texts", op. cit., p. 99.
[881] Ibid.
[882] Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit., p. 151 (editor's translation).
[883] Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit., p. 160 (editor's translation).
[884] See Cova A., *Il Banco di S. Ambrogio nell'economia milanese dei secoli XVII e XVIII*, op. cit..

authors who dealt with the subject had no model of the *lira di banco* to refer to. This even applies to Neri, who, coming from Tuscany, where such a system had not developed either, knew the *lira di banco* thanks to his reading, but lacked the real experience and ability to apply the concept to the financial structure. He therefore turned to John Locke, who had been translated into Italian by Pagnini and Tavanti in the same year (1751),[885] to find the principles of monetary stabilisation. Locke, in fact, said that "silver alone is the measure of commerce",[886] and fixed the monetary standard at the ounce of silver according to the Elizabethan value of 5 s. 2 d. and left gold floating (copper was not included as it was not issued in England at the time). However, it is worth noting that silver was undervalued at the mint price and the mint price of gold was not adjusted sufficiently to compensate for the discrepancy, so silver flew away and the system soon became a gold standard. Moreover, the role of small money before the great recoinage was taken over by the clipped silver coins, so the recoinage deprived the system of the necessary small money and caused enormous deflation.[887]

On the other hand, as a government official, Neri had to find a compromise between principles and politics. He envisioned a bimetallic system in which the imaginary money was tied to the ounce of silver. He therefore took the silver *filippo* in Milan at the legal rate of 7 L. 10 s. as a model and proposed a bimetallic ratio to gold of 1:15.5, but suggested that the contracting parties could deviate from the parity, which distorted the system in the direction of monometallism in the wake of Locke. The other problem for Neri was the issue of the cost of coinage, which had been set at 2 per cent by the conference. While neither Locke nor Davanzati envisaged coinage costs, he agreed in theory but stuck to the 2 per cent rule in practice. In summary, he proposed that all members of the monetary convention should fix their unit of account at silver, plus 2 percent of minting costs, so that exchange rates were fixed, and that they should control within limits the circulating quantity and quality of low money in order to avoid the creation of agios on noble money.[888]

Gianrinaldo Carli, in contrast to Neri and in agreement with Broggia, held on to copper as the "measure of the other metals".[889] He regarded the copper *quattrino* in Milan as a unit of account and saw the origin of the monetary disorder in its debasement, which in turn was the cause of the fact that "the parts were no longer proportional to the whole, so that four *quattrini* (3 d. each) no longer corresponded to the value of the *soldo* (12 d.), ten *quattrini* no longer corresponded to the value of the *parpaiola* (2 s. 6 d.) and eight *parpaiole* no

[885] See Pagnini G. F., Tavanti A., *Ragionamenti sopra la moneta, l'interesse del denaro, le finanze e il commercio, scritti e pubblicati in diverse occasioni dal signor Giovanni Locke, tradotti la prima volta dall'inglese con varie annotazioni*, op. cit..
[886] Locke J., "Further Considerations Concerning Raising the Value of Money", op. cit., p. 422.
[887] See Desan C., *Making Money*, op. cit..
[888] See Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit..
[889] Carli G. R., "Dell'origine e del commercio delle monete", op. cit., p. 93 (editor's translation).

longer corresponded to the value of the *lira* (20 s.), whereby silver was replaced by copper and an imaginary value was added to the deficit of the real value".[890]

Carli meant two things with this passage. Firstly, that the debasement of the *quattrino* due to the exorbitant seigniorage levied on copper by the (subcontracted) mint from the beginning of the 17th century caused silver to increase in value in relation to copper, so that it flew away because it was undervalued at the tariff. Secondly, Carli introduced his special concept of imaginary money, i.e. "imaginary value", which fills the gap between the intrinsic value of coins and the extrinsic value (i.e. seigniorage), which he estimated at 54 per cent of the *quattrino*.[891] For Carli, then, imaginary money is an extremely negative concept, an artificial value attributed to coins in order to relate them formally to each other on a proportional scale of value, whereas in reality they are not.

Girolamo Costantini, in Venice (1751),[892] talks about the agio on noble money, which was formed in Venice for the same reasons as in Milan, and also refers to the "imaginary of coins", but he distinguishes this concept from that of imaginary money, which he praises in the form of the Venetian *ducato di banco*. It therefore seems that the term "imaginary" in the sense of "artificial" is distorted by Carli to correspond to imaginary money. Thus Carli proceeds with the calculations to establish the correct proportions between different metals and different subdivisions for each metal, but, as Massimo Amato notes, "in Carli's project the imaginary lira sinks into insignificance, without however ceasing to be the implicit horizon in which his project also takes place".[893] Be that as it may, his plan for monetary reform was to form the backbone of the proposal of the Economic Council (*Consiglio dell'economia*)[894] founded under his chairmanship in 1765, but it was mercilessly rejected by Vienna in the monetary reform of 1788.

A special case in Milan is that of Pietro Verri and Cesare Beccaria, the pamphleteers of the *Accademia dei pugni*, who intervened in the monetary debate in 1762 with a proposal against the tide. Beccaria,[895] having recognised the monetary disorder in Milan on the basis of Carli's research, proposed tying the currency standard to the gold florin, which circulated in Milan at 15 L. instead of 14 L. 10 s. of the tariff. Thus 15 L. would correspond to the florin and all other coins would have been valued at intrinsic value in relation to the standard. It therefore made no sense to waste resources on the creation of a national coinage "in a country as limited as ours", as both Neri and Carli suggested to do, because "a minister specially in charge of this matter, who, with the tariffs of all nations in his hand, watches

[890] Carli G. R., "Dell'origine e del commercio delle monete", op. cit., pp. 23-24 (editor's translation).
[891] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia*, vol. II, p. 373.
[892] See Costantini G., *Delle monete in senso pratico e morale,* op. cit..
[893] Amato M., *Il Bivio della moneta*, op. cit., p. 119 (editor's translation).
[894] The proposal was written by Cesare Beccaria, see id. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit..
[895] See Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762*, op. cit..

over the change of proportions, and with this thermometer reforms the price of the coins as required, and by means of the tests determines the value of the new coins to be introduced",[896] would be sufficient for the task of keeping a monetary system in equilibrium, regardless of whether it is based on domestic or foreign coins. It is worth recalling that this idea particularly appealed to Luigi Einaudi,[897] who combined it with Galiani's proposal to fix the coinage rate with a recommended tariff (*di voce*) instead of a compulsory one (*di grida*), so that a different rate could be formed on the market and the tariff would be immediately adjusted to the market value.[898] Verri intervened to support Beccaria by emphasising that "we, the inhabitants of a small Mediterranean state without mines", "should think of regulating our trade, reducing imports, increasing exports, reviving industry; we think of having good money, valuing it well, and we do not care about the stamp that this currency must have: this is what Hamburg and Frankfurt am Main do".[899] Indeed, both Frankfurt and Hamburg had the appropriate institutions to value foreign coins, namely a bourse and a public bank respectively. However, the case of Milan, which was an international centre for currency exchange,[900] is more similar to that of Antwerp in the 16th century, as illustrated by Boyer-Xambeau et al.:

> Antwerp played this role of center for the redistribution of minted metals between all European countries, thanks to its extreme flexibility in determining the legal value of the coins. [...] the Flemish authorities followed the commercial value of all the coins circulating in the country on a daily basis (and there were no fewer than a thousand of them at the end of the sixteenth century!) and promptly announced the new legal values of coins and of unminted metals.[901]

Antwerp was a centre of international arbitrage between coins operated by money changers, as was Milan, and so Beccaria develops from this peculiarity a mercantilist model to thrive in that "state of war in which nations are, according to Hobbes", which "occurs in commerce and coinage, where each nation seeks to enrich itself by impoverishing others",[902] and goes on to say that the only case, in which a national coinage makes sense is when a state "is surrounded by other nations where darkness and chaos still reign in the currencies", so that "the wise nation will enrich itself at the expense of the others, by depriving the ill-regulated nation of the best coins in exchange for the worst that are

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[896] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762*, op. cit., p. 230 (editor's translation).
[897] See Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", op. cit..
[898] See Quadrio Curzio A., Scazzieri R., eds., *Sul disordine delle monete a Milano nel Settecento*, op. cit..
[899] Verri P., "Dialogo sul disordine delle monete", op. cit., p. 290 (editor's translation).
[900] See Caizzi B., *Industria, commercio e banca in Lombardia nel XVIII secolo*, op. cit..
[901] Boyer-Xambeau M. T., Deleplace G., Gillard L., *Private Money & Public Currencies*, op. Cit., p. 117.
[902] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762*, op. cit., pp. 213-214 (editor's translation).

introduced, and reducing the former to the form of the latter".[903] In any case, arbitrage for Beccaria is a war that must be fought with the most appropriate weapons. This approach was taken up again by Beccaria (1939 [1771]) when he wrote the Report of the Council of Economy in 1771, after having joined the Council in the same year.[904] As we have already mentioned, the report contained Carli's plan and some other residual ideas such as the plan of the *sestini*, i.e. the reduction of the nominal value of the *quattrino* from 3 d. to 2 d. in order to obtain a *sestino* (i.e. the sixth part of a *soldo*). It is immediately clear that this plan, which originally had a different purpose (namely to avoid the minting of new copper coins by adjusting the face value, and which was also supported by Verri,[905] was finally taken up in the proposal, according to Beccaria's conjecture, "to turn the wisdom of the money dealers in our favour"[906] and rid the national market of these old copper coins in exchange for foreign money made of copper or alloys, which would then be banned (Beccaria hoped that the foreign money changers would exchange their low money for the *sestini* to make a profit, as the value of the coins had fallen) to achieve the result of eliminating the surplus copper coins in the country, which did not please Chancellor Kaunitz as the outcome was uncertain.[907] Certainly Beccaria's endeavour was not due to complete naivety, but to the fact that they muddled through to realise Carli's plan for recoinage, which Beccaria (but not Verri, who was the vice-president of the council)[908] had agreed to without having certain financial means at his disposal. They therefore planned to withdraw only some of the copper coins from circulation by displacing the others.

1.4 *The Milanese monetary reform*

The financial means for the new coinage came a few years later through the intervention of Vienna. Finally, Maria Theresa's monetary reform was implemented in 1778. But as we have already said, the reform disappointed Carli as well as Beccaria and even Verri. Two points were the break with the economic council, namely the copper money and the seigniorage. Let us start with the copper money. As we have seen, Carli wanted to abolish imaginary money by calculating with copper. To this end, the extrinsic value of copper should correspond to the intrinsic value plus the minting costs, which Carli always favoured. According to his estimate, the cut of the *quattrino* should therefore be 100 to the mark,

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[903] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762*, op. cit., p. 228 (editor's translation).
[904] See Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit..
[905] See Greppi E., Novati F., ed., *Carteggio di Pietro ed Alessandro Verri dal 1766 al 1797*, op. Cit., p. 349.
[906] Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit., p. 54 (editor's translation).
[907] Kaunitz W. A., "Relazione conclusiva a sua maestà (11 ottobre 1776)", op. cit..
[908] See Verri P., "Consulta sulla riforma delle monete", op. cit..

which was approximately the cut used in Milan at the beginning of the 17th century, before a continuous debasement even raised it to 150 to the mark.[909] Verri and Beccaria were even more extreme in their demand for coins of full weight, as they rejected the minting costs, even if Beccaria later joined Carli's position. This point was rejected by Chancellor Kaunitz, who affirmed that copper was not a full-weight coin in any country of the Habsburg Empire, and that the reason for this was that a much higher face value prevented the coins from being melted down.[910] The new copper coins were therefore to be minted in the mints of the Empire with a face value of twice their intrinsic value and transported to Milan.

In fact, the awareness that low money had become token money and that one should focus on quantity rather than metal content was already present since Gemignano Montanari at the end of the 17th century,[911] who was quoted by Neri:

> The low coins of one's mint must never be minted in a larger quantity than the state needs for the use of the small issues. Up to this limit they may be given the value that pleases the prince without regard to grade; if he minted too many, they would increase the value of the large coins, as is the case in the ducal states of Lombardy (my translation).[912]

Neri takes into account seriously this policy and he himself claims:

> It would be necessary that this [the low currency] should not only not be abundant, but should be kept within the limits of positive scarcity, and this scarcity, in connection with daily needs, would be that which sustains the legal value, just as the abundance [i.e. the demand] of credit sometimes sustains the value of notes and other representations or simulacra of money.[913]

In the correspondence with Francesco d'Este, Duke of Modena and Governor of Milan (1753-1771), Neri envisaged a plan for recoinage in Milan and proposed to maintain a large seigniorage in copper (and alloys), similar to Kaunitz.[914] Girolamo Costantini in Venice held the same opinion:

> The strict ratio necessary for the noble coins of gold and silver [...], is not so for the *veglioni* [billon], which, circulating only in the state for the use of the minute traffic, cannot alter the value of the noble coins, and therefore the sovereigns can undoubtedly extract from this coinage a greater benefit of seigniorage; which, however, has its limits, while they cannot issue a greater quantity than that which

[909] See Carli G.R., "Piano ragionato per la rifusione della moneta nello stato di Milano", op. cit..
[910] See Kaunitz W. A., "Relazione conclusiva a sua maestà (11 ottobre 1776)", op. cit..
[911] See Cipolla C. M., *Moneta e civiltà mediterranea*,op. cit..
[912] Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit., p. 213 (editor's translation).
[913] Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit., pp. 192-193 (editor's translation).
[914] See Neri P., "Ragionamento del presidente Neri", op. Cit.; see also Appendix 5.

> can serve the purposes of the previous minute traffic, otherwise the excess would disturb the good order of the noble coins [...].[915]

Beccaria also opened up the possibility of using copper like fiduciary money when recoinage was not possible, although he did not elaborate on this, so that "the low currency should not be considered as a real currency, but as a partial representation of it, just like the *cedole di banco* (i.e. the notes issued by the *Wiener Stadtbank*)",[916] and in Naples, where the copper coins had not undergone the same process of debasement as in Milan, Galiani recognised their nature as tokens, for they were clipped and worn, "so that they appear reduced to *representative money*".[917] For both Neri and Galiani, the reason why low money can retain its value depends on the high velocity of circulation. If for Neri "the general scarcity makes it circulate quickly",[918] for Galiani "its velocity of circulation, which is at least four times greater than that of silver, and six times greater than that of gold, makes it acceptable to anyone, because one is always sure of being able to trade it off".[919] However, the fact that low money became representative money displaced Broggia's concept of copper-based imaginary money, which required copper coins of full weight, and necessitated other solutions to regulate low money on the one hand, such as estimating the demand for low money,[920] and to peg imaginary money to either gold (e.g. Verri and Beccaria on the florin) or silver (e.g. Neri on silver bullion) on the other.

As far as seigniorage is concerned, we proceed from Carli's idiosyncratic approach in contrast to that of Neri. The latter[921] took the silver *filippo* in Milan as a monetary model and, having set the minting cost at 2 per cent, deducted this percentage from the value of the *filippo* and then calculated the value of the silver ounce. This was the mint price (MP), i.e. the price the mint would pay for foreign silver or bullion, with the mint equivalent (ME), i.e. the legal value of national silver coinage, being 2 per cent higher.[922] In the correspondence with the Governor of Milan, Neri proposed not to establish "two classes of silver", thus conforming to Locke's principle that there should be no seigniorage (in England seigniorage was abolished in 1666), if at all, the seigniorage should not exceed 2 per cent.[923]

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[915] Costantini G., *Delle monete in senso pratico e morale,* op. Cit., p. 17 (editor's translation).

[916] Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762*, op. cit., pp. 233 (editor's translation).

[917] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 97; id., *Della moneta. Edizione seconda*, op. cit., p. 131.However, in Galiani, *On Money* p. 97, there is an incorrect translation, so I translated from id., *Della moneta. Edizione seconda*, p. 131.. The italics are in the original text, Galiani refers to a special category of money.

[918] Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit., p. 193 (editor's translation).

[919] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 101 (editor's translation).

[920] See Beccaria C. , "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit..

[921] See Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit..

[922] See Redish A., *Bimetallism, an Economic and Historical Analysis*, op. Cit.; Sargent T. J., Velde F. R., *The big problem of small change*, op. cit..

[923] See Neri P., "Ragionamento del presidente Neri", op. cit..

Carli instead set the pattern in the gold sequin (silver had almost completely flown away by this time [1766]), then he set the standard of national silver (i.e. including the minting cost of 2 per cent) at the bimetallic ratio of 14.5, then he envisaged different silver coins (e.g. ecu, half ecu, lira, half lira, etc.), for each of which he set different minting costs, depending on the actual labour each coin would require for its minting.[924] Even if this procedure seems reasonable, it was objectively complicated to determine the correct cost of production of each coin on the one hand and to reconcile it with the difference ME - MP on the other, which Carli did not explain. This explains why Carli's proposal was rejected. With the reform, however, even three classes of silver were introduced. Not only a MP and a ME were fixed, but also a lower legal value for foreign coinage (FP), so that FP < MP < ME, as you can see in the plan below.

tab./fig. 22 **The plan for monetary reform in Milan (1778) BIS***

This table is a reworking and translation of the original published in Gianelli (1984, Tab. 12). The percentages are approximate values, which leads to some discrepancies in the results.		**National money**		**Foreign money**	
		Gold	Silver	Gold	Silver
1	**Bimetallic ratio** -theoretical- **Bimetallic ratio** - actual - i.e. after the approximation of the ratio between the Milanese and the Viennese unit of account	1	14 4/9 (14.444) 14 25/56 (14.446)	1	14 314/609 (14.515) 14 122/227 (14.537)
2	**Foreign-coinage price (FP)** - actual - value per mark of fine metal in foreign coins			L. 966.10.2	L. 66.9.8
3	**Mint equivalent (ME)** - actual - value per mark of fine metal in national coins	L. 979.8	L. 67.15.10		
4	**Mint price (MP)** - actual - value per mark of fine metal	L. 975.8	L. 66.13	L. 975.8	L. 66.13
5	**MP - FP** Incentive to bring foreign coins to the mint			L. 8.17.10 **0.92%**	s. 3.4 **0.25%**
6	**ME - MP** Seigniorage	L. 4 **0.41%**	L. 1.2.10 **1.71%**		
7	**ME - FP** Difference between the legal value of national and foreign coins, which gives the difference in			L. 12.10.14	L. 1.6.2

[924] See Carli G.R., "Piano ragionato per la rifusione della moneta nello stato di Milano", op. cit..

	the bimetallic ratio. Calculated values: Official values:			**1.33%** **1,5%**	**1.97%** **2%**

*See tab. 16, ch. 3 para. 7 and tab. 25 in the appendix (i.e. the original table)

The total difference between the legal value of domestic and foreign coins is, according to my calculations, 1.33 per cent for gold and 1.97 per cent for silver, see line 7 (i.e. there is a discrepancy with the official values given in the schedule, namely 1.5 per cent for gold and 2 per cent for silver, which is probably due to the approximation of the bimetallic ratio, see line 1). Be that as it may, this means that both national silver and national gold are more valuable than foreign silver and foreign gold. However, the fact that the difference in silver (domestic vs. foreign) is higher than the difference in gold (domestic vs. foreign) leads to different bimetallic ratios when looking at domestic or foreign money (see line 1). However, if you remint foreign coins into domestic coins, you get an incentive (i.e. 0.92 per cent for gold and 0.25 per cent for silver [see line 5]), so the net seigniorage is 0.41 per cent for gold and 1.71 per cent for silver (see line 6).

This regulation is intended to create an incentive to bring foreign coins to the mint and at the same time prevent the melting down of national coins. The plan was presented to the Italian ministers, who did not fail to criticise it. If Carli was disappointed because his plan was not approved, Beccaria criticised the price of foreign coins, which was lower than that of bullion and would have led to foreign gold coins being melted down instead of minted, and foreign silver coins, whose bimetallic ratio in relation to foreign gold was higher than 14 ½, i.e. undervalued, would have flown away.[925] Ultimately, the foreign precious metals, both gold and silver, would have been displaced by arbitrage against the wager of Ambrogio Forni, a functionary of the Italian Department and Hubert von Clotz, the mint master of Hal, the authors of the plan. For this reason, Beccaria finally proposes to abolish the minting charges for noble money and to finance the coinage through the fund that had been set up to finance new copper coins, assuming that the new copper would bring in enough seigniorage to finance its minting, and then argues again in favour of abolishing the seigniorage for gold and silver, since copper should be considered as token money at that time, thus returning to his original position.[926]

1.5 *Conclusion*

The reduction of copper to fiduciary money changed the monetary system de facto from a trimetallic to a bimetallic system. In this transition, the nature of the imaginary money also had to change, from a system in which the imaginary money was based on copper coins to

[925] See Beccaria C., "Relazione sulla grida della riforma monetaria", op. cit..
[926] See Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762*, op. cit..

another in which first silver coins and then silver bullion were the hanger. The first framework is first emphasised by Broggia (1743), who linked imaginary money to copper coins in order to adjust the nominal value of gold and silver reciprocally to their respective intrinsic value, which, according to the theory of value at the time, was given by the supply of each metal, i.e. its relative scarcity.

Such a position, as we have said, is undermined by the fact that copper coins (alongside alloyed coins) have become representatives of either gold or silver. The low money multiplication and its debasement led to a devaluation of the imaginary money and an appreciation of the noble money with effects on the exchange rate (i.e. devaluation) and the general price level (i.e. inflation). A first solution was the restoration of the full weight of copper coins, as envisaged by Carli (1766).

Carli calls for a trimetallic standard in which each metal is fixed in relation to the others and copper is the unit of account without imaginary money. It is a strictly metallistic approach in which the minting costs are only authorised to the extent that they represent the actual production costs for each coin. This model, which was the proposal of the *Consiglio dell'economia*, was rejected by Chancellor Kaunitz, who decided that copper should be a token with a face value twice as high as the intrinsic value.

The alternative solution was imaginary money based on silver, i.e. the *ducato di banco*, which was used in both Genoa and Venice, as Neri recognised. However, he was inspired by Locke's teachings and came to a different conclusion. He imagined a silver standard in which the imaginary money was tied to the silver ounce, having fixed the silver *filippo* at 7 L. 10 s. (as Locke had fixed the silver crown at 5 s. 2 d.). He then established the bimetallic ratio to gold and proposed to keep the low money in a "positive scarcity", indicating a deflationary decision.

The *ducato di banco*, on the other hand, which travelled from Genoa and Venice to Amsterdam with the founding of the Bank of Amsterdam in 1609, where it reached its highest potential, was based on two units of account. The first, the *lira di banco*, was a book money used to fix bills of exchange and pay large transactions and taxes; the second, the *lira corrente,* was used to pay for ordinary transactions. Both were theoretically tied to the metal, the former to the *ducati di banco*, i.e. to the old full-weight silver coins, which also established a parity with the ounce of silver, the latter to actual money. In practice, bank money was a higher currency class, a complementary money used in the high-ranking market. The agio, which regulated the relationship between the two currencies (i.e. bank money and actual money), was managed by the *Banco del giro* in Venice and the Bank of Amsterdam in Amsterdam.[927]

[927] See Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. Cit. ; Quinn S., Roberds W., "The Bank of Amsterdam Search for Success and Stability", op. cit..

For Neri, as for Locke, imaginary money is an instrument to unilaterally tie the entire monetary system to the silver ounce, with the result that the system becomes completely rigid, while in the system of the *ducato di banco* imaginary money serves to control the money supply and make the system flexible thanks to the complementarity between the two levels of currency, i.e. bank money and actual money. In fact, the English monetary system became more flexible towards the end of the 17th century, but this was thanks to the Bank of England's paper money, which was, however, an indirect effect of the reform based on Locke's principles. Indeed, it arose from the complex dynamics between the government and the bank, but was also favoured by the fact that the store of value function of money was ensured by the union of imaginary and real money.[928] However, Bank of England notes were only a substitute for coins, while bank money in Amsterdam or in Venice and Genoa, as we have seen, was complementary.

According to Marcello de Cecco, "the great metallist reforms were the outcome of the intellectual movement which would later take the name of *political economy*", "it was composed of men who, in many countries, believed that human society was organised according to natural principles, which could be studied by the same methods used to inquire into the world of nature", but "the political economists soon found themselves considerably disturbed by the existence of a human institution, Money, which continually interfered with the progress of commodity valuation", so that "the solution was a commodity money, a monetary regime whose standard would be a coin made of metal of fixed weight and fineness".[929] In 18th century Italy, all scholars were "political economists" in the sense that they studied the laws of nature and tried to obey them, but not all of them wanted to neutralise the political leverage of money. This was certainly the case with Neri and Carli, but above all with Verri, for whom money was the "universal commodity"that exhausted itself in trade,[930] and also with Beccaria. An exception could be that of Galiani, who retains some features of mercantilism by giving the sovereign control over the value of money. Unlike Verri, who considers money as a "universal commodity", Galiani considers money first and foremost as a unit of account whose definition is reserved to the sovereign, who can therefore change it, taking care not to violate the law of nature that regulates the parity between precious metals. This characteristic allows a certain autonomy of the national economy vis-à-vis international flows, as recommended by Keynes.[931]But the management of imaginary money is also evident in the context of the Theresian currency reform in Milan, which shows that imaginary money was still an institution on which governments in 18th-century Italy relied.

[928] See Amato M., Fantacci L., *Fine della finanza*, op. cit; Desan C., *Making Money*, op. cit..
[929] De Cecco M., "Gold standard"*, The New Palgrave: a Dictionary of Economics*, First Edition, 1987, p. 2.
[930] See Verri P., *Meditazioni sulla economia politica*, op. cit..
[931] See Keynes J. M., "A Treatise on Money", op. cit..

2. The theory of *alzamento* by Ferdinando Galiani and the debate in 18th century Italy

The aim of this section is to analyse a peculiarity of the *Ancien Régime* monetary system, namely the phenomenon of the enhancement or augmentation of money, called *alzamento* in Italian and *augmentation* in French, when the sovereign "cries up" the nominal value of money, i.e. changes by decree the nominal value of a specific coin. In particular, a rather famous definition of *alzamento* is considered, namely that of Ferdinando Galiani, the 23-year-old Neapolitan abbot who in 1751 wrote the book On Money, which became a masterpiece of the 18th century. This work has been researched by several scholars, but the first important study is that of Einaudi,[932] who also analysed the theory of *alzamento* proposed by Galiani and explained the meaning of *alzamento* as devaluation of the unit of account, and he generally translated it as devaluation of the exchange rate in a gold exchange standard system, as he states: "If we assume that the Swiss franc is a gold coin of fixed standard, while in Italy there are only paper liras in circulation, we speak of a devaluation of the lira when one has to give 5, 6, 10, 100 or 150 liras instead of 1 lira against a Swiss franc".[933] However, although *alzamento* is actually the devaluation of the unit of account, the generalisation "*alzamento* = devaluation" can be misleading, as the devaluation of money takes on different meanings depending on the context. As Bloch says, this manoeuvre, which he places in the broader category of *affaiblissement* (i.e. a combination of debasing the metal content and increasing the face value of the coin), is very different from modern devaluation, because, as we shall see, the former leads to an immediate increase in the means of payment, while the latter does not.[934] Indeed, in Einaudi's example, the devaluation of the exchange rate against the franc is not per se an increase in the means of payment. We therefore propose to analyse historically what *alzamento* meant at the time Galiani was writing. In particular, we will discuss the monetary debate in eighteenth-century Italy and the connection with the broader international debate that took place in England at the end of the 17th century and later in France with reference to monetary and financial history. We begin with Galiani's model and then consider the English case of the Great Recoinage, in which a great debate led to the establishment of Lockean principles. In particular, we consider the contrasting views of Locke and Newton on the appropriateness of the money enhancement. We will then discuss the French tradition of augmentations and in particular the 1709 case discussed by Melon and the 1718 case discussed by Galiani. We will also present John Law's reflections on the subject. Finally, we will look at the debate in Milan, Venice and Naples.

[932] Einaudi L., "Galiani economista", op. cit.
[933] Einaudi L., "Galiani economista", op. cit., p. 2 (editor's translation).
[934] See Bloch M., "Esquisse d'une histoire monétaire de l'Europe", op. cit., pp. 63-64.

2.1 The alzamento*, a definition by Ferdinando Galiani*[935]

In general, *alzamento* means the increase of the coin's face value, while the intrinsic value, i.e. the metal content in relation to a certain weight and fineness, remains stable.[936] Following the definition of Ferdinando Galiani, it is the revaluation of the entire coinage, i.e. gold, silver and copper coins. According to Galiani, *alzamento* is a nominal change (*di voce*) of coins, with the temporary effect of devaluing debts, whose effect is neutralised when the price level follows suit. Indeed, being the credits settled in units of accounts, once the latter are increased for each unit of weight of precious metal, the settlement of outstanding credits occurs with a lower quantity of precious metal. The purpose of the *alzamento* is on the one hand to devalue government debt when the government budget is under pressure and on the other hand to realise a seigniorage when the introduction of new taxes would be unsustainable. If we define the "mint price" as the price paid by the mint in units of account for a unit of weight of precious metal, and the "mint equivalent" as the value in units of account for a unit of weight of the coined metal (i.e. the same metal issued as legal tender), the seigniorage is the difference between the latter and the former, and consists of the net profit plus the cost of minting or brassage.[937] For example, if the mint buys an ounce of silver at X *lire* and issues coins with that ounce of silver at a total face value of Y *lire*, the seigniorage is Y - X *lire*. This difference can only cover the minting costs or make a profit. With the *alzamento*, the mint equivalent is increased in order to realise an extraordinary gain when exchanging the coins at the mint (i.e. the revalued coins are brought to the mint to be either recast or stamped). Prices will then rise due to the depreciation of the exchange rate, making imports more expensive and thus driving up all prices. In the long term, all prices are adjusted and the *alzamento* exhausts its effect:

> [...] augmentation of the currency denotes a profit which the prince and the state enjoy because of the slowness with which the multitudes change the relationship between the prices of things and of money.[...] It only produces verbal changes in things. Thus, in order for the real prices of things to remain the same, their nominal prices must change. If this should follow on the very same day on which the augmentation of the currency takes place, for example, and if it would take place proportionately in all things, and then the rise in money will not have any effect whatever, just as nothing would be changed by a law naming all coins in Latin, Greek or Hebraic, instead of in Italian.[938]

[935] See ch. IV, para. 2.4.

[936] See Fantacci L., "The dual currency system of Renaissance Europe", op. cit.

[937] See Redish A., *Bimetallism, an Economic and Historical Analysis*, op. cit.; Sargent T. J., Velde F. R., *The big problem of small change*, op. cit.

[938] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 166-167. For the original text see ch. IV, para 2.4 and Galiani F., *Della moneta*, op. cit., p. 188; id., *Della moneta. Edizione seconda*, op. cit., pp. 222-224.

What makes Galiani original is the distinction between a "short run", in which money is manageable and not neutral, and a "long run", which is based on the naturalistic, static notion of the equilibrium typical of the time, in which money is "a veil". To recognise the impact of the *alzamento* on seigniorage and the exchange rate, we can look at the following definition of the exchange rate by Annalisa Rosselli:[939]

$$E^* = (Pa + s) / P^*a$$

Where E^* is the exchange rate of a national coin (i.e. legal parity abroad), P is the national mint price, a is the intrinsic value (i.e. metal content) of that coin, s is the seigniorage, P^* is the foreign mint price. For example, if the sovereign "cries up" the value of a silver ducat and sets the mint equivalent of $(p+s)$ to $(p+s')$, the realised seigniorage increases by definition by $(s'-s)$. The exchange rate increases to $Pa + s' / P^*a$, which means that you need more national units of account to buy the same amount of foreign units of account P^*, i.e. the exchange rate is devalued. At the same time, as we have already noted, the devaluation of the unit of account against the metal makes it possible to settle credits established in units of account with less precious metal.

According to Galiani, the *alzamento* is "the policy of augmentation by the prince, of the prices of all coins, either by proclamation or by reminting all coins simultaneously, with their weight or fineness, in carats, diminished".[940] However, he advises against the latter because the coins "would be diminished in size, discredited, and shunned",[941] which we will discuss later. He then specifies: "The means are three in number: namely, the markings, new coinage, and the simple edict on the prices of coins".[942] According to Galiani, the first system (i.e. bringing the coins to the mint to have them marked) was already used in antiquity, but was also used in France by Louis XIV.[943] The second system (i.e. a complete recoinage) was also used in France, according to Galiani, but he says that this system reduces the profit for the sovereign if the metal content of the worn and clipped currency is to be reintegrated. The third system (i.e. a simple decree) would be the most appropriate in the case of Naples, says Galiani, where there are public banks, so that the sovereign could expropriate the seigniorage on the total deposits, because if the sovereign has little money of his own, his seigniorage would be low. In contrast to pure *alzamento*, a "change in proportions" (*mutarsi la proporzione*), i.e. the revaluation of a single metal in relation to the others according to market value, can have similar but also negative effects:

[939] See Rosselli, A., "Early views on monetary policy: The Neapolitan debate on the theory of exchange", op. cit., pp. 68 ff.
[940] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 165 (Bk.3 ch.3, I).
[941] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 158 (Bk.3, ch.2).
[942] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 188 (Bk.3, ch.3, VI).
[943] See ch. I, para. 4 and Rowlands G., *The financial decline of a great power*, op. cit.

> Whereas the augmentation of one part of the currency either freezes or disperses the other part and, in this way, bleeds the state dry, a general augmentation of the currency does not cause any-obstacle to the movement of money. Such an augmentation constitutes a [gain to the prince from his creditors, ed.] that is, [from] the wealthier people. A disproportion, on the other hand, is a gift imprudently made to foreigners or to wise, malicious and rich subjects, of the property of the innocent, unsophisticated and poor.[944]

Galiani sees the danger of speculation according to Gresham's law (i.e. the obstacles to the circulation of money) and a redistribution of wealth at the expense of the poor. The purpose of *alzamento* is rather to favour debtors over creditors. In the context of alzamento, i.e. a financial crisis, the former are an exhausted sovereign and the peasants who pay taxes, while the latter are merchants and financiers. The *alzamento* is thus intended to reduce the national debt and at the same time reduce the tax burden (instead of increasing it) and thus incentivise the more productive classes, such as peasants and artisans, who would have more money to invest:

> The only effect of augmentation is to diminish the quantity of money which circulates between the subjects and the prince: paid by one, spent by the other. But this is a great and singular benefit when the amount of money is small. When a stream is not navigable because of the small amount of water it contains, its course is slackened, and it is seen to become proud and majestic. In like manner, if the channels of trade languish, exhausted for lack of money, they begin to take a long and useless course, only to be filled again soon, as money moves once more, albeit at a slow and deliberate pace.[945]

The devaluation of old loans thus increases the money supply for the economy, which injects new liquidity into the system and solves liquidity problems. At the same time, the devaluation of the exchange rate improves the balance of trade:

> [...] foreign goods become dearer. And in that is not harmful case, less money goes abroad; a state is less depleted of it; more goods of their own manufacture are left to be sold to foreigners. The economy of nations is exactly concerned then: that

[944] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 159-160 (Bk. 3, ch. 2). For the original text see Id., *Della moneta. Edizione seconda*, op. cit., pp. 215: *"L'alzamento di una parte congela, o fa dileguare l'altra parte, e dissangua così lo stato; ma il generale non fa intoppo a movimenti della moneta. L'alzamento generale è un guadagno fatto dal Principe su i creditori, cioè sulla gente più agiata; la sproporzione è un dono imprudentemente fatto agli stranieri, o a sudditi accorti, maliziosi, e ricchi, delle sustanze degl'innocenti, dei semplici, e de' meschini."*

[945] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 180 (Bk. 3, ch. 2). For the original text see ch IV, para. 2.4 and Galiani F., *Della moneta*, op. cit., p. 204; id., *Della moneta. Edizione seconda*, op. cit., pp. 243-244.

> more is to be sold than is bought; or, more is exported than is introduced into the state.[946]

To summarise, *alzamento* for Galiani is a policy of last resort to remedy the state's insolvency in a deep financial crisis, e.g. when neither the levying of new taxes nor the issuing of state notes, which are "a tax collected in advance", is feasible. The *alzamento* is precisely the "repudiation of this debt",[947] and it "has the same effect as bankruptcy, but the harm from it is slower to come and is distributed over everyone as it falls".[948] In addition, it provides the necessary liquidity to rebalance and stimulate the economy. The creditors are clearly harmed by this policy, but they coincide with the unproductive class, so it is wise to sacrifice their interests for the security of the country.

2.2 The Great Recoinage in England [949]

From 1688, England was engaged in the Nine Years' War against France. The most important problems were the financing of the war and the poor state of the coinage. The former was brilliantly solved by the founding of the Bank of England in 1694, the latter was at the centre of a debate that led to the Great Recoinage of 1696. The problem with the coinage was that the silver coins commonly used in the internal and international markets to pay bills of exchange were, to a large extent, clipped, which led to a devaluation of the exchange rate with the Netherlands. On the other hand, silver coins (the crown and its subdivisions) were undervalued against silver bullion, i.e. the nominal value of the crown was set at 5 s., which did not match the intrinsic value of the crown. Thus, a premium formed on both silver full-bodied coins (when exchanged for clipped coins) and gold coins (i.e. the guinea when exchanged for silver coins), so that silver full-bodied coins flew abroad to buy gold at intrinsic value. In 1695, Charles Montague, Chancellor of the Exchequer, proposed that silver coinage be increased by 10 per cent and a partial recoinage of the hammered coins that would have been milled. John Locke, who was against the silver enhancement, published the *Short Observations* to counter this proposal. However, this was taken up again by the Secretary of the Exchequer, William Lowndes, who proposed a 25 per cent augmentation of silver coins to keep pace with the rise in the market price of silver. Lowndes argued that the money enhancement would have prevented the outflow of silver because the silver coins would no longer have been undervalued; it would have increased

[946] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 181. For the original text see ch IV, para. 2.4 and Galiani F., *Della moneta*, op. cit., p. 204; id., *Della moneta. Edizione seconda*, op. cit., p. 244.
[947] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 179.
[948] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 187-188 (Bk. 3, ch. 6).
[949] See ch. I, para. 3.

the money supply and restored the exchange rate with Holland, with the added benefit of being able to change the rate again if conditions changed in the future. Isaac Newton, who would be appointed Master of the Mint in 1699, is also in line with Lowndes, for although he agrees with Locke that the face value of coins must be equal to the intrinsic value (note that seigniorage had been abolished in England since 1666), he maintains that "it seems more reasonable to alter the extrinsick than the Intrinsick value of milled money, that is, to raise a crown piece to the value of an ounce of bullion, wch. at present is at least 6 s. 3 d. than to depress bullion to the present value of mill'd money".[950] Newton refers to Locke's proposal to set the price of silver irrevocably at the value authorised by Elizabeth I in 1601 of 5 s. 2 d. for the ounce (i.e. 5 s. for the crown), says Locke:

> [...] altering the standard by raising the Money will get to the publique or bring to the mint to be coins not one ounce of silver: but will make great confusions in accounts, bargains, trade and all buying and selling whatsoever to no purpose and defraud the king in all his settled revenues, and all other men in their revenues and debts".[951]

Locke here clearly defends the right of creditors, both of the sovereign in levying taxes and of merchants and bankers in honouring loans. Note that a year earlier, the Bank of England had been founded as a syndicate of the sovereign's creditors, including Locke and many members of the Whig party that Locke represented. The huge loans to which they had committed themselves to the sovereign were allowed to appear on the assets side of the bank balance sheet so that it could provide the government with the necessary liquidity, primarily in the form of paper money. Very soon, liquidity was also extended to the market. The whole process is commonly referred to as the "financial revolution", which enabled the development of "capitalism".[952]

It is quite clear that the money enhancement in this case would have had no fiscal purpose, as in the case of Galiani, for the financial needs of the sovereign are met by the establishment of the Bank of England. The proposed augmentation of silver money was intended to be an adjustment of the bimetallic ratio between gold and silver. However, since silver was the common currency, the enhancement of silver was quite an "*alzamento*". The arguments put forward by the parties in the debate are in fact common in any debate on the money enhancement. Locke emphasises the sovereign's loss in the collection of taxes when the pound is devalued, and at the same time that of all creditors. As we have seen, the creditors in this case are the sovereign's lenders (i.e. the Bank of England), who lent him £1.2 million at an annual interest rate of 8 per cent. However, the principal would not have been paid until 1706, and the bank was granted the right to issue bills or notes for such a

[950] Newton I., "Isac Newton concerning the amendment of coins", op. cit., p. 217.
[951] Locke J., "Propositions Sent to the Lords Justices", op. cit., p. 376.
[952] See Amato M., Fantacci L., *Fine della finanza*, op. Cit.; Desan C., *Making Money*, op. cit..

value, so the sovereign was in no hurry, but the creditors demanded that their loan not be devalued. The situation was therefore different from the one Galiani refers to. Galiani admits that the *alzamento* would have reduced the ruler's revenue, but this loss would have been less than the benefit of the operation, and he would have recouped it by increasing taxes by the same percentage of the *alzamento* once its cycle was complete.[953]

According to Newton, however, the benefits of raising the coin were manifold. For example, "it will make a greater quantity of current money in the nation, wch. is now wanting",[954] which would guarantee liquidity and prevent deflation, or "the cheapness of commodities in respect of bullion invites foreigners to buy here wch. is our advantage, the dearness invites us to buy abroad wch. is their's",[955] i.e. if silver is nominally revalued, its purchasing power increases in relation to commodities, which are then cheaper for both nationals and foreigners (otherwise nationals have an incentive to buy abroad), which improves the balance of trade. Moreover, the enhancement would provide seigniorage if the coins were newly minted: "It will lessen the charge wch. the nation will be at in milling all the unmill'd money",[956] for the hammered crown is withdrawn at the value of 5 s. and issued milled at a higher value, which means less silver to reach the original face value. As for the negative effect of increasing the face value of silver, Newton sees the increase in prices because, as he says, people reckon by the denomination of coins.[957] All these points are also mentioned by Galiani. However, the Great Recoinage sanctioned Locke's principles of a "sanctified" monetary standard,[958] which, even at the cost of severe deflation, formed the basis of the modern capitalist financial system.

2.3 The French augmentations *of 1709 and 1718* [959]

According to Guy Rowlands, French coins were rerated at least 43 times between 1689 and 1726, when the money was stabilised.[960] The main reasons for the augmentation of money during the reign of Louis XIV were of a financial nature. The king, who was involved first in the Nine Years' War (1688-1697) and then in the War of the Spanish Succession (1700-1713), found himself in a financial emergency, so he enhanced the money in order to generate revenue in the form of seigniorage and to devalue the national debt. The enhancement was carried out in the manner described by Galiani, although only gold and

[953] See Galiani F., *On Money*, op. cit., Bk.3, ch.3, III.
[954] Newton I., "Isac Newton concerning the amendment of coins", op. cit., p. 217.
[955] Newton I., "Isac Newton concerning the amendment of coins", op. cit., p. 218.
[956] Newton I., "Isac Newton concerning the amendment of coins", op. cit., p. 217-218.
[957] See Newton I., "Isac Newton concerning the amendment of coins", op. cit., p. 220.
[958] See Feavearyear A. E., *The Pound Sterling*, op. Cit. and Kelly P. H., *Locke on Money*, op. cit.
[959] See ch. I, para. 4.
[960] See Rowlands G., *The financial decline of a great power*, op. cit.

silver were enhanced, as the same Galiani recognises.[961] The coins were brought to the mint for being restamped, and sometimes a complete recoinage was undertaken, as in 1709 or in 1718.[962] However, the monetary manoeuvres under John Law (1716-1720) generally had other aims. In fact, Law considered enhancement to be inexpedient and even counterproductive for the expansion of the money supply and only used such kind of monetary manoeuvres to promote the circulation of paper money.[963] According to Rowland's account, it is possible that these operations were counterproductive under Louis XIV, as the precious metal in the country fell from 18,000 marks of silver to 13,500. Certainly the reasons for this decline were varied and difficult to weigh, for example much of the precious metal was exported for war payments considering that much of the army was stationed abroad during the War of the Spanish Succession, but the outflows of precious metal caused by speculation in currency manoeuvres were definitely important. Indeed Law says:

> Raising the money in France is laying a tax on the people, which is sooner paid, and thought to be less felt than a tax laid on any other way. When the King raises the Louis d'or from 12 livres to 14, they are taken in at the Mint for 13 livres, and given out for 14; so the King gains a livre on the Louis d'or, and this tax comes to 20 or 25 million of livres, sometimes more, according to the quantity of money in the country. But so far from adding to the money, it stops the circulation: A part being kept up till there is occasion to export it to Holland, from whence a return is made by bill, of a sum of livres equal to the same quantity of new Louis d'ors that were exported of old ones, and 8 or 10 per cent more, according as the exchange is on the Dutch side. Others who won't venture to send the money out, keep it till the new money is cried down, so save a 13th part, which the King would have got if they had carried the money to the Mint to be recoined. This tax falls heavy on the poorer sorts of the people.[964]

Let us try to explain the mechanism that involves alternately diminutions and augmentations.[965] In Law's example, the golden louis is increased from 12 to 14 *livres*, but it is accepted by the mint for 13 *livres* if it is brought within a certain period. After that, the incentive of 1 livre is lost and the coin that is not brought to the mint to have it marked or recoined is no longer legal tender, so the owner of the louis has an incentive to bring it to the mint rather than hoard it. If a certain amount of louis is brought to the mint within the time limit, the owner actually loses only one *livre* of intrinsic value for each coin (e.g. if he brings 14 louis to the mint for 182 *livres* at 13 livres each, he gets back 14 livres less, i.e. one

[961] See Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 158-159 (Bk. 3, ch. 2).
[962] See Abot de Bazinghen F., *Traité des monnoies et de la juridiction de la cour des monnoies*, Vol. II, Paris, 1764, pp. 202-212.
[963] See Law J., *Money and trade considered*, op. cit.; Murphy A. E., *John Law*, op. cit.
[964] Law J., *Money and trade considered*, op. cit., pp. 94-95.
[965] See Rowlands G., *The financial decline of a great power*, op. cit.

louis less). This *livre* for each louis is the tax to which Law refers (i.e. the seigniorage), which must be multiplied by the number of louis in the nation. However, the owner of the louis has two other options: 1. he can take the louis abroad, namely to the Netherlands, and issue a bill of exchange for the same louis, which will be repaid about 10 per cent more due to the increase in the exchange rate caused by the same augmentation. 2. Hoard the louis and wait for a diminution to take the coin to the mint and get it back as legal tender without loss. Therefore, rich people can export the currency abroad or hoard it, while the poorest are forced to take it to the mint and pay the seigniorage. As for diminutions, if announced in good time they served to bring money into circulation and make it available for loans to the government. Indeed, fearing further diminutions, those with large sums of money were encouraged to lend. When money became scarce in the market, this was the moment for the augmentation, which not only provided seigniorage but also devalued the government's short-term debt. Although Law believed that seigniorage was a tax on the poor, augmentation represented the "gentler" and more effective way of "taxing" the aristocracy and the upper middle class (i.e. the *noblesse de robe* who administered the tax system) by devaluing the government debt they held.[966]

In particular, the recoinage of May 1709, which was made possible by a fortuitous delivery of gold from America,[967] increased the value of money by a quarter.[968] In particular, the gold mark (i.e. 8 ounces) was increased from about L. 453 of the last diminution in February to L. 600, while the silver mark was increased from about L. 30 to L. 40, i.e. by a quarter of the new value of the gold or silver mark.[969] The "enhancement" thus took place through an increase in the face value, but the intrinsic value of the coins was also changed, e.g. heavier coins were minted in 1709.[970] When Melon speaks of augmentation, he is in fact referring to the enhancement of a mark of precious metal with which the coins are made (i.e. the mint equivalent), regardless of the value of the specific coins. According to Melon, the 1709 reform had some important consequences:

> The Monies were raised one fourth by a general re-coinage. There were two principal Views in it. The first, was the King's Profit by the great Duty of Seigniorage, The other, the Extinguishment of the Mint-Notes which, rightly employed, might have, for some Time, proved a support to the Finances; but were by the imprudent Use that was made of them, turned to their disadvantage.[971]

The measure thus provided seigniorage in the forms we are familiar with and also enabled the redemption of most mint notes, i.e. notes issued by the mint as extraordinary means of

[966] See Rowlands G., *The financial decline of a great power*, op. cit.
[967] See Rowlands G., *The financial decline of a great power*, op. cit.
[968] See Melon J. F., *Essai politique sur le commerce,* op. cit.
[969] See Abot de Bazinghen F., *Traité des monnoies et de la juridiction de la cour des monnoies*, op. cit., p. 204.
[970] See Abot de Bazinghen F., *Traité des monnoies et de la juridiction de la cour des monnoies*, op. cit.
[971] Melon J. F., Political Essay upon Commerce, translated by d. Bindon, Dublin, 1738 (1734), pp. 260-261.

payment, which were traded at huge discounts due to overissuance and uncertainty about their legal tender status.[972] In contrast to Law, who criticised the mint notes, but wanted to promote a stable circulation of paper money, Galiani emphasised the temporal binding of the state notes (*biglietti di stato*) and, like Melon, saw *alzamento* as a way of withdrawing them. However, Galiani seems to have confused the mint notes of Louis XIV with the *billets d'état* of Philippe d'Orleans, who took office as regent in 1715 during the minority of Louis XV.[973] In fact, he jumps directly from the debt crisis of 1708 to the augmentation of 1718 by the minister d'Argenson, skipping the recoinage of 1709.[974] The monetary reform of 1718 is significant for Galiani because it is characterised by a conflict between the parliament of Paris and the regent who finally enforced compliance with the decree of augmentation, and it recalls the fact that the king who decided on the enhancement was repeatedly criticised by intermediary bodies within the monarchies,[975] as was also the case in Naples.[976] On the other hand, the *Banque Générale* had only just been founded at the time and John Law was its director. It is therefore quite unlikely that Law had nothing to do with the augmentation, so it is possible that the main objective was debt management, i.e. the repayment of part of the discredited *billets d'état*.[977] While in 1709 the increase in liquidity was achieved through the augmentation, so that the "engagements of the bankers and the persons who undertook to supply the armies were discharged among themselves, because the king paid off those who were most pressing and needy",[978] in 1718 it was achieved mainly by the General Bank issuing new banknotes to replace the discredited state notes. In fact, Galiani appreciated the first phase of Law's plan and regarded it as temporary, while criticising the introduction of the fiat money system that marked the second phase.[979]

2.4 The debate in Milan and Venice [980]

Northern Italy was characterised by "monetary disorder" in the 17th and 18th centuries. In particular, low money (i.e. copper and alloyed money), which was increasingly debased, was issued in ever greater quantities, even spreading beyond national borders and raiding the markets of neighbours, due to the weak control of borders and the frequent wars that moved armies around. Gianrinaldo Carli analyses a 1710 minting contract in Milan and notes

[972] See Rowlands G., *The financial decline of a great power*, op. cit.
[973] See Galiani F., *On Money*, op. cit., Bk. 3, ch. 4.
[974] In fact, a further augmentation was enacted also in December 1715. See Melon J. F., *Essai politique sur le commerce*, op. cit., p. 199; see also Velde F. R., "Chronicle of a Deflation Unforetold", op. cit., p. 596.
[975] See Galiani F., *On Money*, op. cit., Bk.3, ch.3, VI.
[976] See Galasso G., *Napoli spagnola dopo Masaniello,* op. cit.
[977] See Murphy A. E., *John Law*, op. cit.
[978] Melon J. F., Political Essay upon Commerce, op. cit., pp. 261-262.
[979] See Galiani F., *On Money*, op. cit., Bk.4, ch.4.
[980] See chs. II - III.

that the government, which had been under Austrian rule since 1706, commissioned the mint with the agreement to reimburse the minting costs of the full-bodied silver *filippi* by granting a huge seigniorage on the issue of copper *quattrini*, which were therefore issued in large quantities.[981] In Venice the passage of foreign armies had brought a huge amount of bad money, moreover silver money was clipped. Genoa and Piedmont were not exempt from the problem either. The result was the creation of the agios on noble money (i.e. gold and silver full-bodied coins) when exchanged for low money.

According to the Venetian Girolamo Costantini,[982] the agio represents the "*alzamento"* of noble money, and he proposed a recoinage of low money in order to eliminate the agio on noble money. On the other hand, he furthered the controversy over *alzamento* by publishing a translation of Nicolas Dutot,[983] who debated augmentation against Melon, and attacking Galiani with this argument in the introduction. Costantini's main reasons against *alzamento* are the following: 1. the damage to the creditors. 2. The increased tax burden, since taxes are paid in *ducati di banco*, i.e. the bank money of the Republic,[984] which has a fixed exchange rate with the *ducati effettivi*, i.e. the actual money. Thus, while private loans were settled in current units of account (*lira corrente*) and paid in actual ducats, public loans and bills of exchange were settled in bank money (*lira di banco*) and paid in bank money (*ducato di banco*), so that the premium on the actual ducats was lost when exchanged for the *ducato di banco*. 3. Inflation, i.e. prices rose in proportion to the amount of the agio, which particularly hurt farmers and craftsmen who were paid in low money, as their wages were not adjusted for inflation. According to Costantini, as well as many other authors and in line with Newton (see above), the causality from agio to inflation is immediate, since the value of commodities is measured by precious metal, but their price is correlated with the face value of coins. There is, however, a specific mechanism of transmission, which becomes clear, for example, in the decree (*grida*) of the Milanese government of 5 August 1749.[985] This decree banned foreign low money (the ban was unsuccessfully repeated several times), temporarily exempting the population who traded in this type of money, while explicitly including merchants "engaged in any kind of trade, both wholesale and retail", because "by virtue of the knowledge they have of the coins, it is assumed that they compensate the lower value of the type on the price of the goods".[986] In particular, the agio was a transaction cost in moving from the retail market, where low money was used, to the wholesale market, where noble money was used, so that merchants had to exchange the

[981] See Appendix 3.
[982] See Costantini G., *Delle monete in senso pratico e morale,* op. cit.
[983] See Costantini G., *Delle monete, controversia agitata tra due scrittori oltramontani, i signori Melon e Dutot*, op. cit.
[984] See Tucci U., "Convertibilità e copertura metallica della moneta del Banco Giro veneziano", op. cit.
[985] See Quadrio Curzio A., Scazzieri R., eds., *Sul disordine delle monete a Milano nel Settecento*, op. cit., p. 145.
[986] Quadrio Curzio A., Scazzieri R., eds., *Sul disordine delle monete a Milano nel Settecento*, op. cit., p. 145 (editor's translation).

former for the latter by paying the premium, which they added to the prices of goods on the retail market.

Who could have better represented the campaign against the "*alzamento*" of noble money than Locke. In fact, John Locke's economic writings were translated by Pagnini and Tavanti in Tuscany in 1751[987] and immediately became the object of study for the reformers working in Milan under the rule of Maria Theresa of Habsburg. In particular, Pompeo Neri, a Tuscan jurist and official, was appointed chairman of a conference to create a monetary union with Turin and possibly other neighbours (which never materialised) based on the principles of monetary stability in line with Locke's principles. Neri proposed to fix irrevocably the unit of account ("imaginary money") in each state with the unit of weight of silver, then establish by law the bimetallic ratio with gold, leaving the possibility to private parties to move from this parity.[988] Importantly, he suggested that each state was in charge of low money, with the task of restraining the quantity, which was the main cause of the agio on noble money. Neri appreciated Galiani's work, but turned against *alzamento* with arguments in favour of the rights of creditors (which Galiani actually also recognised, but which took a back seat to state rescue).[989]

Carli was in line with Neri and claimed that "no trading nation can make arbitrary changes to the coins without being doomed to failure".[990] He agreed with Bernardo Davanzati's concept of "universal money",[991] according to which only precious metals could be money in international trade and the face value of coins should correspond to their intrinsic value. Although Carli, unlike Davanzati, was in favour of levying minting costs on the extrinsic value of coins, he claimed that further changes in coin value would affect the exchange rate, which would have a negative impact on trade and open the way for arbitrage on coins. In fact, his view reflected the "monetary disorder" that was spreading in the Italian states and the common practice of arbitrage that benefited from the discrepancy between the face value of coins and the intrinsic value between the different states, which made it possible to buy a certain coin in one state and resell it in another at a profit, and this is also the reason why Neri and the government of Milan were working on a monetary union. In this situation, monetary manoeuvres, even if they were aimed at rebalancing the bimetallic ratio between gold and silver, which in principle nobody disputed (apart from Locke, but his vision was strictly monometallic, which cannot quite apply to the Italian context, where the monetary system was trimetallic), were really a taboo. This approach was also taken by the Economic

[987] See Pagnini G. F., Tavanti A., *Ragionamenti sopra la moneta, l'interesse del denaro, le finanze e il commercio, scritti e pubblicati in diverse occasioni dal signor Giovanni Locke, tradotti la prima volta dall'inglese con varie annotazioni*, op. cit.

[988] See Neri P., **"**Osservazioni sopra il prezzo legale delle monete", op. cit.

[989] See Neri P., "Appendice alle Osservazioni", op. cit.

[990] Carli G. R., "Osservazioni preventive al piano intorno alle monete di Milano", op. cit., p. 92 (editor's translation).

[991] See Davanzati B., "Lezioni delle monete", op. cit.

Council (*Consiglio dell'economia*) established in Milan in 1765 under the chairmanship of Carli, who envisaged a plan for a general recoinage.[992]

The proposals of the pamphleteers Beccaria and Verri,[993] who argued against a national coinage in a small state like Milan, were an exception. They proposed using foreign coins in circulation in Milan and giving each of them a legal rate in terms of imaginary money, the Milanese lira. Beccaria proposed a "minister of the tariff" who would have supervised the management of the imaginary money.[994] According to this plan, the government should have taken the gold florin as numeraire at the rate of 15 L., i.e. at the abusive rate. In Milan there were, as we have seen, two rates of coinage, the legal (*tariffa*) and the abusive one, which was formed on the market and was characterised by the presence of the agio on noble money. The "tariff" of the florin was in fact 14 L. 10 s. and the abusive rate at the time Beccaria wrote was 15 L.. Verri even gave the definition of the lira as the fifteenth part of the florin.[995] Raising the value of the coins according to this new rate and in line with the market rate would have meant legalising the *alzamento* on noble money, while the general tendency was to combat it.

This kind of *alzamento*, as just mentioned, had only negative effects: 1. The damage to creditors. 2. The increase in the tax burden in the amount of the agios (e.g. when buying the coins needed to pay the taxes, such as *moneta di grida* in Milan and *ducati di banco* in Venice). 3. Inflation, which harms the weakest classes, whose income is not adjusted for inflation and who are paid in low money, while the upper classes deal with noble money and benefit from the premium on noble money. In fact, neither Beccaria nor Galiani view inflation negatively (as opposed to deflation), but rather see it as a symptom of economic expansion.[996] Beccaria, on the other hand, distinguishes inflation when it is caused by the circulation of bad money because it does not lead to investment and higher wages.[997] When he joined the Economic Council, he moved away from Verri's position (Verri was vice-president) and joined the more conservative position represented by Carli, whose authentic endeavour was to eliminate the agio on noble money through a recoinage, with the certainty that it would have lowered prices to the same extent (which in fact did not happen after the recoinage of 1788, even if price trends began to adjust in the long term).[998]

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[992] See Carli G.R., "Piano ragionato per la rifusione della moneta nello stato di Milano", op. cit.

[993] See Beccaria C., *Del disordine e de' rimedi delle monete nello stato di Milano nell'anno 1762,* op. cit.; Verri P., "Dialogo sul disordine delle monete", op. cit.

[994] See also Einaudi L., "Teoria della moneta immaginaria da Carlomagno alla Rivoluzione francese", op. Cit.; Quadrio Curzio A., ed., *Alle origini del pensiero economico in Italia*, op. cit.

[995] See Verri P., *Considerazioni sul commercio dello stato di Milano*, op. cit., p. 211, Tav. II *(Pesi e misure della città di Milano).*

[996] See Beccaria C., "Elementi di economia pubblica", op.cit.; Galiani F., *On Money*, ch.2, Bk.2; ch.4, Bk.1.

[997] See Beccaria C., "Consulta del Supremo Consiglio di Economia del 9 agosto 1771 sulla riforma delle monete", op. cit.

[998] See De Maddalena A., *Prezzi e mercedi a Milano dal 1701 al 1860*, op.cit.

As far as the exchange rate of the Milanese currency was concerned, the abusive rate of the coins was more correct than the legal one, since the legal value of the coins did not correspond to the intrinsic value - due to the "eighty-eight useless decrees" on money from 1600, as Verri wrote.[999] In Venice, on the other hand, the exchange rate was stabilised by the *ducato di banco*, which was used to settle bills of exchange and, as we have seen, formed a double rate between bank money and current money. Bank money was also used for the payment of taxes, so that the Republic's revenues were not reduced by the agio on the noble money (i.e. the loss was on the taxpayer's shoulders if he exchanged the actual ducat for the *ducato di banco*, as Costantini complained), and the same happened in Milan, where taxpayers had to pay their taxes in noble money at the legal rate (*moneta di grida*). In both Milan and Venice the state was partially protected by the "*alzamento*", since only *moneta di grida* and *ducati di banco* were legal tender for the payment of taxes, while merchants, bankers and money changers profited from the agio on noble money and from arbitrage transactions. Landowners generally lost out on the payment of rents (which were increasingly paid by tenants in cash)[1000] and the population suffered from inflation. This partly explains why recoinage occurred in Milan under the "enlightened" rule of Maria Theresa, but not in Venice, where the dominant merchant class, who held their wealth in bank money, exchanged the *ducati di banco* for real ducats at a profit.

2.5 The *alzamento* in Naples [1001]

Since the 16th century, Naples had been a viceroyalty of Spain, and its capitals were used to finance Spanish wars. Therefore, the enormous silver outflows led to a deficit in the balance of payments and a consequent devaluation of the exchange rate as well as a shortage of silver currency within the borders. The solution to the latter was the early use of paper money in the form of *fedi di credito*, issued by a system of public banks established towards the end of the century.[1002] The depreciation of the exchange rate was at the centre of a debate at the beginning of the 17th century and was eventually tackled with a recoinage to correct the problem of clipped coins and reintroduce the currency standard of 1554. In fact, silver coins had been increasingly debased to adjust with the price increase of bullion, but in 1621 the new Spanish king Philip IV ordered that the old standard of Neapolitan currency be restored in order to preserve dignity in international relations, in so doing favouring foreign creditors.[1003] As a result, silver coins rose in value but were undervalued at legal parity (i.e.

[999] See Verri P., *Considerazioni sul commercio dello stato di Milano*, op. cit., part 2, ch.3, II, pp. 127-130.
[1000] See Capra C., "Il Settecento", op.cit.
[1001] See ch. IV.
[1002] See Costabile L., Neal L. (eds.), *Financial Innovation and Resilience. A Comparative Perspective on the Public Banks of Naples (1462 - 1808)*, op. cit.
[1003] See Costabile L., Neal L. (eds.), ibid.

both within the borders compared to the other metals and abroad), which led to the coins being cut or melted down and exported. However, the devaluation of the exchange rate continued and in 1688 the Marquis del Carpio (Viceroy) issued some 3 million new silver ducats to solve the problem of the clipped coins, which in turn were seen as the cause of the devaluation of the exchange rate.[1004] Eventually, he decided to increase the value of the coins by 10 per cent to realign the legal parity abroad, but he died and this measure was carried out by his successor, the Marquis de San Esteban. The latter also minted about 2 million ducats more with a lower weight to obtain again a ducat with a value of 100 *grana* as a unit of account,[1005] while the ducats of the Marquis del Carpio were now 110 *grana* (i.e. in Naples the units of account were silver ducats and silver *carlini*, but silver was reckoned with copper, i.e. *grana* coins). The exchange of the new coins for the old coins began in 1689 and was carried out via the deposits of the public banks.[1006] In 1691 the Marquis de San Esteban decided on a further enhancement of 20 per cent. The result was that the ducats of the Marquis del Carpio, then called *ducatone*, now totalled 132 *grana*, the ducats of the Marquis de San Esteban became "coins of 12 *carlini*" (i.e. one *carlino* equals 10 *grana*) and a new issue of lighter ducats of 100 *grana* was made.

This was the two-stage *alzamento* of the Marquis de San Esteban, criticised by Carlo Antonio Broggia and approved by Galiani. On the one hand, Broggia criticised the debasement of the ducat by the Marquis de San Esteban; on the other, he criticised the extent of the *alzamento*, which made it clear that the purpose was to generate seigniorage. According to Broggia, the ducat, i.e. the money to which the exchange rate refers (*moneta dei cambi*), could not be reduced in its intrinsic value, as this would have a negative effect on the exchange rate, while the face value of the coin could be changed according to the value of bullion. Therefore, the 32 per cent increase for the adjustment of the monetary value was excessive and only the first enhancement of 10 per cent was appropriate. Galiani agrees with Broggia that the first enhancement was a correction of the ratio of silver to copper and the second was the real *alzamento* that allowed the sovereign to receive an extraordinary seigniorage, but unlike Broggia he praises this policy.[1007] However, his position on debasement is rather controversial, for like Broggia he is in general against debasement, but in this context he tacitly approves of it. Broggia instead cites the examples of famous silver trade coins such as the Venetian ducat and the Austrian thaler, which maintained their weight and fineness precisely and constantly. In polemic with the numismatist Cesare Antonio Vergara, who was of the opinion that even the first enhancement of 10 per cent led to a devaluation of the exchange rate and a resulting imported inflation, Broggia claims that it was in fact the immediately following debasement of the coin that led to such results. It should be noted, however, that a nominal adjustment of the coin by definition affects the

[1004] See Galasso G., *Napoli spagnola dopo Masaniello*, op. cit.
[1005] See Broggia C. A., "Trattato delle monete", op. cit.
[1006] See Galasso G., ibid.
[1007] See Galiani F., *On Money*, op. cit., Bk. 3, ch. 2.

exchange rate, while the psychological effect that could be generated by a debasement on the exchange rate and lead to an excessive devaluation is hardly measurable, so it is impossible to say here who was right and to what extent. Be that as it may, Broggia claimed that the ducat of 100 *grana*, instead of being minted with a lower weight, would have been designed as imaginary money modelled on the Venetian *ducato di banco* (even if the latter was not actually stabilised against copper but against the old Venetian silver ducat). Galiani disagreed on this point, as it made no sense to look for a constant unit of account, because "a constant and immutable measure need not be desired, nor even be sought after. A slow and less sensitive change has been substituted for it",[1008] which means that neither copper nor silver were stable because they changed in price. According to Galiani, one can simply reckon in *grana* when paying in copper, and ducats when paying in silver, so that the imaginary money is not necessary. However, this position led him to accept the Marquis de San Esteban's debasement in order to maintain the ducat of 100 *grana* as the unit of account,[1009] as otherwise the real *alzamento* would not have been realised, as he confirms:

> If the money of account had not changed at the same time, there would have been no augmentation of the currency. But once the value of the grana had been altered, and allowed to become equal to 1/132 part of the ducat of one ounce, a trappeso and 15 acini of silver, — of which they were actually 1/100 part, and having nevertheless maintained the ducat at only 100 grana — an augmentation followed it.[1010]

Apart from this, the imaginary money for Galiani is not necessary because the unit of account is inherent in money. According to Galiani, "whenever money is used to express the value of anything, ideal money is considered. That is to say, a single word, just a number suffices to evaluate each thing, since price merely consists of a proportion which is admirably explained and understood by numbers".[1011] So it seems that Galiani (in the original text) conceptually distinguishes between "imaginary money" (i.e. " which does not correspond exactly to any piece of metal to which it is equivalent in value")[1012] and "ideal money" (i.e. which measures prices). The two may coincide, but the latter is originally inherent in a coin and can only become imaginary later, when the coin is no longer minted. In fact, the existence of "ideal money" can enable *alzamento* by shifting the "number" of coins upwards, even in a system like that of Naples where there was no "imaginary money". Although Galiani's adherence to the metallistic concept of "universal money", i.e. the money used as a "pledge", which is necessary in the international exchange, places him in the

[1008] See Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 75 (Bk. 2, ch. 2).
[1009] See Galiani F., *On Money*, op. cit., Bk. 3, ch. 2.
[1010] Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., pp. 162.163. For the original text see ch IV, para. 2.4 and Galiani F., *Della moneta*, op. cit., p. 185; id., *Della moneta. Edizione seconda*, op. cit., pp. 219.
[1011] See Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 49 (Bk. 1, ch. 4).
[1012] See Galiani F., *On Money. A Translation of Della Moneta by Ferdinando Galiani*, op. cit., p. 73 (Bk. 2, ch. 2).

tradition of Davanzati and Locke, the "shiftability" of the nominal value of money by the sovereign places him closer to the tradition of chartalism,[1013] also in line with Keynes' quest for monetary autonomy at national level.[1014]

2.6 Concluding remarks

Galiani creates a theoretical economic model of *alzamento* on the basis of historical cases. In particular, he takes into account the augmentation of 1718 in France and the *alzamento* of 1691 in Naples. His theory of *alzamento* states that the nominal value of all money is increased without affecting the intrinsic value of the coins. In both Naples and France, however, where the enhancement was experienced, the low money (e.g. copper and billon) was not involved, and contextually the features of the coins were changed. In France, imaginary money (i.e. the *livre*) was used to increase the value of gold and silver. In Naples, where there was no imaginary money, silver was raised against copper, and gold, which was reckoned in silver *carlini* and *ducati*, automatically increased by the same percentage. The *alzamento* was thus achieved by raising the "ideal money", i.e. the "number" of silver coins, which was represented by the number of the "money of account", i.e. the copper *grana* used to calculate the silver. However, while in France the *augmentation* could also be possible for copper by making "imaginary money" the linchpin of the manoeuvre, this was not possible in Naples, where the only way to enhance silver was against copper. Moreover, while the money enhancement in France in 1709 was accompanied by a reinforcement of the metal content of the coins, in Naples the debasement of the ducat was part of the enhancement, as Galiani himself acknowledged.

On the one hand, Galiani introduces Broggia's concept of "sound money", but ignores his call for the introduction of imaginary money in order to avoid debasement. On the other hand, Galiani puts forward the theory of *alzamento* of all money, so that the effects of *alzamento* would be neutralised in the long run, as all nominal values would increase by the same percentage, but does not acknowledge the need for imaginary money to enhance all money. Nevertheless, he provided us with a "normative" macroeconomic model that is still fascinating today.

As far as the international debate is concerned, we have seen that an adjustment of the bimetallic ratio between gold and silver, as proposed in England in 1695, would have had some of the typical effects of the *alzamento*, such as the nominal increase in the money supply, a positive effect on the balance of trade, the rise in prices, the seigniorage in the

[1013] See Rosselli, A., "The role of the precious metals in Della Moneta by Ferdinando Galiani", op. cit.
[1014] See Keynes J. M., "A Treatise on Money", op. cit.

event of a recoinage. However, a different strategy was chosen in England to deal with the monetary and financial crisis, namely a financial revolution that was incompatible with the money enhancement because it would have undermined the store of value function of money, i.e. the right of creditors, such as the gentlemen of the Whigs represented by the principles of John Locke, who granted a loan of £1.2 million to the sovereign through the Bank of England. The opposition between the King and Parliament turned in favour of the latter in the England of the Glorious Revolution, while in France the King reasserted his power, as in the clash with the Paris Parliament of 1718 considered by Galiani (even if the Parliament in France was of course a different institution from the English one). Galiani clearly sided with the king against the intermediary bodies, which often represented the ruler's creditors. When the financial health of the state is jeopardised, it is the creditors, who in a financial crisis are usually speculators, rentiers, "*agioteurs*", often foreigners, who enrich themselves on the shoulders of the productive classes (i.e. peasants and artisans). In this respect, Galiani seems to agree with John Law in France, while in England the creditors were the backbone of the financial revolution, but also in Milan and Venice they coincide with the powerful class of merchants and financiers.

Alzamento thus represents a solution to the sovereign's inability to pay typical of an absolute monarchy. It also provides liquidity for the settlement of short-term private debts. The ability to increase the "number" of coins by the ruler provides the flexibility that a public bank modelled on the Bank of England would have offered in a more developed financial system. We have called this characteristic "chartalism", but it does not apply to those who merely argue in favour of adjusting the face value of coins to the value of the metal content, such as Newton in England, Broggia, Costantini in Italy and basically all economists of the Milan school, because they reject the political side of money. Galiani's chartalism, however, is something special. He favoured the management of the unit of account with respect to precious metal, the universal money, in order to give the national financial system the necessary flexibility also in relation to international flows of precious metals.

Appendix

1. Unit of account and units of measurement in connection with money

In the ancient monetary system currencies were valued either by their nominal value, usually measured in pounds, or by their weight and fineness, measured in marks and carats, respectively. These measures are quite similar in both the English and Italian cases, but there were many peculiarities between the different states in Italy. See the following for England and Italy in the 17th and 18th century:

Unit of account

1 pound *(Lira) = 20* shillings *(soldi)* of *12* pennies *(denari)* each.

England

If you give the value of the English crown at Elizabethan value of 5*s* 2*d*, it means 5 shillings and 2 pennies (where *d* stands for *denarius*, the original Latin version of penny).

Italy

If you give the value of the *filippo di Milano* in the 18th century as 7.10, it means 7 *lire* and 10 *soldi*, or 7 *lire* and a half, it was the way they used to write it down.

Unit of measurement for the weight

England

1 troy pound (lb t) = 12 troy ounces (oz t)
1 troy ounce = 20 pennyweights (dw t)
1 troy pennyweight = 24 grains

Italy

1 marco (mark) *= 8 once* (ounces) *of 24 denari* (pennyweights).

Then you can find the *denaro* (pennyweight) *= 24 grani* (grains) or 6 *carati* (carats) of 4 *grani* (grains), but also other subdivisions were possible.

See Cipolla C. M., *Le avventure della lira*, op. cit., p.127.

Unit of measure of fineness

England

Fineness is measured by the same measures of weight for silver and in 24 carats for gold. For example, on the one hand you give the Elizabethan sterling fineness of money as 11 oz and 2 dwt silver, 18 dwt alloy to the troy (12 oz) pound, on the other hand, you give the fineness of the gold guinea as 22 carats fine and 2 carats alloy.

See Li M. H., *The Great Recoinage of 1696 to 99*, op. cit., pp. 47-48.

Italy

Both gold and silver fineness are measured in *carati* (carats) in two possible ways: 1 *carato* (carat) out of 100 *carati* or 1 *carato* of 24 *carati* for gold and 1 *carato* of 12 for silver (*1 carato= 24 grani*).

See Carli G.R., *Dell'origine e del commercio della moneta,* op. cit., p. 198 - 201.

2. Arbitrage on coins, explained by Carli

According to Carli, arbitrage is a consequence of the disproportion in coins, i.e. the disproportion between the face value and the intrinsic value of coins made either of the same metal or of different metals. He described this situation, which is characteristic of the whole of Italy, in a special table.[1015] To make the table, he takes all the "common money" (*monete comuni*), that is, the money in circulation in all the Italian markets (i.e. Venice, Florence, Rome, Turin, Boulogne, Naples, Milan, Modena, Lucca). Most of it is gold money: *zecchini di Venezia, dobble di Spagna, dette delle Colonne, dette di Portogallo, dette di Francia vecchie, dette di Francia nuove, dette d'Italia, gigliati fiorentini, zecchini romani, detti genovesi, ongari bragoni, ongari Cremnitz, ongari di prima sorta, ongari di seconda sorta*; and some is silver money: *filippo di Milano, giustina di Venezia, scudo di Venezia, scudo di Roma, genovina, ducato veneto*.

In each city, the price of the "common money" is expressed in a different unit of account (e.g. Venetian *lira* in Venice or Milanese *lira* in Milan). In the following I reproduce an adapted table from Carli's original, in which only some coins and the respective value in relation to the unit of account of each state are given, in order to follow an argumentation of the author about the possibility of currency arbitrage:

[1015] Table 1 in the appendix of Carli G.R., *Dell'origine e del commercio della moneta*, op. cit.

tab./fig. 23 **Carli's tab. 1: Coins and units of account in Italy**

State, unit of account	***Dobble di Spagna***	***Gigliati Fiorentini***	***Filippo di Milano***	***Scudo Romano***
Venezia, Lire of *piccoli (soldi) 20*	37.10	21.5	11	12
Bologna, Lire of *baiocchi 20*	18	10.8	5.5	5.10
Roma, Scudi of *100 baiocchi*	3.55	2.5	1	
Milano, Lire of *soldi 20*	25.1	14.5	7.10	8.5
Torino, Lire of *soldi 20*	16.12.10	9.15	4.16	5.5
Firenze, Paoli 1 and a half *= 1 Lire* of *Firenze*	54.10	20	10	10
Modena, Lire of *soldi 20*	51.10	30	15	16.6
Napoli, Carlini of *grana 10*	45		12 and a half	13 and a half
Genova, Lire of *soldi 20*	23.6	13.6	6.12	7.2
Lucca, Paoli of *soldi 20* *(Paoli 1* and a half *= 1,2 Lire* of *Lucca)*	34 and a half	20	10 and a half	10 and a half

Source: Carli G.R., *Dell'origine e del commercio della moneta*, op. cit., tab. 1, appendix (editor's elaboration)

For example, Carli explains arbitrage in Rome this way:

> *Ai Milanesi ha tornato in vantaggio gittar in Roma filippi per aver in iscambio altrettanti scudi; e i Veneziani ben volentieri gittarono colà i gigliati, estraendovi per ogni gigliato filippi 2, baiocchi 5. E perché in Roma la dobbla di spagna vale scudi 3 e baiocchi 55, e il gigliato scudi 2.5, onde per ogni dobbla vi vogliono gigliati 1, scudi 1 e mezzo; così a' veneziani tornò in vantaggio portar a Roma le dobble di Spagna, che là vagliono lire 37.10, per barattarle in tanti gigliati e scudi; perché in Venezia un gigliato e scudi 1 e mezzo danno lire 39.15. Quindi i mercatanti di Roma carichi di dobble, vedendo che a Bologna valevano esse baiocchi 5 di più per cadauna, cioè scudi 3.60, si spogliarono d'esse e ricchi si fecero di baiocchi.*
>
> [The Milanese had the advantage of taking *filippi* in Rome and receiving the same amount of *scudi* in return; and the Venetians liked to take the *gigliati* there drawing for each *gigliato 2 filippi* 2, 5 *baiocchi*. And since in Rome the *dobbla di Spagna* is worth 3 *scudi* and 55 *baiocchi*, and the *gigliato* 2.5 *scudi*; since the *dobbla* there is worth 1 *gigliato*, 1 *scudo* and a half; it was advantageous for the Venetians to bring the *dobble di Spagna* to Rome, where they are worth 37.10 *lire,* in order to exchange them for many *gigliati* and *scudi*; because in Venice 1 *gigliato* and 1 *scudo* and a half yields 39.15 *lire.* Then the merchants of Rome, loaded with *dobble*, saw that in

Bologna they were worth 5 *baiocchi* more, that is 3.60 *scudi,* they got rid of them and filled themselves with *baiocchi*.][1016]

This is how arbitrage works in the marketplace of Rome:

➢ 1 *filippo* = 1 *scudo* (100 *baiocchi*).

For the Milanese merchants, it is convenient to exchange the *filippo* for the *scudo* in Rome and take the *scudo* in Milan, because the *filippo* is worth 7.10 *lire* of Milan, while the *scudo* is worth 8.5 *lire*. So the profit in this case is: (7 *lire*, 10 *soldi*) - (8 *lire*, 5 *soldi*) = 1 *lira*, 5 *soldi*.

➢ 1 *gigliato* = 2 *filippi*, 5 *baiocchi* = 2 *scudi*, 5 *baiocchi*.

For the Venetian merchants it is convenient to exchange the *gigliato* in Rome for 2 *filippi*, 5 *baiocchi*, because 2 *filippi* = 22 *lire* of Venice and 5 *baiocchi* = about 12 *piccoli*, while 1 *gigliato* = 21 *lire* of Venice and 5 *piccoli*; so the profit is: (22 *lire*, 12 *piccoli*) - (21 *lire*, 5 *piccoli*) = 1 *lira*, 7 *piccoli*.

➢ 1 *dobbla* = 3 *scudi*, 55 *baiocchi* = 1 *gigliato*, 1 *scudo* and a half.

For the Venetians it is convenient to exchange in Rome the *dobbla di Spagna* for 1 *gigliato* and 1 *scudo* and a half, because in Venice 1 *dobbla* = 37.10 *lire* of Venice, while 1 *gigliato* and 1 *scudo* and a half = 39.15 *lire* of Venice, so they can make 2.5 *lire* of Venice profit.

➢ In Boulogne, 1 *dobbla* = 18 *lire* of *baiocchi* = 360 *baiocchi*; while in Rome 1 *dobbla* = 3 *scudi*, 55 *baiocchi* = 355 *baiocchi.*

It is convenient for the Roman merchant to sell *dobble* in Boulogne in exchange for *baiocchi*, making 5 *baiocchi* profit per *dobbla*.

Carli proceeds in defining the exact weight and fineness of the metal content of coins. To do that, it adopts the unit of measure of weight current in Venice. As for the gold, it is divided in *grani* (grains), *carati* (carats), *once* (ounces), *marche* (marks), in the following proportion:

4 grani = 1 carato
144 carati = 1 oncia
8 once (1152 carati) = 1 marca

As for the fineness of the gold, you must count the *carati* of the *"peggio"* [worse, ed.], i.e., the proportion of alloy in the gold piece, and if you say, for example, that a certain kind of money has 100 *carati* of "*peggio"*, it means that it has 100 *carati* of alloy per mark (Carli also mentions the other way of calculating the fineness used abroad, which is to divide gold into 24 *carati*, while silver is divided into 12 *denari*, which in turn are divided into 24 *grani*, but he prefers to use the Venetian system).

[1016] Carli G.R., *Dell'origine e del commercio della moneta,* op. cit., p. 195 (editor's translation).

He thus calculates how many coins are needed for each "*moneta comune"* to equal one mark of fine metal, in order to compare the different market prices and determine the disproportion.

To do this, he applies the following formula:

X=MM/U(M-P)

Where *X* is the number of coins cut from a mark of fine metal, *M* is the mark, *U* is the gross weight of the coin, *P* is the "*peggio"* (i.e., the carats of alloy per mark).

So, for example, if you take the *zecchino* of Venice, it is fine gold and weighs 16 240/273 *carati*, so the number of *zecchini* from a mark of fine gold is 68 ¼. Then take the *dobbla di Spagna* and you have the following:

P= 106 carati
U= 33 carati
X= (1152 x 1152) / 33 x (1152 - 106)= 38 9/20

So you have 38 9/20 *dobble di Spagna* from a mark of fine gold.

Now, if the *zecchino* is worth 22 Venetian *lire* in Venice and the *dobbla di Spagna* is worth 37.10, then the price of a mark of fine gold in the form of *zecchini* is 30,030 *soldi*, while in the form of *dobble* it is 28,837.6 *soldi*, with a difference of 1,192.6 *soldi*, which is the disproportion between *dobbla* and *zecchino* in Venice.[1017]

Carli then, in order to calculate the "disproportions", made another table in which he gives for each money the value of a mark of precious metal in the respective market in relation to the unit of account of that market (i.e., *soldi* in every marketplace except for *baiocchi* in Rome and Boulogne and *grana* in Naples), and calculated the difference either to the Venetian *zecchino* (of fine gold) for gold, or to the Milanese *filippo* (of fine silver) for silver.[1018]

The solution to prevent arbitrage, according to Carli, is first to adjust the external ratio *("proporzione esterna")*, i.e. of the ratio between gold and silver, which Carli puts at 1:15, corresponding to the exchange rate between the *zecchino* (fine gold) and the *filippo* (fine silver), but he demands that all states "find out what is the average proportion of metals

[1017] Carli G.R., *Dell'origine e del commercio della moneta,* op. Cit., pp. 198-204.
[1018] Table 2 in the appendix of Carli G.R., *Dell'origine e del commercio della moneta,* op.cit.

minted in Italy and beyond in Europe";[1019] second, to adjust the internal proportion *("proporzione interna")*, i.e., the exchange rate between different types of money and also between the whole and the parts of a single type. This can be done, as we have just seen, on the basis of the metal content of each coin, but also taking into account the expenses of the mint (*spese di monetaggio*). In the *Dissertazione VI* he elaborates on these points: first, he calculates the Italian bimetallic ratio as 1:14 ⅔ and the European one as 1:14 ½; second, he says that coinage fees are levied on national money (they should be within 1.5 or 2 percent), so the correct bimetallic ratio between national currencies must be calculated because the ratio between national and foreign coins is affected by different fees, thus it is arbitrary.[1020] On the basis of this information, it is necessary to withdraw the disproportionately heavy coins and mint them again with the correct weight. These coins should be exchanged by the mint at face value and the difference with the intrinsic value should be made up by the sovereign so as not to penalise the citizens. Finally, it must regulate the rate of foreign coins allowed in the state, simply according to their metal content. This is the policy to control the monetary disorder that is spreading in Italy and that causes money to flow out and interest rates to rise due to the scarcity of money. Summing up, Carli follows a strictly metallistic view, according to which he believes that the solution to monetary disorder is to maintain the correct proportions between coins, which must be full-bodied coins, according to the market value of precious metals, in order to escape the arbitrage that drains money.

3. The contract between the government of Milan and the mint master Giuseppe Triepi in 1710, explained by Carli

Carli analyses a coinage contract that the Milanese government concluded with the mint master Giuseppe Triepi in 1710, as well as the execution of the contract to show how it was carried out. Carli says:

> *Le condizioni di quella impresa furono le seguenti: che l'impresario dovesse ogni anno coniare la somma di filippi 200.000 e L. 60.000 di quattrini, abbonandogli a titolo di fattura la Camera soldi 12, d. 6 per ogni marco tanto d'argento come di rame. | Le suddette L. 60.000 di quattrini, computati 140* [105, this is a typo, ed.] *per marco come allora correvano, sono marchi 34.285 25/35, che a s. 12 d. 6 per marco sono L. 21.428 s. 11. | Come il marco di rame valeva allora soldi 16 ed anche meno, così, aggiunto a questo valore reale del rame i soldi 12, d. 6 di bonificazione per la fattura, si computavano per ogni marco di quattrini s. 28 d. 6, ma poiché per ogni marco*

[1019] *"...debbano] ritrovare quale sia la media proporzione de' metalli monetati in Italia ed in Europa ancora",* Carli G.R., *Dell'origine e del commercio della moneta,* op. cit., p. 225.
[1020] Carli G. R., *Delle monete e dell'istituzione delle zecche in Italia,* Dissertazione VI, tomo II, op. cit., pp.408 - 414.

coniava l'Impresario 140 quattrini, così per soldi 28 d. 6 ne dava soldi 35, e per conseguenza veniva a guadagnare soldi 6 d. 6 per ogni marco, che sono per anno lire 11.142 s. 16. | [...] | Debito dell'impresario era di coniare marchi 34.285 circa all'anno, e per conseguenza in otto anni ne doveva coniare marchi 274.280. | Ma poiché dalle note di zecca si rileva essersi dall'anno 1710 sino al 1719 coniati marchi 291.538, che sono di più del concordato marchi 17.258, così l'Impresario guadagnò in ragione di s. 6, d. 6 il marco altre L. 5.608 s. 17.| Come però ne' Filippi si computò allora la manifattura per s. 1 d. 6 [s. 12 d. 6, this is a typo, ed.] *per ciascheduno, così sopra tale specie di moneta non può calcolarsi a favore dell'Impresario nessun vantaggio, trattone quello che poteva trarsi dalla bonificazione del rimedio in peso e in lega, di che si parlerà più abbasso. | Può dunque senza paura di equivoco, stabilirsi che sopra L. 60.000 di quattrini vi andavano L. 20.000 di aggravio da bonificarsi con la diminuzione del valore intrinseco in esse L. 60.000, il che produce che di reali vi fossero L. 40.000, e d'immaginarie L. 20.000, cioè in ragione di 50%. |Questa era la legittima riduzione accordata dal Magistrato nell'intrinseco della moneta, ed a questa vi si aggiungeva tutto quel più che somministrar poteva l'industria.*

[The terms of this commitment were as follows: the mint company was to mint each year the sum of 200,000 *filippi* and *L.* 60,000 *quattrini*, with the chamber granting him *soldi* 12, *d.* 6 for each mark of silver and copper. | The above *L.* 60,000 *quattrini*, calculated at 140 [105, this is a typo, ed.] per mark, as they were then, are 34,285 25/35 marks, which at 12 *s.* 6 *d.* per mark is *L.* 21,428 *s.* 11. |Since the copper mark was then worth 16 *soldi* and even less, the *s.* 12 *d*. 6 of the complaint for the manufacture was added to this real value of the copper, for each mark of *quattrini s.* 28 *d*. 6 resulted, but there the mint struck 140 *quattrini* for each mark, so instead of *s*. 28 *d*. 6 per mark he gave *s*. 35, and as a result he earned *s.* 6 *d.* 6 for each mark, that is 11,142 *lire* per year *s.* 16| [...] | The mint was obliged to mint about 34,285 marks per year, and consequently he had to mint 274,280 marks in eight years. | But since the records of the mint show that 291,538 marks were minted from 1710 to 1719, more than the agreed 17,258 marks, the mint earned another *L.* 5,608 *s.* 17 at *s.* 6 *d.* 6 per mark.| But as for *filippi*, the production was estimated at *s.* 1 *d.* 6 [*s*. 12 *d.* 6, this is a typo, ed.] per piece, no advantage over this kind of currency can indeed be calculated in favour of the mint, except that which results from covering the cost of the metal by weight and alloy, of which we shall speak below. | It can therefore be said without misunderstanding that of the 60,000 *L. quattrini*, 20,000 *L.* of the fee has been recovered with the decrease in intrinsic value in these 60,000 *L.*, giving a real value of *L.* 40,000 and an imaginary value of *L.* 20,000, i.e. a rate of 50%. | This was the legitimate discount that the magistrate granted on the intrinsic value of the money, and to which was added everything that the industry could handle.][1021]

Let us explain that above. As for the *quattrini*, the mint would have had to issue 60,000 *lire*, which was about 34,285 marks at 105 *quattrini* per mark, and the government credited 12.6

[1021] Carli G.R., "Piano ragionato per la rifusione della moneta nello stato di Milano" (1766), in Vianello C. A., *La riforma monetaria in Lombardia nella seconda metà del '700,* pp. 73-74 (my translation). Note that there are two mistakes in the text, probably Vianello's typos, which have been corrected by the editor.

soldi per mark as coinage, and 16 *soldi* was the price of a mark of copper. So the state guaranteed 28.6 *soldi* per mark, but the mint minted more *quattrini* per mark than agreed (i.e., 140 instead of 105) and earned 6.6 *soldi* more per mark, which at 140 *quattrini* corresponds to about 11,142 *lire* per year, while the coin charges were about 20,000 *lire*. Thus, Carli claims that the mint earned the minting fees, that is L. 20,000 over L. 60,000, i.e. 1⁄3 of L. 60,000, within the framework of the contract, realised as an "imaginary value" (*"la legittima riduzione accordata dal magistrato nell'intrinseco della moneta"*), plus the non-contractual additional profit due to the further reduction in intrinsic value, which brought in about 11,000 *lire* per year (but Carli reports that this value will increase as long as the number of *quattrini* per mark increases over time other minted firms to about 170),[1022] and then the surplus in the minting of the *quattrini*, which brought in almost 5,400 *lire* throughout the period and possibly more (*"tutto quel più che somministrar poteva l'industria"*). On the other hand, despite the contract, no coin fees were charged for minting the *filippi*, which, as can be observed, probably prompted the mint, with the acquiescence of the government, to squeeze the *quattrini* business as much as possible. After all, we also have to take into account the annual expenses of the mint, i.e. 5375 *lire* for renting the *regia camera* and 2500 *lire* for the *questori,* plus 7757 *lire* for the administration of the mint, such as staff costs (but again, 4081 *lire* included for the *questori*).

4. A short comparison between Neri's plan for a monetary union and the Latin Monetary Union

It is interesting to compare Neri's plan for a monetary union[1023] to the Latin Monetary Union (LMU) that emerged more than a century later between Italy, France, Switzerland and Belgium with Neri's proposal. Let us see the main features of the LMU designed at the Paris International Conference in the words of Marcello de Cecco:

> The 1865 conference [...] commenced with a strong inclination amongst its delegates toward gold monometallism as the basis for European monetary integration. Yet, it ended with a formal agreement maintaining bimetallism at the 1:15.5 mint par. [...] | The signatory states agreed to limit the maximum issues of divisionary currency to a total of six francs per inhabitant as far as silver coins were concerned, and to fix the titre of coined silver at 835. [...] | Gold and silver full bodied coins struck by the four states' mints [...] were to be freely accepted at the member states' respective public treasuries without any limit. Divisionary coins issued by any of the signatories were to be freely accepted by all member states as payment for obligations incurred by citizens of any of the other states up to a maximum of 100 francs per transaction.

[1022] Carli G.R., "Piano ragionato per la rifusione della moneta nello stato di Milano", pp. 74-75.
[1023] See Chap. 3, para. 2.

> Private citizens were obliged to accept divisionary coins in payment for obligations incurred by citizens of other member states up to a maximum of 50 francs per transaction. Each state was required to exchange its own divisionary coins, presented by other member states, into gold and silver full-bodied currency.[1024]

In the first passage we can notice two things. First, the initial tendency toward monometallism is reversed to bimetallism by fixing the gold-silver ratio at 15 ½. Apart from the ratio of 15 ½ (exactly the same that Neri had proposed for Italy), what is significant here is the fact that the decision to fix the gold-silver ratio makes the difference between bimetallism and monometallism and confirms that Neri's model goes in the same direction. In the second passage, the fineness of silver is fixed. We know that the member states had already adopted the French metric system and irrevocably fixed the parity of their currency with silver, abandoning imaginary money. But even in a framework in which imaginary money is maintained, Neri proposed that the silver standard be irrevocably fixed for each state, so that a fixed exchange rate would apply in the Union and gold and silver coins could circulate freely within the Union. The other aspect is the "divisional money", which is regulated, as will also become clearer in the third passage, according to the standard formula recalled by Cipolla.[1025] Thus small money, which is limited in quantity, can circulate in the Union and is convertible into gold and silver money, even if the amount offered for larger payments is capped. This solution is clearly a further development of Neri's proposal, in which small money is limited to the borders of the individual member states. Neri, however, adhered to the idea of a convertible low currency, on condition that it was recast according to the principles of proportionality with both coins of higher denomination and coins of different metals.

5. The currency plan of Neri from 1754

The document, dated the first of February 1754, is in the State Archives of Turin and is entitled *Ragionamento del presidente Neri per un regolamento in materia di monete, colle risoluzioni date dal sig. Duca di Modena in qualità di Governatore di Milano* [Reasoning of the president Neri for a regulation on coins, with the resolutions of the duke of Modena as governor of Milan, ed.].[1026] In fact, it is not just another of Neri's reflections on the monetary question, but it is a plan for an imminent reform of Milan, albeit crippled as far as the recoinage part is concerned, which may have been the reason why it was not executed.

[1024] De Cecco M., "The Latin Monetary Union revisited once again", op. cit., p. 67.
[1025] See chap. 2, para. 4.
[1026] Neri P., *Ragionamento del presidente Neri,* AS Torino, Archivio Balbo Junior, vol. 11 carte Bogino. The text is also published in Gianelli G., *Studi sulle dottrine monetarie del settecento*, Università degli Studi di Genova, appendix pp. 106 - 123. The translations here are by the editor.

In fact, it is a report with the possible content of an imminent decree addressed to Francesco d'Este, Duke of Modena and Governor of Milan, who wrote in the same document the instruction to elaborate the draft decree, as Neri explains in the introduction:

> *Avendomi Vostra Altezza Serenissima comandato di riassumere la commissione datami nella passata Estate dal Sig. Conte Pallavicini di proporre un regolamento nella materia monetaria che possa essere conveniente alle circostanze di questo Stato, prescindendo per ora dall'idea di poter concordare tale regolamento con i Principi confinanti, io ho fatte tutte le osservazioni che ho credute opportune per dare un ordine naturale alle diverse questioni che cadano sopra questa materia e per rilevare in ciascheduna di esse i punti principali sopra di cui converrebbe che la Superior prudenza dell'A.V.S. decidesse le massime che restano o disputabili o dubbie, acciò sopra le sue decisioni si possa passare alle successive operazioni necessarie per riformare la vegliante Grida e per compilare la nuova con tutte quelle ulteriori provvidenze che Ella si sarà degnata approvare.*
>
> [Having summarised, Your Serene Highness, the order of Count Pallavicini to propose a regulation of monetary affairs suitable to the circumstances of this State, leaving aside for the moment the idea of being able to reconcile such a regulation with neighbouring principles, I have made all the remarks which I thought proper to give a natural order to the various questions which arise in this matter, and to record in each particular the main points on which the highest prudence of the Your Serene Highness to decide upon the maxims which remain either disputed or doubtful, we may proceed to the further steps necessary to reform the present decree and to complete the new decree with all those further provisions which you would resolve to approve, ed.] (para1)

As for the framework of the document, in the right column of the paper there are 40 pages divided into 76 paragraphs, while in the left column there are the final decisions of the Governor of Milan, written in the form of short orders without signature, but recognisable by a different calligraphy and a surrounding cornice, which we will reproduce in full together with the proposals of Neri. Let us now proceed to the analysis of the document.

Paras. 1- 4. The money tests made in Turin are the point of departure for the reform.

First of all, it must be said that throughout the document Neri refers to all the tests and calculations on the weight and fineness of coins and relative value that were carried out in Turin. He also refers to the work done in the *Osservazioni* and to the attached monetary tables, as well as to the attached documents such as the memoranda of the conferences with the mint directors during the years 1751. So, the first proposal is to keep the coin tests carried out in Turin as a basis for the Milan monetary system.

Governor Decision (GD): *"Si ritenghino per base della nuova Grida i saggi concordati in Torino con i conseguenti esperimenti in Milano."* [The tests agreed in Turin with the subsequent experiments in Milan are to be taken as the basis for the new decree] (para 3).

GD: *"I saggi fatti in massa si parifichino ai saggi fatti in particolare, e nelle monete forestiere incontrandosi saggi di diverse Bontà, si ritenga la Bontà minima."* [The mass tests are to be equated with the individual tests, and in the case of foreign currencies meeting tests of different fineness, the minimum fineness is to be used] (para 4).

As for the current Milan monetary system, we refer to Carli's table, which we also show here as follows:[1027]

tab./fig. 24 **The Milanese coinage BIS***

Money	**Metal**	**Value**
Quattrino	copper	*3 denari* *(4 quattrini = 1 soldo)*
Parpaiola	copper/alloy	*2 soldi e mezzo* *10 quattrini*
Doppia parpaiola	copper/alloy	*5 soldi* *20 quattrini*
Mezza lira	silver	*10 soldi* *4 parpaiole* *40 quattrini*
Lira	silver	*20 soldi*
Filippo	silver	*Lire 7 e mezzo (7.10)*
Ducatone	silver	*Lire 8.12*
Doppia	gold	*Lire 25.5*

*see tab. 81, ch. 3, para. 1.2.

Para 5. *"Fissazione del campione"*

Neri proposes to take the *filippo di Milano* with its current value of 7.10 *lire* as a pattern to which all coins must refer.

GR: *"Si fissi per Campione il Filippo di Milano nel prezzo di Lire sette, e mezza."* [The *filippo di Milano* is to be set as a sample at the price of seven and a half *lire*] (para 5).

Paras. 6-9. Regulation of national money of silver.

[1027] The only difference between Neri and Carli is that the latter defines both the *quattrino* and the *parpaiola* as copper money that is part of the *moneta erosa*, even though he states that the *quattrino* is all copper, while the former distinguishes the *quattrino* of copper from the *parpaiola* of alloy and considers only the *parpaiola* as *moneta erosa*.

All silver coins should be calibrated to the pattern. As long as the price of *ducatone* (i.e., *lire* 8.11.3) is correct, the *lira* (or *pezzo da 20 soldi*) and the *mezza lira* (or *pezzo da 10 soldi*) should be withdrawn and recast into new *lira* and *doppia lira* with the appropriate silver content, as Neri says:

> *[...] il prezzo del Ducatone non ammette nessuna difficoltà, e tutto il dubbio si restringe alle predette Monete minori di 20 e 10 soldi, le quali non sono battute in proporzione al Filippo.*
>
> [The price of the *ducatone* does not allow any difficulty, and all doubts are limited to the mentioned smaller coins of 20 and 10 *soldi*, which are not beaten in relation to the *filippo*, ed.] (para 7)

It is actually clear that fixing the price of the 20-*soldi* coin at 19 *soldi* and the 10-*soldi* coin at 9 *soldi* and 8 *denari*, as Neri calculates, is not reasonable, since these coins are used in small trade and their value must be clear and immediate, and they have always been used as 20- and 10-*soldi* coins, so the better solution would be to mint them anew. It is clear, then, that the manoeuvring of the tariff reaches a limit as long as there is the habit of counting on coins of a certain value, so that a recoinage is the best way to proportion these coins while retaining their original face value.

However, the *mezza lira (10 soldi)* and the *5 soldi*, because they were too small, could be minted in alloy, so that they would become part of the "*moneta erosa*" [eroded money]. Neri writes the following:

> *La Moneta di 10 soldi potrebbe non fabbricarsi in proporzione del Filippo, perché essendo molto minuta potrebbe credo senza pregiudizio battersi alla Lega della Moneta erosa e con ciò si potrebbero convertire in Monete di 10 e 5 soldi le presenti monete di 20 e 10 da ritirarsi , e l'utile che da tal conversione potrebbe risultare sarà sufficiente a pagare la spesa della nuova Lira semplice e Doppia da battersi in proporzione del Filippo* [...].
>
> [The *10 soldi* coin could be minted without the ratio to the *filippo* because, being very small, it could be safely minted in the alloy of the eroded money, and you could exchange the *20* and *10 soldi* coins to be withdrawn for *10* and *5 soldi* coins, and the profit that might result from such an exchange would be sufficient to pay the cost of the new single *lira* and *doppia* minted in proportion to the *filippo* [...]] (para 9)

GD: "*Si ritirino dalla Zecca tutte le monete di venti, e dieci soldi, che non sono battute in proporzione del Filippo per rendere tutta la moneta nazionale uniforme al Campione"* [Withdraw from the mint all twenty and ten coins that are not minted in proportion to the *filippo*, to make the entire national currency according to the pattern](para 7).

GD: "*Si stampino Filippi, Mezzi Filippi, e Quarti, e Pezzi di Dieci soldi, tutti in proporzione del Filippo fissato a campione"* [*filippi, mezzi filippi, and quarti, and pezzi di 10 soldi,* are to be

minted in proportion to the *filippo* according to pattern] (para 8). It seems that here the solution of minting the *10 soldi* and *5 soldi* in alloy was discarded.

Paras. 10-19. Regulation of foreign silver money.

First of all, there are some coins that are approved for circulation under the current decree, but they are not included in the monetary tables because they were not reliable in terms of weight and fineness when tested in Turin. These coins are: *testone delle fasce, pezza di Spagna colonnaria, pezza della rosa di Firenze, ducatone di mantova, scudo di Francia, ducatone di Borgogna, ducatone d'Alemagna, scudo di Bologna.*

GD: All these coins are to be excluded.

At this point, says Neri, it is necessary to fix the price of the authorised foreign coins, which should be done according to the intrinsic value as in the case of the national coins, but "*quando pur si voglia statuire il prezzo di affezione in preferenza dell'Argento nazionale*" [if we want to establish the "price of affection" for national silver] (para. 18), that is, in order to overvalue the national silver with respect to the foreign one, this *"predilezione"* [preference] should be as low as possible and not exceed the 2 percent (i.e., the rate agreed in Turin) in order to limit the possibility of arbitrage. And he will explain how arbitrage would work when he deals with the parity between gold and silver:

> *[...] con tal duplicità di proporzioni resterà sempre turbata la materia monetaria, non sarà mai possibile sostenere l'unità, e precisione del prezzo legale della Grida e in somma per comprare un marco d'Oro fino ci vorranno 15 marchi d'Argento fino in un genere di monete e in un altro genere ci vorranno 15 marchi e mezzo, ovvero basteranno 14 e mezzo, nella quale disuguaglianza resta assicurato tutto il profitto della scienza arcana dei Cambiatori di valute e resta aperta la miniera dei loro guadagni.*
>
> [As long as monetary affairs are always disturbed by this double nature, it will never be possible to maintain the unity and accuracy of the legal price of the decree, and in sum, to buy one gold mark, it will take 15 silver marks in one variety of coin, and in another variety 15 marks and a half, or only 14 and a half Therefore, the money changers could continue to make huge profits] (par. 29)

GD: *"Ritenuto il campione sopra fissato per la moneta nazionale, si assegni il prezzo delle monete forestiere col defalco di uno, e un quarto per cento sotto il Campione''* [In view of the pattern for the national currency set forth above, foreign coins are to be valued at a discount of one and one-quarter percent below the pattern] (para 19). Thus, foreign silver money in the country is undervalued by 1.15 percent. It appears that the procedure used here differs from that used by Neri in the *Osservazioni*, when the 2 percent coinage fee was

established for all currencies in the Monetary Agreement, so that Neri first subtracts the coinage fee from the value of the *filippo* and then calculates the silver standard. In this case, it must calculate the value of national silver coinage on the basis of the *filippo* at 7.10 *lire* and then reduce such a value by 1.15 percent (i.e. the seigniorage) to find the value of foreign silver coinage.

Paras. 20 - 41. Regulation of foreign money of gold.

There are foreign coins in the Turin table that are not comprised in the current decree, they are: *doppia di Venezia, zecchino di Genova, zecchino di Roma, doppia nuova di Savoia*.

GD: *"Si ammettino il Zecchino di Genova, e la Doppia nuova di Savoia, e il Zecchino di Roma, con che poi si facciano saggiare i Zecchini del Pontificato di Clemente XII per esaminare se siano di diverse bontà; e la Doppia di Venezia si escluda"* [The *zecchino di Genova*, the *doppia nuova di Savoia* and the *zecchino di Roma* are to be admitted, then the *zecchini del Pontificato di Clemente XII* are to be tested to check if they are of different fineness; and the *doppia di Venezia* is to be excluded] (para. 21)

Then there are the *doppia di Firenze* and the *doppia di Mantova*, which are included in the current decree but are not in the table for the same reasons we found for some silver coins.

GB: they are to be excluded.

At this point, the gold - silver parity is to be fixed, Neri proposed first the ratio of 1 to 15 7/20 (15.35) referring to the ratio that he found in the *Osservazioni* with reference to the whole Italy, then, since the reform is focused only on Milan, he suggests others possibilities calculating the average only for the commercially closest states such as Venice, Milan, Genua, Turin and possibly Modena and Boulogne and the result is in both cases is 15 1/16 (15.062).

GD: *"Si ritenga la proporzione di uno a quattordici, e undici dodicesimi"* [The proportion to be taken is 1 to 14 11/12 (14.916)] (par. 27). This proportion, as we have seen, is exactly the same that was proposed in 1751 by the senator Gabriele Verri on behalf of the government of Milan.

GD: *"Si desuma la suddetta proporzione dal prezzo dato all'Argento delle monete forestiere"* [This rate is to be calculated on the silver price of the foreign coins] (par. 28), which is against Neri's advice:

> *Ma se fusse stato deciso di statuire una differenza fra l'Argento nazionale, e il forestiero e fussero con ciò introdotte due classi di Argento di prezzo differente [...] io crederei che [il rapporto bimetallico, ed.] si dovesse desumere dall'Argento campione, poiché quello dà regola al prezzo dell'oncia di Argento in grana, e se si desumesse dall'Argento più basso noi rischieremmo di dare all'oncia di Grana un*

prezzo ideale, e contrario al fatto, il quale non può servire di fondamento a formare con l'aiuto della stabilita proporzione il prezzo dell'oncia d'Oro.

[But if it were decided to make a distinction between the national silver and the foreign, and thereby introduce two classes of silver of different price [...], I would believe that [the bimetallic ratio, ed.] should be derived from the silver sample, since this determines the price of the ounce of silver in grain, and if it were derived from the lowest silver, one would risk giving the ounce of grain an ideal price which is contrary to the facts and which cannot serve as a basis for forming the price of the ounce of gold by means of the fixed ratio.] (para. 28)

However, the Governor's basic idea seems to be quite clear, namely, to value the price of the ounce of grain the same as that of foreign silver, while giving the national silver an "ideal price," in the sense that it includes a seigniorage, so that the mint price is the same whether you bring foreign silver coins or bullion to the mint, and the mint charges for national coins are 1.25 percent (or the mint equivalent is 1.25 percent higher).

After that, Neri comes to discuss the valuation of the *zecchino di Venezia*, whose fineness is 24 carats. He asks if he should set a higher price or allow the market a spontaneous premium. In fact, he proposes to increase the tariff by 2 *soldi* for the *zecchino di Venezia*, the purest, and proportionally also for other *zecchini* and *ungari* as long as they exceed 23 ¾ carats, while the other coins are 22 carats as ingots.

GD: the proposal is accepted and the tariff for the *zecchino di Venezia* and the gold coins with a fineness of more than 23 ¾ must be prepared for approval.

Paras. 42 - 48. Regulation of national gold money.

The only national gold money is the *doppia di Milano*, which is indeed very rare. Therefore, while asking whether to take either the national or the foreign silver as a reference for the tariff, Neri makes a suggestion:

Ma siccome la Doppia vecchia di Milano è ormai tanto rara, così dovendosi in oggi pensare a un nuovo regolamento di monete, par questa una occasione molto congrua per pensare a battere una nuova Doppia per decoro di questa Zecca e per fornire al Paese il decoro di una Moneta d'Oro nazionale.

[Since the old double of Milan is now so rare and it is necessary to think about a new regulation of the coins, this is a very reasonable occasion to think about the minting of a new double for the decorum of this Mint and to provide the country with the decorum of a national gold coin] (par. 45)

Moreover,

Pare che per il comodo delle contrattazioni fusse opportuno che la Doppia equivalesse a quattro Filippi, potendo battersi anco la mezza Doppia equivalente a

due e volendo anco di maggiori Monete equivalenti a otto, e sedici Filippi, con le quali e con le Monete d'Argento di sopra accennate consistenti in Filippi, mezzi Filippi, e pezzi di 20, e di 40 soldi, noi averebbamo provvisto lo Stato di un buon assortimento di buone monete, sicché porrebbamo col tempo anco dispensarci dell'ammissione di tante varie Monete forestiere, che per ora in mancanza di nazionali conviene tollerare.

[It seems that for the convenience of the merged stores it is appropriate that the *doppia* equals four *filippi*, where we can even struck the *mezza doppia* equal to two and want even more coins equal to eight and sixteen *filippi*, with these and with the above silver coins consisting of *filippi*, *mezzi filippi* and pieces of 20 and 40, we would have provided the State with a good assortment of good coins, so that in time we would also dispense with the admission of so many different foreign currencies, which for the time being we should tolerate in the absence of national ones] (para 46)

Therefore, in an attempt to create a national coinage, Neri proposed to mint the new *doppia* with the same fineness as the old one (i.e. 21.18 carats) in order to save the cost of refining.

GD: the old *doppia* must be withdrawn and the new *doppia* must be minted with the old fineness for the equivalent of four *filippi*, using the price of the national silver as a reference for setting the tariff. In this case, then, the bimetallic ratio is calculated in terms of national silver money, which is consistent with national money preference. There are thus two classes of money, one national and one foreign, both with a bimetallic ratio of 1:14.916, the first containing the seigniorage, both in silver and gold.

Paras. 49 - 55. Regulation about the weight of the coins.

Neri introduces a stricter regulation on the issue of the *"monete calanti"*, he observes:

La tolleranza di un grano che la Grida accorda per ogni moneta d'Oro, deve stare nei limiti di un comporto accompensativo delle monete calanti con le traboccanti, ma non bisogna giammai che passi in regola, poiché questo sarebbe l'istesso che ridurre a 67 grani lo Zecchino, che deve essere 68, e in un pagamento di mille Zecchini sarebbe l'istesso che defraudare il Creditore di 4250 soldi il che non può mai essere stato nell'intenzione del legislatore in qualunque regolamento di monete.|Può passarsi che nei piccoli pagamenti di poche Monete, il calo minore di un grano si comporti per facilità delle minute contrattazioni; ma nei pagamenti considerabili [...] bisogna obbligare il debitore a pesare in Massa, e come si dice a peso di marco, acciò l'aggregato dei cali non faccia pregiudizio alcuno al creditore, e si tolga il profitto a i Tosatori delle Monete.

[The tolerance of one grain that the decree grants for each gold coin must be within the limits of a behaviour composed of the decreasing coins with the overflowing

> ones, but it must never pass into order, because that would be the system that reduces the *zecchino* to 67 grains that must be 68, and in the case of a payment of a thousand *zecchini* would be the system that defrauds the creditor of 4250 *soldi*, which can never have been the intention of the legislator in any regulation of the coins.|It may be that in the case of small payments of a few coins, the slight reduction of one grain serves to facilitate the small transactions; but in the case of large payments [...] we must force the debtor to weigh in bulk, and as they say, according to the weight of the mark, so that the sum of the drops is not detrimental to the creditor and so that the profit of the coin cutters is taken away] (para 51)

So Neri proposes that for payments whose amount exceeds 20 gold coins or silver coins like the *filippi* and 50 coins like the *testoni*, the sum must be weighed and valued *"a peso di marco"*, provided that, as the current decree states, beyond a certain limit both gold and silver *"monete calanti"* must be prohibited.

GD: *"Approvasi il regolamento di pesare a Marco, e se ne formi le istruzioni pratiche, tanto nell'Oro, che nell'Argento".* [The rule of weighing *"a marco"* is approved, the corresponding practical instructions must be prepared for both gold and silver] (para 53)

GD: *"Li Zecchini calanti più di due grani, si sbandischino dal commercio; e le monete d'Oro più grosse a proporzione, siccome la moneta d'argento a proporzione, da spiegarsi nella Grida."* [The *zecchini* that decrease by more than two grains are to be deducted from the trade; and the larger gold coins in proportion as the silver coin in proportion as the decree will declare] (para 54)

Furthermore, Neri is concerned about the weight sample and suggests that a sample be provided and kept to prevent falsification of the unit of measure of the weight.

GD: "*Si formi un Campione del Peso Di Milano colle diligenze che si crederanno necessarie, e se ne faccia relazione, perché resti provvisto alla perpetua conservazione di esso."* [Form a sample of the weight of Milan with the provisions deemed necessary and record them, so that it is preserved forever] (para 55)

<u>Paras. 56 - 60 Regulation of copper money.</u>

Neri begins to say about copper that, since "*le circostanze del paese non permettono a tenerlo in proporzione coi detti metalli più preziosi, bisogna almeno voltarsi al pensiero di restringerne la quantità*" [the circumstances of the country do not allow it to be kept in proportion to the so-called most valuable metals, we must at least turn to the idea of limiting its quantity] (para. 56), so that the plan of keeping all metals in proportion to each other, which would have meant recasting copper into full-bodied coins, cannot be implemented. Thus, since the cost of recoining copper at full value would be too high, the first necessity is to reduce the quantity. Neri, in fact, approves the decision of the previous government to prohibit foreign eroded and copper money, and proposes to stop the

issuance of this type of coins in the country and even to recoin them in limited quantities. For this project it would be necessary to know the number of *parpaiole* and copper coins in circulation in order to recoin them in a quantity that is *"necessaria ai bisogni del minuto commercio e niente più"* [necessary for the needs of small commerce and nothing more]. If, as it seemed, the *parpaiole* more or less met the needs of the retail trade, the project of minting new 10-*soldi* in an alloy like that of the *parpaiole* from the silver 20- and 10-*soldi* coins would prove extremely useful in using the profits to mint the new *lira* and the half *lira*, and at the same time to mint such a new eroded money to allow a greater reduction of the *quattrini* when the possibility of a new coinage exists, and here Neri seems to have had in mind the solution that could reverse the original assertion that a new copper coinage is not possible (para. 60):

> *Rispetto a questi quattrini il Progetto di ritirarli sarebbe certamente dispendioso per la Zecca, ma secondo alcuni conteggi che ho fatto, questo dispendio si residuerebbe alla pura importanza della manifattura della moneta nuova sopra della quale si potrebbe trovare qualche compenso per ottener facilità [...]*
>
> [As for these *quattrini*, the plan to collect them would certainly be expensive for the Mint, but according to some calculations I have made, these expenses would fall short in relation to the sheer importance of producing the new currency, over which you could find some compensation to gain ease[...]]

It is thus quite obvious that Neri is thinking of financing production costs through seigniorage and greatly reducing the amount of *quattrini* as more eroded money is made available. Neri is of the opinion that the new alloyed 10- and 5-soldi coins were no longer part of the noble money, probably due to inflation, which made coins of this denomination useful for small trade. Neri promises to return to this point when the *grida* on coinage is to be prepared, but unfortunately, as we shall see, the process does not advance.

GD: "*Si confermi ora la rigorosa proibizione delle monete forestiere Erose, e di Rame, e l'ordine a questa Zecca di non ne battere altrimenti, riservandosi S.A.S. di prendere in considerazione gli altri provvedimenti, che saranno proposti dopo fatta la nuova Grida; e intanto si bandischino con una Grida preventiva lo Scudo di Genova colle sue divisioni, e le Madonnine, e le Argentine"* [Now confirm the strict prohibition of foreign eroded coins and copper coins, and the instruction to this mint not to strike any such coins, and reserve to Your Majesty the right to consider the other measures to be proposed after the new decree; and in the meantime prohibit the *Scudo di Genova* with its subdivisions, and the *Madonnine* and the *Argentine*] (para 60). This order was immediately implemented by the decree of the third of February 1754.[1028]

[1028] See Quadrio Curzio A., Scazzieri R., ed., *Sul disordine delle monete a Milano nel Settecento*, Electa, 1986, p. 146; ASMI, Finanze p.a., c. 822.

Paras 61- 62. The draft of the new decree.

Neri will prepare the draft of the new decree and asks if it is appropriate to include in it also some of the specific points of the *Osservazioni* that we have enumerated in the previous section as 10 to 15,[1029] about the importance of enforcing the use of the tariff in every case, especially when it comes to contracts, taxes, public documents on prices and accounting.

GD: The Governor asks for a more specific proposal on this point in the draft decree.

Paras 62- 76. "Battitura della Zecca."

Neri makes the case for the mint activity. He says:

[...] resta da riassumere il discorso sopra la battitura della Zecca, la quale potrebbe occuparsi primieramente nel battere la nuova lira di Milano semplice e doppia in proporzione del Filippo, il che non può peraltro farsi senza leggiero scapito.

[It remains to summarise the discourse on the striking of the mint, which could be primarily about striking the new *lira di Milano* single and double in relation to the *filippo*, which is not possible without slight loss] (para 63).

In secondo luogo in convertire in Lega di Parpaiole le presenti Monete di 20 e 10 soldi facendone pezzi di 10 e 5 soldi , nel che vi dovrebbe essere un utile di circa 7 per cento, che compenserebbe la perdita dell'Articolo precedente.

[Second, in converting the current 20- and 10-*soldi* coins in *parpaiola* alloys into pieces of 10 and 5 *soldi*, making a profit of about 7 percent, offsetting the loss of the previous article] (para 64).

In terzo luogo nel batter Filippi, e mezzi Filippi, avvalendosi di quelle opportunità che annualmente accadono, di Paste che son portate alla Zecca a prezzo da poterle convertire in Filippi senza perdita, il che sebbene in forme grandiose e regolari non si può far sperare [...]

[Third, to strike *filippi* and *mezzi filippi*, taking advantage of the opportunities that present themselves each year to bring the bullion to the mint at a price that can be converted to *filippi* without loss, even if they are not expected in large and regular form] (para 65).

In quarto luogo col battere la nuova Doppia di Milano, nella quale qualche piccolo utile secondo i conteggi fatti vi dovrebbe essere.

[Fourthly, by striking the new *doppia di Milano*, whereby, according to the calculations, a small profit was to be made] (para 66).

[1029] Paras. 144 ss. in the *Osservazioni*.

E in quinto luogo col battere la nuova Moneta di Rame, quando si dia il caso di poter pensare a ritirar la vecchia, e di soffrire la spesa a ciò necessaria.

[And fifthly, with the striking of the new copper coin, if it should be possible to think about withdrawing the old coin and bear the necessary costs] (para 67).

Finally, Neri proposes to reproduce the methods of the Mint of Savoy to attract bullion. He claims that the Mint can flourish *"sotto la direzione di una persona intelligente e fidata"* [under the direction of an intelligent and faithful person] and that, in any case, all adjustments can be made in the first years of activity.

GD: *Per la Battitura della Zecca, e per facilitare l'acquisto delle Paste si faccia proposizione a parte; e intanto il Presidente Neri dia le disposizioni opportune per l'esecuzione delle sopraccitate risoluzioni.*

[For the striking of the Mint, and to facilitate the purchase of the bullion, make a separate proposal; and in the meantime, the President Neri gives the appropriate provisions for the execution of the above resolutions.] (para 63).

This last decision cancels most of the previous ones and postpones indefinitely the new coinage, so that this reform was never carried out. All the more so because the project of Neri to issue the 20- and 10- *soldi* coins in alloy was not accepted, so the whole architecture was stalled under the pressure of the costs required for the works. However, it can be concluded that Neri's plan, even if the metallistic approach (think of the rule to take noble money in payment *"a peso di marco"*, that is, according to the weight of the coins), was still based on the role of imaginary money. In fact, the restructuring revolved around tariff adjustments: All gold coins were to be revalued according to the new gold-silver ratio (i.e., 1:14.916), with reference to silver money, whether domestic or foreign, granting national coins a *"prezzo di affezione"* according to the governor's decision. In fact, foreign silver coins were to be re-rated at 1.25 percent under the pattern, identified with the *filippo di Milano* at the current value of 7.10 *lire*, i.e., the seigniorage was fixed at 1.25 percent. This solution goes back to a compromise with the governor, because Neri maintains that, as Locke and Davanzati teach, there is no place for a seigniorage and therefore for a double class of money, foreign or not. As for silver coins, the *filippo* is the pattern, and the other coins must be recast in proportion to it, that is, the *lira* must be recast in the new *lira*, while the *ducatone* is already proportioned. As for low money, all foreign copper and eroded money should be banned, and all copper and eroded money should be withdrawn and recast into new copper coins (not as full-bodied coins) and into new alloyed money *"a lega di parpaiole,"* i.e., the already mentioned 10- and 5-*soldi* coins to be coined from the *mezza lira*, which would yield a profit of 7 percent (as far as low money is concerned, the principle of lack of seigniorage is no longer taken into account). This new alloyed money should replace a copper quota, thus reducing the whole amount of copper. The seigniorage would

cover the cost of minting the new *lira*, while the minting of the new copper (in a reduced quantity), which Neri calculates to be as high as the cost of production, must somehow be financed (this is probably the biggest obstacle to reform). Neri thus intends to limit the amount of small money by banning foreign money (this was provided by the *grida*) and issuing new copper and eroded money (with an intrinsic value lower than the face value) in a limited quantity.

6. The Hamburger Bank

In this section we examine the nature of the Hamburger Bank to understand why Verri and Beccaria refer to Hamburg as a monetary system that dealt in foreign coins (see ch. 3, para. 4), and we note that foreign coins, whether noble or low money, were accepted as collateral for Lombard loans from the bank and bank money was then put into circulation. If this is the system to which Verri and Beccaria refer, then they lack the necessary financial institution in Milan, such as the Hamburger Bank.

In 1619, the Hamburger Bank was founded on the model of the Bank of Amsterdam.[1030] The special feature of this bank, however, was the practice of Lombard loans in the wake of the banks of Naples and the *monti di pietà*. Like the Bank of Amsterdam, the Bank of Hamburg was founded to stabilise money against changes in actual money. Its unit of account was the *mark banco*, which was ⅓ of an imperial thaler but to avoid the problems of changes in the characteristics of the thaler, it was pegged directly to silver in 1770. The bank was divided into two divisions (anticipating the features of the Stockholm Banco and later the Bank of England): "the bank of exchange, creating the underlying bank money and operating the payment system, and the loan bank, which created credit against appropriate collateral security." In particular, "the lending bank provided credit against a wide range of collateral: gold and silver coin, later on jewels, gems, durable goods, municipal securities or real estate".[1031] However, the type of collateral was expanded over the years, e.g. copper was added in 1641.[1032] The bank's duties also included the exchange of money, as stated in Article 5 of the mandate of February 1639:

> It will be hereby prohibited to the citizens, inhabitants and everyone, after the said date, to purchase broken gold, silver, … nor similar things, nor to exchange monies, which are not common here and need to be re-coined, nor to exchange gold and

[1030] For this part see Bindseil U., *Central Banking before 1800: A Rehabilitation*, Oxford University Press, 2019; id.., *Some Pre-1800 French and German Central Bank Charters and Regulations*, April 27, 2019. Available at SSRN: https://ssrn.com/abstract=3177810 or http://dx.doi.org/10.2139/ssrn.3177810.
[1031] Tarkka J., "The North European Model of Early Central Banking", quoted in Bindseil U., *Central Banking before 1800: A Rehabilitation,* op.cit., p.218.
[1032] See Bindseil U., *Some Pre-1800 French and German Central Bank Charters and Regulations*, op .cit., p. 12.

> silver species which are common here. Instead, this is reserved, next to the city mint, to the Banco, which will also provide the right exchange rates.[1033]

However, species with a haircut of 25 percent could be accepted as collateral, as stated in Art. 3 of the regulation of November 1619:

> All gold and silver collateral should be examined [copper was added in 1641, ed.], weighted and taken into custody by the guardian, and if deemed to be appropriate, up to three quarters of the value can be provided as credit. If jewels and pearls are part of the collateral, then only the gold should be counted.[1034]

The loan was granted as an advance in the form of a "lending-note", as you can see in Art. 7 of the regulation:

> The collateral which has been pledged will be returned to the borrower if the borrower returns the lending-note and if he has paid both the capital and the interest and if no obvious deceitfulness was noted.[1035]

Thus, the bank did not issue banknotes, but giro operations were possible over the counter, as in Art. 9 of the regulation:

> The accountant, while sitting in the front, should accept the transfer notes in the order that they come in, without regard to the persons. He should carefully monitor whether the written sums or characters and numbers match and whether the transferee has enough funds. Then he should transmit the transfer notes to the other accountants who will write them down.[1036]

The species could therefore either be exchanged by the bank or deposited as collateral for a loan denominated in thalers. It is important to note that the bills of exchange over 400 *marks banco* had to be paid in bank money. So it seems that species were accepted as face value if they were sound currencies, otherwise other prices could be offered and finally they could be accepted as collateral by weight. In fact, the preamble to the regulation states that the aim of the lending bank was to help poor people:

> According to experience, which also has been reported bitterly to the City Council, people who need to borrow substantial amounts of money in emergency or for their business have to pay excessive interest rates, and pledge collateral, to egoistic, advantage-seeking individuals, in contradiction with Christian love. Therefore, the City Council, to help the deserving poor and anyone else, has decided to establish a

[1033] Bindseil U., *Some Pre-1800 French and German Central Bank Charters and Regulations*, op .cit., p. 7.
[1034] Bindseil U., *Some Pre-1800 French and German Central Bank Charters and Regulations*, op .cit., p. 11.
[1035] Bindseil U., *Some Pre-1800 French and German Central Bank Charters and Regulations*, op .cit., p. 12.
[1036] Bindseil U., *Some Pre-1800 French and German Central Bank Charters and Regulations*, op .cit., p. 8.

> lending bank (*Lehn Banco*) with the following specification, such that everyone can as of now get funding there at a fair interest rate.[1037]

However, the lending bank also granted loans to the city of Hamburg, albeit on a modest scale. As Sieveking reports for the years 1650-1770, on average 67 percent of the balance sheet consisted of reserves, 19 percent of Lombard loans and 14 percent of loans to the city.[1038]

The experiment of the Hamburger Bank was quite successful as long as the bank was able to survive the Napoleonic era, until it merged with the Reichsbank in 1876.

7. Technical aspects of Milanese monetary reform of 1788

In this section we will show how tabs. 16, 22 are constructed from the original table, which reads as follows:

tab./fig. 25 **The plan for monetary reform in Milan (1788), original table**

		In moneta nazionale **National money**		***In moneta estera*** **Foreign money**	
		Oro **Gold**	***Argento*** **Silver**	***Oro*** **Gold**	***Argento*** **Silver**
	Dati teorici **(theoretical data)**				
	Equivalenza della nuova lira milanese in parti di Vienna Value of the new lira of Milan in Vienna's weight subdivisions	55 + 47/58	806 + 13/87	56 + 259/400	802 + 79/290
	Valore di un marco di metallo fino Value of a mark of fine metal	982.15.8	68._.8	968.5.2	66.14
	Rapporto di scambio Bimetallic ratio	1	14 + 4/9	1	14 + 314/609

[1037] Bindseil U., *Some Pre-1800 French and German Central Bank Charters and Regulations*, op .cit., p. 11.
[1038] Bindseil U., *Central Banking before 1800: A Rehabilitation,* op.cit., p.220.

	Dati effettivi **Real data**				
1	*Equivalenza della nuova lira milanese in parti di Vienna* Value of the new lira of Milan in Vienna's weight subdivisions	56	809	56 + 3/4	825
2	*Valore di un marco di metallo fino* Value of one mark of fine metal	979.8	67.15.10	966.10.2	66.9.8
3	*Prezzi di acquisto dei metalli nobili da parte della zecca* Mint price	975.8	66.13._	975.8.	66.13.
4	*Differenza* Difference	4.	_.2.10	8.17.10	_.3.4
	Rapporto di scambio Bimetallic ratio	1	14 + 25/26	1	14 + 122/227

Source: ASMI, busta 824, "Tabella delle proporzioni tra l'oro e l'argento e valore dei rispettivi marchi a norma delle risultanze del piano monetario", reported in Gianelli G., *Ricerche di storia della moneta e del pensiero monetario*, op. cit. , p.197 (editor's translation).

For the construction of tabs. 16, 22 we take into account the real bimetallic ratio (i.e. after the approximation of the new lira of Milan to the Viennese weight subdivisions). The mint price is from line number 3. The value of a mark of fine metal (line 2) is the mint equivalent when we take into account the value of national money, while it is the foreign-coinage price when we take into account the value of foreign money.

8. The French recoinage of 1709 according to Melon and the misunderstanding of Broggia

In the following extract from the *Essai politique sur le commerce*,[1039] Melon claims that the enhancement of the coins in 1709 enabled the government to make the most urgent payments and redeem the Mint bills, i.e. the government's paper money that had been

[1039] Op. cit.

issued to finance the war economy (even if only some of it was collected). He also claims that the revaluation favoured the settlement of debts on the market. He then criticises the diminution (i.e. the reduction in the face value) of money at the end of the war, which caused the national debt to soar and led to the bankruptcies of 1714, 1715 and 1716.

> *En 1708 les Finances étoient dans un désordre presque désespéré, avec une guerre malheureuse, & selon les apparences très longue. [...] On augmenta les Monnoyes d'un quart par une Refonte générale. Deux objets principaux déterminérent: Le premier, le profit du Roi par le grand droit de Seigneuriage: L'autre, l'extinction des billets de Monnoye, qui, pouvant être pendant quelque temps le soutien de la Finance, en devenoient la perte par l'imprudent usage qui s'en faisoit. Cette augmentation fut le salut de l'Etat; moins par ces deux raisons que par une troisième qui n'avoit point été prévue: C'est que par cette augmentation, les engagements des Banquiers & des Entrepreneurs s'acquittérent entr'eux, parce que le Roi s'acquitta du plus pressé, & l'imposition en devint moins onéreuse, parce que le prix des Denrées augmenta. Nous avons eû raison de dire que cet effet n'avoit pas été prévû, puisqu'à la paix, la première opération fût la diminution des espèces sans aucune attention à la dette du Roi. Supposons-là alors seulement de cent cinquante Millions annuels à quarante Francs* [i.e. *livres*] *le Mark, c'est trois cens cinquante mille Marks à payer annuellement: Lors que le Mark fut diminué à trente livres, la dette augmenta de cent cinquante mille Marks annuels: Aussi la misère & le discrédit ce devinrent tels, que nous n'avons point d'exemples de plus de Banqueroutes, que dans les années 1714, 1715. & 1716.*
>
> In 1708 the finances were in an almost desperate disorder, with an unfortunate war, and apparently for a very long time. [...] The coinage was increased through a general recoinage of a quarter. Two were the main achievement: The one is the King's gain by the great right of Seigniorage; the other is the extinction of the Mint bills, which may for some time be the support of the finances, becoming a loss by the careless use of them. This augmentation was the salvation of the State; less by these two reasons than by a third which had not been foreseen: by this augmentation the obligations between bankers and entrepreneurs were settled, the King made the most urgent payments, and taxes became cheaper because the price of goods rose. We were right when we said that this effect was not foreseen, because in peace time the first operation was the diminution of the species, without taking into account the king's debts. Let us only suppose, then, one hundred and fifty millions a year at forty francs [i.e. *livres*] the [silver] mark, three hundred and fifty thousand [silver] marks were to be paid annually: When the mark was reduced to thirty *livres*, the debts increased by one hundred and fifty thousand marks a year: the misery and discredit became so great, that we have no other examples of bankruptcy than in the years 1714, 1715, and 1716.[1040]

[1040] Melon J. F., *Essai politique sur le commerce*, op. cit., pp. 194-197 (editor's translation). There is probably an approximation by Melon, the correct sum is 375,000 marks instead of 350,000.

In the review of Melon *Essai Politique sur le Commerce*, Broggia attacks the debasement of money, but he commits an embarrassing error of interpretation.[1041] He claims that when the French authors, and Melon in particular, use the word "augmentation" and the word "diminution", they mean the debasement and the reinforcement of coins, although it is clear that they mean a nominal change in value.[1042] In particular, Broggia criticises the positive approach taken by Melon in the case of the recoinage of 1709.[1043] According to Broggia, the bankruptcies of 1714, 1715, 1716 were not due to what he interpreted as a restoration of intrinsic value, but to the past policy of augmentation (which he interpreted as a reduction of intrinsic value), which irrevocably damaged the state's revenues and private creditors. However, according to Abot de Basingen, who was counsellor at the *Cour de monnaies* in 1741, the intrinsic value of gold and silver coins was actually increased in 1709, even if the net result of the monetary reform was a strong augmentation of the money.[1044] Broggia's misunderstanding of the language used by Melon, on the one hand, and the fact that the intrinsic value of the louis d'or was increased and not decreased, as Broggia thought, make his criticism of Melon completely unfounded.

[1041] Broggia C. A., "Trattato delle monete", vol 5, op. cit.

[1042] Broggia writes: *" dobbiamo primamente sempre ricordarci, che i francesi per aumento di moneta intendono allorché si scema l'intrinseco, e per diminuzione intendono tutto l'opposto"*, in id., "Trattato delle monete", vol 5, op. cit., p. 85.

[1043] Broggia actually refers to 1708 because Melon speaks of a severe financial crisis in 1708, but the recoinage took place in 1709. See Rolands G., *The financial decline of a great power*, op. cit., pp. 124-125. See also chap. 1, para. 4.

[1044] The gold mark (i.e. 8 ounces) was increased from about L. 453 to L. 600, while the silver mark was increased from about L. 30 to L. 40, Abot De Bazinghen F., *Traité des monnoies et de la jurisdiction de la cour des monnoies*, Vol. II, Paris, 1764, p. 204.

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