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ABSTRACT

This dissertation investigates small remote island economies (SRIEs)—a unique grouping of countries that has not been addressed systematically in the economics literature. The rationale behind this categorisation lies in the *interactions* of smallness, islandness and remoteness. These interactions might exacerbate the problems face by these economies, and possibly create new opportunities for them. This study consists of four essays which address their most important economic issues.

The first essay brings SRIEs into context by drawing from the existing literature. Economists and other social scientists acknowledge the economic challenges of smallness: limited scale economies, limited resource endowments, economic concentration, high economic openness and consequent vulnerability to external shocks. Many small countries are also islands: islandness contributes to economic volatility because it increases the risks associated with environmental hazards, climate change, and man-made and natural disasters. The new category SRIEs highlights a well-documented economic problem—remoteness. However, there is little research on the implications of remoteness for small island economies. This thesis addresses this gap in the literature and seeks to better inform policy.

Many SRIEs were affected by the dismantling of the Multifibre Agreement (MFA). MFA quotas guaranteed that the textiles and clothing (T&C) products of SRIEs had accessed to developed markets and protected these small economies from competitive larger developing countries. The second essay adopts a novel methodology—network analysis—to investigate the impacts of the ensuing trade liberalisation in T&C on SRIEs. The MFA altered T&C trade patterns: in the post-quota period, SRIEs preferred to trade with closer partners, thus, supporting the hypothesis that remoteness matters. Network statistics demonstrate that liberalisation led to convergence. SRIEs had a relative comparative advantage in final rather than intermediate products.

An analysis of trade specialisation patterns confirms that MFA quotas created artificial comparative advantages. The third essay analyses individual cases of SRIEs through a global value-chain framework. T&C global fragmentation of production was shaped by quotas. A distance effect on trade is revealed as trade with relatively remote partners declined post-MFA. The results of a unit-value analysis support the thesis that those SRIEs that survived moved up the value-chain or upgraded to maintain competitiveness. Upgrading involved shifting to higher-valued products and niche markets but also integrating regionally.

The last essay provides an alternative explanation for the notion of remoteness, particularly when viewed from a tourism perspective. Scholars agree that nature attracts tourists. An exploratory analysis shows that SRIEs are well-endowed in nature. Indeed, the econometric results show that remoteness is positively associated with tourism performance. Price acts as a sorting factor signalling the high-value tourist to choose less competitive but remote destinations; destination choices, hence arrivals, are price-dependent. However, price is irrelevant for expenditure per tourist. In sum, the cost of remoteness can be offset by its value. Remote island tourism is proposed as a positional good.

Keywords: small islands, remoteness, network analysis, value-chain analysis, tourism
JEL classification: F13; L67; L83; O50 ; R12

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INTRODUCTION

Geography, particularly, size and location are important determinants of the economic structure of nations. The implications of country size for economic development have been debated for decades (Robinson 1960) and are still on the agenda of economists today (Alesina & Spolaore 2003). Smallness presents challenges that impact on economic progress. Indeed, Kuznets emphasised the size concept when he noted that, in principle, "small countries are under a greater handicap than large in the task of economic growth" (1960, p27). Many small countries are also island countries. Island economies have received less attention in the size-growth debate although *islandness* per se implies challenges and opportunities that go beyond size. Islands feature a variety of economic, socio-cultural, political, and geographical characteristics: consider small and large islands, oceanic and continental islands, resource-rich and resource-poor islands, and autonomous and dependent islands. Many islands are geographically remote from the world economo-political centres. Economists have debated and investigated, using gravity models, the negative effects of distance on economic relations (Anderson & van Wincoop 2004; Disdier & Head 2008). Many scholars recognize that the remoteness or peripheral aspect of islands matters (Briguglio 1995; McGillivray et al. 2008; Read 2008). However, there is little research that investigates the impacts of remoteness on the diverse sectoral or socio-economic problems faced by island economies.

This thesis, unlike previous studies, brings together the literature on smallness, islandness and remoteness. It investigates a unique grouping of islands—small remote island economies (SRIEs)—that have not previously been addressed in a systematic way in the economics literature. The rationale behind this categorisation lies in the interactions of smallness, islandness and remoteness that might exacerbate the problems which these features give rise, and possibly might create new opportunities for these countries.

SRIEs are small and this feature contributes to economic volatility in several ways. First, with their small populations, they cannot reach the minimum efficient scale of production which results in higher unit production costs than large states. Second, small islands are not endowed with all the range of "conventional[1]" resources that large countries usually have: small islands might have just one or two of these resources, often in exhaustible quantity, which will not allow diversification. Similarly, a small domestic labour market constrains the opportunity for labour-intensive industrialisation. Third, SRIEs remain dependent on a narrow range of exports

[1]The term "conventional" refers to resources, such as, minerals and similar resources used as factors of production. SRIEs are generously endowed with other "natural resources", for example, natural beauty and exotic fauna which have economic value from a tourism perspective.

and export markets, which contribute to their vulnerability to external shocks. Fourth, they have a high degree of openness to trade and a low domestic base; consequently, they depend on strategic imports and often cannot resort to import substitution. Fifth, SRIEs are vulnerable to climatic shocks due to their smallness, dependency upon a few sectors, such as, agriculture and tourism, and their poor human and financial capacities. All of these factors limit opportunities for diversification and, hence, increase their economic vulnerability.

SRIEs are remote: economists agree that remoteness deters economic transactions. Remoteness implies higher transportation costs which reduce trade. Countries which are a long distance from large foreign export markets have a low degree of foreign market access. Remoteness limits access to and increases the costs of raw materials, intermediate goods and capital (Redding & Venables 2002). Distance reduces technology flows (Keller 2001) and also the development and application of R&D. Remoteness hinders foreign direct investment (Redding and Venables 2002 citing Di Mauro 2000) and also hinders cross border equity transactions (Portes & Rey 2005).

The existing literature analyses small—but not remote—islands. Crowards (2002) proposes a criterion for defining small states, Armstrong and Read (1998) establish the determinants of economic growth for small countries, Briguglio (1995; 2003) and Briguglio & Galea (2004) develop and augment a vulnerability index, and many other scholars investigate small islands, usually, small island developing states (SIDS). Most of these scholars acknowledge the problem of remoteness but I am not aware of any studies of remote islands as a group. This thesis addresses this gap in the literature through a collection of essays that analyse various economic issues relevant to SRIEs.

The first essay is a conceptual essay that aims to situate SRIEs in the literature. It highlights their characteristics, vulnerabilities as well as their strengths. The analysis reveals that although islands have interested scholars for centuries, it was not until the 1970s that they gained international recognition; *developing island countries* earned an informal status through an UNCTAD resolution (United Nations 1974). However, the discussion relating to islands much resembles the discussion of small states. The economic difficulties encountered by the latter have been on the agenda of economists since 1957 when they convened at the International Economic Association conference. It was agreed that smaller states were at a disadvantage yet there were no mention of islandness. Political scientists were also interested by smallness, essentially, the power-relations and alliances of small states. Most scholars agree that smallness is a relative concept: the degree of smallness differs according to the time period considered, the economic situation of the country under study, its network of relations and so on. The

vulnerability of islands has recently attracted scholarly work. Small islands' vulnerability stems from their smallness but also from their manifest difficulties to recover from economic and environmental shocks. Remoteness hinders economic progress and, hence, affects prosperity. The case for SRIEs is justified as a tool for economic analysis and policy-making.

Although SRIEs are primarily agriculturally-based, policies of diversification and, more importantly, trade preferences have allowed them to develop a manufacturing sector. Trade liberalisation affects SRIEs since they are necessarily open economies with a high ratio of international trade to GDP. A significant number of them are textiles and apparel exporting countries. The dismantling of the Multifibre Agreement (MFA) was a major shock for these small islands. The MFA was set up by developed countries to restrict imports from developing countries into their territories and it covered trade in cotton, wool, and man-made fibre products. It was at the same time a benefit for those small economies that were guaranteed access to these markets through quotas. The second and third essays aim at understanding how SRIEs trade relations were affected by the challenge of the subsequent dismantling of the MFA. The second essay uses a novel methodology recently applied in the trade literature—network analysis (Jackson 2008). Network analysis reveals that the MFA influenced the geography of T&C manufacturing and altered the pattern of network formation. The evolution of network statistics shows that SRIEs became more interconnected among themselves during the post-MFA period suggesting an increased preference to trade with closer partners. The network of textile products is less dense and more stable than that of clothing. On a global stance, post-MFA trade in T&C declined but there is a strong indication of convergence.

The third essay uses the standard trade theory and the value-chain framework to investigate the impact of quotas and their removal on SRIEs. Various hypotheses are investigated: first, through case studies of Madagascar, Mauritius, Fiji and Sri Lanka; second, through a unit-value analysis and third, through a revealed comparative advantage analysis. The main findings reveal that while trade expanded in many SRIEs during the quota-period, its removal impacted these islands differently. The more opportunistic islands developed a comparative advantage in the sector while the less innovative islands, usually smaller with a foreign-run T&C sector, collapsed. As suggested by the value-chain framework, a more competitive environment triggers upgrading—where upgrading may take different forms, such as, moving from standard to differentiated products and moving from bilateral to intra-regional trade. The impact of geography on trade is exposed and, thus, supports the findings of the second essay. In the absence of trade barriers, SRIEs prefer to trade with relatively proximal rather than distant partners.

Can the disadvantages of remoteness and smallness be overcome by tourism development? Are island economies better off reorganising their economies towards services, such as, tourism and off-shore banking rather than towards export manufacturing (Armstrong and Read 2000; Bertram 2004)? The fourth essay quantifies the impact of remoteness and islandness on tourism performance. The tourism literature has successfully identified nature and scenery as prime attractors of tourism. Remote islands are found to be well-endowed in nature and scenery which plausibly play a major role in promoting tourism. The results of an empirical analysis favour the hypothesis that nature has a positive impact on tourism performance (symmetric revealed comparative advantage) and tourism demand. The contrasting effect of distance on the different measures of demand is interesting. While being distant is detrimental to arrivals, it positively affects expenditure per tourist. In addition, being both an island and distant is favourable to demand but the degree of remoteness matters. The result holds only for very remote islands but not for moderately remote islands. Very remote island tourism may be a positional good. The decomposition of receipts into arrivals and expenditure per tourist proves useful and revealing. These two variables have different determinants. While price factors are useful in determining arrivals, they seem irrelevant in determining expenditure once the tourist has reached its destination. Smallness and remoteness matter. The value of remoteness can offset the costs of distance if efficiently and sustainably exploited.

While there is no theory of islandness, the study of islands, "nissology" is slowly emerging (Hay 2006, p.1). Island studies focus on the impact and influence, possible or plausible, of islandness on aspects ranging from archaeology and ecology to economics and tourism. The present thesis contributes to the economics of islands, essentially, small remote islands that have often been neglected in this literature because of their small economic contribution relative to the world. The essays in this thesis explore some of the contemporary issues in economics but in relation to SRIEs. Geography, whether it is size, location or topography, matters for economic success of small open economies. Size can restrict production but induces trade, and location determines the nature of production. While remoteness might render export in tangible traded goods costly, remoteness can be a valuable asset from a tourism perspective. As Kuznets puts it, "*every* small nation has advantage in natural resources—whether it be location, coastline, minerals, forests, etc", sustained growth is possible only if the nation modifies its social and economic institutions (Kuznets 1960, p.28).

REFERENCES

Alesina, A. & Spolaore, E., 2003. *The size of nations*, 2003 Massachusetts Institute of Technology: The MIT Press.

Anderson, J.E. & Van Wincoop, E., 2004. Trade costs. *Journal of Economic literature*, 42(3), pp.691–751.

Armstrong, H.W. & Read, R., 1998. Trade and growth in small states: the impact of global trade liberalisation. *World Economy*, 21(4), pp.563–585.

Briguglio, L., 1995. Small island developing states and their economic vulnerabilities. *World Development*, 23(9), pp.1615-1632.

Briguglio, L., 2003. The vulnerability index and small island developing states: a review of conceptual and methodological issues. In *AIMS Regional Preparatory Meeting on the Ten Year Review of the Barbados Programme of Action: Praia, Cape Verde*.

Briguglio, L. & Galea, W., 2004. Updating and augmenting the economic vulnerability index. *Occasional Paper, Islands and Small States Institute of the University of Malta*.

Crowards, T., 2002. Defining the category of 'small' states. *Journal of International Development*, 14(2), pp.143-179.

Disdier, A. & Head, K., 2008. The puzzling persistence of the distance effect on bilateral trade. *Review of Economics and Statistics*, 90(1), pp.37-48.

Hay, P., 2006. A phenomenology of islands. *Island Studies Journal*, 1(1), pp.19–42.

Jackson, M.O., 2008. *Social and economic networks*, Princeton University Press.

Keller, W., 2001. The geography and channels of diffusion at the world's technology frontier. *NBER Working Paper*.

Kuznets, S., 1960. Economic growth of small nations. In *The Economic Consequences of the Size of Nations*. pp. 14–32.

McGillivray, M., Naudé, W. & Santos-Paulino, A., 2008. Small island states development challenges: introduction. *Journal of International Development*, 20(4), pp.481–485.

Portes, R. & Rey, H., 2005. The determinants of cross-border equity flows. *Journal of international Economics*, 65(2), pp.269–296.

Read, R., 2008. Foreign direct investment in small island developing states. *Journal of International Development*, 20(4), pp.502–525.

Redding, S. & Venables, A.J., 2002. The economics of isolation and distance. *Nordic Journal of Political Economy*, (28), pp.93-108.

Robinson, E.A., 1960. *Economic consequences of the size of nations*, Macmillan London.

United Nations, 1974. Declaration on the Establishment of a New International Economic Order - A/RES/S-6/3201. Available at: http://www.un-documents.net/s6r3201.htm

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ON THE RATIONALE FOR SMALL REMOTE ISLAND ECONOMIES

(SRIEs)

ON THE RATIONALE FOR SMALL REMOTE ISLAND ECONOMIES (SRIES)

SUMMARY

This paper proposes a novel categorisation of countries—small remote island economies (SRIEs). The socio-economic challenges of small countries are well-documented in the economics and international politics literature. Similarly, the vulnerability of islands as compared to other groups of developing countries has gained increased scholarly attention. In particular, *small* islands have limited capacity to cope with exogenous shocks. Distance negatively affects trade, foreign direct investment and other economic transactions. Many small islands are distant from the world economo-political centres. The category SRIEs addresses a gap in the literature by highlighting the feature *remoteness* in addition to smallness and islandness. The combined effects of these features might have exacerbated impacts on economic performance and might possibly create opportunities. Although size is an ambiguous concept, remoteness can be easily measured. This paper details the criteria for identifying SRIEs. This new economic classification of countries is useful for economic and comparative analyses and, hence, aims at better informing policy.

Keywords: small countries; island economies; distance costs

JEL classification: R12; O10

1. INTRODUCTION

Smallness and *islandness* have been studied by social scientists for a long time. However, the economic impacts of geography or location on countries that are both small and islands have been little researched. Many small islands are also remote. Remote island economies as a group have not been systematically investigated in the economics literature despite the fact that geography matters for economic development. In contrast, smallness and its implications on development have gained more scholarly attention. In that context, scholars repeatedly mention the overemphasis on the large—sustained by the importance attached to increasing returns to scale—as opposed to the problems facing the small. The more recent interest in smallness can be attributed to the increase in the number of small countries over the last few decades and the general concern over the impact of globalisation on weak economies.

For economists, smallness is an impediment to economic performance. The problems of small economies can be viewed from a demand-supply perspective. Small economies have small land areas, hence, limited resources. Limited resources both in terms of physical properties and variety of resources constitute a supply constraint. A limited labour force implies a narrow spread of skills and an unbalanced demographic structure. Capital has to be sourced from abroad and entrepreneurial activities are limited. From the demand side, a small domestic market does not allow for scale economies and leads to inefficiency in production. Consequently, small economies tend to be heavily dependent on foreign markets.

Among international organisations, the Commonwealth has a special interest in small economies as a large number of its members are small by area, population or GDP. It held a conference in 1981 to address the problems of and policies regarding small economies. The proceedings were later published by Jalan (1982). The disadvantages faced by small states were discussed extensively and a few policies suggested. While most disadvantaged countries are small, it is not necessarily the case that most small countries are disadvantaged: for instance, Singapore and Hong Kong have seen remarkable economic performance. In addition, one should distinguish between landlocked and island economies: where the latter has to face transportation problems and difficulties to access large markets. Landlocked countries have access to a wider range of neighbouring markets, consequently, they have a greater market potential.

A distinguishing feature of many islands is their remoteness. They are remote from the main continents and remote from the main world markets. However, the degree of remoteness varies. The Caribbean islands are not as remote as the Indian Ocean islands both in terms of geographical distance to the continents and access to economic markets. In this paper, I propose

a new categorisation of islands—small remote island economies (SRIEs)—that has not been systematically addressed in the economics literature. Although smallness, islandness and remoteness have been the subject of various studies, they have not been addressed together. Nevertheless, scholars recognise that bringing those features together might exacerbate their implications on the economies concerned. This paper provides a conceptual overview that situates SRIEs in the literature. It brings together the literature on smallness, islandness and remoteness and stresses the challenges and opportunities faced by SRIEs. It aims at identifying SRIEs based on a set of non-arbitrary criteria.

2. SMALLNESS AND SIZE

One of the fundamental issues in the literature about smallness is definitional. How small is small? What is the optimal size of state? Does size matter for socioeconomic welfare? Svetličič et al. (2001) argued that all countries are becoming small: first, their capacity to influence world politics diminished, and; second, their autonomy decreased as their dependency on the external environment increased. Hence, as Alesina and Spolaore (2003) reported, size of states is not a constant but varies across time. They argued that borders are man-made institutions, thus, malleable. However, national and political borders are often wrongly taken as exogenously given. For instance, Bolivia was not landlocked until it lost part of its territory to Chile in 1884 and if Lombardy became independent it would be landlocked. These arguments, however, seemed to be historically relevant but of little practical use. In the last few decades, the size of most states has not changed much; this is particularly true for island states whose size is more or less a constant. Alesina and Spolaore (1997;2003) emphasised through a rationalist and deductive approach that the optimal size of states is a trade-off between the benefits of size, that is, scale economies, and the costs associated with heterogeneity of preferences (these costs increase as population increases). However, the proliferation of states in the 20th century is evidence that the cost-benefit approach had little impact on size of nations.

Of practical importance is a quantitative measure of the size of states. Population seems to be the preferred measure of size in the economics literature. Kuznets (1960) defined a small state as having a population of less than 10 million. He continued, however, that "the dividing line is relative to the distribution of nations by size at a given historical epoch, so it is relative to the economic and social potentials that we want to emphasize": a nation of 50 million inhabitants may be limited for some industries while one of 5 million may supply a long-term market (p.14) for other industries. In the 1970s and 1980s, a population of 5 million was mostly used as the dividing line but since the 1990s, 3 million or lower was every so often proposed

(Armstrong & Read 2000). The rationale for increasingly using lower population size lies in the common characteristics that these countries portray as compared to those which are relatively larger and the fact that the number of small states has increased in the last five decades. Nowadays, there is consensus that countries with a population greater than 5 million tend to be large and diversified economies, therefore, not small. However, the use of population as a measure of size overemphasises the factor labour in development and often ignores the distribution of skills. On the demand side, population might not be an adequate proxy for market size due to differences in purchasing power across countries. Population is not always positively correlated with area and GDP or the availability of productive resources; Iceland has a small population of about 280000 but a high income per capita, US$ 52000 in 2008.

Size can also be measured by land area, assuming that the larger the country the larger and more varied its natural and human resources. GDP is a better indicator of size as it is suggestive of market size but, still, it is an ex-post measure. Crowards (2002) reported that there are break points at around US$ 19 billion, US$ 7 billion, US$ 2.5 billion, and US$ 0.7 billion in the distribution of countries GDP. However, which cut-off value to adopt is highly subjective. Some researchers adopted a combined measure of population, area and GDP (Damijan 2001; Crowards 2002). Crowards considered a country small if it satisfies two of the following three characteristics: a low population, a small land area and a low GDP of approximately the 40th percentile. He found that 80 out of 189 developing countries are small, with 50 categorised as micro states. His study does not consider variables such as "export product concentration, export market concentration and a reliance on external finance and trade", which are common but not exclusive to small states (Crowards 2002, p.173).

In practice, however, little consideration is given to these economic measures. It is not farfetched to say that many countries want to be small for opportunistic reasons, such as, benefiting from special and differential treatment in the area of aid and finance from international organisations. In general, countries consider themselves small on different bases. The varied characteristics of states that are members of the Alliance of Small Island States (AOSIS) illustrate both the diversity and subjectivity of the term smallness. The population size of members of the AOSIS ranges from 1570 for Niue to more than 6 million for Papua New Guinea. Nauru has a land area of 21 km^2 while Papua New Guinea has an area of 462,840 km^2. GDP per capita ranges from US$ 823 for Comoros to US$ 31,410 for Cyprus for the year 2008.

A more practical explanation of size was given by Dommen (1985). He argued that "the size of a State is a function of its breadth" where breadth refers to its immediate network of relations. Thus, he reported that although Mauritius is relatively larger than what is called a

microstate, it looks like one "since it is on the geographical periphery of a region where its neighbours are generally speaking much larger and more restless, and furthermore of a different culture" (Dommen 1985, p.13). In contrast, Fiji looks larger as it has a central politico-economic position in the South Pacific relative to neighbouring smaller states. Dommen concluded that, ultimately, an arbitrary threshold is required for practical reasons; he suggested that population might be the simplest measure. Nevertheless, a list of countries generated in this way should not be taken as fixed but should be modified according to each country's political, economic, strategic, cultural or other relations with their dominant network.

Smallness is accordingly a relative, transitory and geographically embedded term.

3. THE ECONOMICS OF SMALLNESS

Economists addressed the issue of smallness when they convened in 1957 at the Conference of the International Economic Association to discuss the relationship of the size of nations to economic prosperity and growth. The proceedings were later edited by Robinson (1960). Since the establishment of common markets and free trade areas are justified on the premise that the limited size of the national markets does not allow scale economies to be exhausted, the question that remained was at what size of the market are the economies of scale exhaustible. This issue is addressed throughout Robinson's book. Svennilson (1963) suggested the rationale for treating a nation as a unit of economic analysis: a nation can be distinguished from other units as it resides within a boundary which is demarcated by discontinuities in the factors of production. Such discontinuities are the results of differences in language, skill, education, culture and interest. But most importantly these discontinuities are man-made, taking the form of protectionist measures such as tariffs.

The new founded political independency of small states raised questions about their ability to be autonomous on matters of industrial, monetary and development policies. Selwyn (1975) dealt with these issues in *Development Policy in Small Countries*. The book emanated from a compilation of papers presented during a conference at the University of the West Indies in Barbados in 1972. The dependency of small states on foreign trade and aid was reported but with a positive connotation as areas for manoeuvre. In other words, Selwyn believed that small states could be good economic performers if appropriate policy measures were adopted. As argued by more recent scholars, regional integration was considered a probable solution to counter the challenges imposed by smallness.

In his seminal paper, Kuznets (1960) laid down the defining characteristics of small countries. He emphasised that limits upon diversity of resources, range of possible industries, foreign trade dependency and other problems of efficiency were exacerbated in nations with smaller population. Accordingly, the economic structure of small nations is less diversified for the following three reasons. First, small size limits the availability of natural resources. A smaller area has lesser variation of climate, minerals, soils and other resources than a large area. Second, there exists a conflict between the limited domestic market and the minimum or optimum scale of production for some industries, for e.g. automobile and aircraft. While access to foreign markets may reduce this conflict, it may not be without risk. Third, it follows from the lack of resources that most of available resources will be devoted to sectors where the nation has a comparative advantage to the expense of other sectors, in other words, there is economic concentration.

Given a small domestic market, limited scale economies and scarcity of labour, Kuznets hypothesised that foreign trade has a greater weight for small nations than the large. This is particularly true of nations that have achieved a high income per capita and, thus, have a higher propensity to import. In noting that a greater share of foreign trade is largely the consequence and complement of greater economic concentration, Kuznets mentioned that small nations do not face interior transportation costs as do large nations, as such small nations are more apt to specialise in world-traded exports. Kuznets did not take into account that small nations are often islands which implies that although interior transportation costs may be low, islands still face distance costs to and from the continents. Small islands face increased transportation costs which may limit traded exports.

Following Kuznets, many scholars have re-confirmed these characteristics of small states: limited size of their domestic market (Briguglio 1995), inability to achieve economies of scale (Jalan 1982; Easterly & Kraay 2000), limited resource base, exports and export market concentration (Armstrong & Read 1998), high degree of openness to trade and a larger public sector (Alesina & Wacziarg 1998), vulnerable to external shocks (Easterly & Kraay 2000), environmental and climatic shocks (Pelling & Uitto 2001; UNEP/WMO 2007) among others. Armstrong and Read (2003) emphasised the economic sub-optimality of small economies which results from their inability to create a critical mass of domestic activity. As a result, these countries cannot engage in the standard process of industrialisation[2] which is based on a large population and a large manufacturing sector, both of which are lacking in small countries.

[2] In particular, the Lewis model of growth.

Armstrong and Read (2003) contended that while smallness poses challenges it may not necessarily limit economic growth. Appropriate economic policies designed to exploit a country's comparative advantage can offset the disadvantages of smallness. They based their arguments on the endogenous growth theory which, contrarily to standard growth theories that impose structural preconditions on growth, allows for the inclusion of specific conditioning variables. They identified four conditioning variables relevant to small countries, namely, openness to trade, human capital formation, locational advantages and social cohesion. First, small countries' high degree of size-induced openness to trade promotes export-led growth which positively impacts on their international competitiveness. Second, the quality of the stock of human capital available in a country can provide a comparative advantage in some specific sectors. Third, small countries that are located in wealthy regions or near prosperous markets will have greater opportunities to attain higher growth rates. Fourth, cohesion creates greater economic consensus and allows small states to be more responsive and flexible to change. Often, their high degree of flexibility and internal cohesion can compensate for their vulnerability to external shocks.

While Kuznets emphasised the challenges faced by the small, he, nonetheless, acknowledged that small states can be successful under certain conditions. He attributed the success of some small nations to their fortunate natural resource endowments. Often these are exploited by foreign firms but benefit the local nation. Nevertheless, the existence of valuable natural resources per se does not guarantee sustained economic development—it represents only a "permissive condition" to achieve growth. For instance, Brazil was considered an El Dorado for resources in the 19th century but it has not achieved significant growth. Although "*every* small nation has some advantage in natural resources—whether it be location, coastline, minerals, forests, etc", sustained economic growth can only be found in the "nation's social and economic institutions" (Kuznets 1960, p.28). This argument parallels the point made by Armstrong and Read (2003, p.113) when they emphasised that "optimal endogenous policy formulations has a critical role in growth".

Furthermore, Kuznets agreed that social cohesion or social capital is an advantage to small nations although he did not use these exact terms. According to him, small nations have a small population which implies greater homogeneity and closer internal ties than would large nations. This greater community feeling is mainly due to common historical experience and close lines of communications. As such, the social adjustments that are required to benefit from technological change and economic growth are easily undertaken. For instance, some groups will lose in importance while others will gain: agriculture will be replaced by non-agricultural sectors. In addition, small nations are more able to spread the economic cake in an equitable

manner. He concluded that the greater elasticity of the socio-economic institutions of a small nation can overcome the size disadvantage.

Svetličič et al (2001) had a similar argument when they documented that a small economic area may be disadvantageous but a small social area may not. Thus, smallness has benefits on the political and sociological dimension including the capacity to achieve "better social cohesion, better structure of the labour/capital relationship and implementation of better policies, and more flexibility" (p.6). Income tends to be more equitably distributed. These factors contribute to socioeconomic stability which in turn leads to more efficient resource allocation, hence, higher living standard. In addition, the limits of scale economies can be offset by integrating the world economy.

Many of these economic characteristics of small nations have been disputed by Damijan (2001). First, he claimed that the methodology used in earlier studies is questionable because the sample size used was usually small and the measure of country size was inadequate. Second, he noted that these characteristics might hold but only under certain conditions, namely, under similar developmental level and geographical location, and under non-discriminatory trade policies. He reported that Damijan (1993, 1996) proposed a weighted-measure of size which combines the geographic, demographic and economic dimension. Therefore, to be categorised as small, GDP should be roughly below US$ 20 billion, population below 13 million and area below 500,000 km^2. The use of different metrics raises the issue of whether small is an economic construct or a geographical construct with economic implications.

Using a sample of 186 countries and regression analysis, Damijan (2001) found an inverse but weak relationship between size and economic performance. After controlling for geographic location (he only distinguished between European and non-European), he proposed that no country is poor because it is small but its geographic location might play a more determining role. He further found an inverse but weak relationship between size and production concentration[3]. He attributed this weak impact of size on production concentration to the low effect of natural resources in production specialisation and to the prevalence of protectionist policies. As regards the latter, he emphasised that small countries can only act as small countries in a liberal economic order where economies of scale would guide their production structure and export specialisation. Geographic location was again very significant.

[3] The Gini-Hirschman measure of production concentration was used: $CPC_i = \sqrt{\sum_j \left(\frac{V_{ij}}{V_i}\right)^2}$ where CPC_i denotes the coefficient of production concentration of country i, V_{ij} denotes the value of manufacturing output for sector j and V_i stands for the total value of manufacturing.

In verifying the thesis that small countries are unable to attain economies of large-scale, Damijan (2001) found two patterns. Firstly, size is less important in sectors characterised by natural endowments. Second, size favours sectors which are highly capital- and R&D intensive. He found no evidence that small countries have a greater openness to foreign trade, a greater geographic and commodity concentration of foreign trade and a larger public sector. On vulnerabilities to external shocks, he found that they are more a function of the structure of the domestic economy where the nature of the main imports and exports matter rather than the domestic concentration of activity. Some economists believed that the export multiplier of small countries to be low. This follows from the fact that they have a high marginal propensity to import which results in a low export multiplier. Using regression analysis, Damijan found that size only explains 2.7 per cent of variance in foreign trade multiplier. Once again, he found geographic location to affect the multiplier significantly. In sum, one general observation from Damijan's criticisms of the characteristics of small countries relates to the importance of geographical location in determining whether a small country is at a disadvantage when compared to the large.

Investigating the case of the Caribbean Community (CARICOM), Griffith (2007) argued that economic smallness is irrelevant in determining the economic structure of production. He believed that knowledge skills are more important determinants. However, he only inferred these conclusions from the historical development of the advanced nations that are not readily comparable to small countries. Through a few examples, such as the use of solar energy in the Barbados, he claimed that CARICOM countries can better their economy if they appropriate sufficient skills and attract foreign investment. It is important to point out that despite the fact that CARICOM countries are small they are geographically close to the US, one of the major world markets. Thus, his conclusions are biased towards small economies that have easy access to large markets.

Alesina and Spolaore (2003) investigated the benefits of large size. First, the per capita cost of public goods diminishes with size. A large population implies that the costs of providing defence, public health, monetary and fiscal policies, and public infrastructure amongst others are distributed over a larger number of taxpayers. Second, a large country is less likely to face foreign hostilities as it can better protect itself. However, the size of defence of a country is largely dependent on the size of other countries and on their military aggressiveness. Third, in the absence of totally free trade, large size is equivalent to large markets. To the extent that there is increasing returns to scale which increase productivity, large countries should be richer. Fourth, large countries can better manage uninsurable shocks. If a region in a large country is hit by some disaster, it can benefit from redistributive fiscal transfers from other regions.

However, if the region is an independent country, it would receive no transfers. In this regard, small nations are at a disadvantage. Last but not least, in a large country positive and negative externalities between regions can be internalized.

The cost of heterogeneity increases beyond a certain size. In general, the larger a country, the more diverse will be the preferences of its population because of differences in culture, language, socioeconomic status, beliefs and goals to name a few. To cater for heterogeneity, some governmental policies might be delegated at the regional or local level, but most policies are nation-wide and may not be optimal for specific groups in the population. Small countries tend to be more homogenous. In *Size and Democracy*, Dahl and Tufte (1973) advocated the benefits of homogeneity. In fact, Anckar (1999) found that small countries are homogenous in terms of attitudinal diversity, which he measured by the number of political parties[4], hence, less prone to conflicts. Yet, in terms of categorical diversity, that is, ethnic, linguistic and religious diversity, he found no difference between large and small countries.

Kohr (1957), who is believed to have coined the famous phrase "small is beautiful", contended that the economic optimum social size is between 4000 and 5000 people with at least 1000 adults which would allow for sufficient specialisation. He maintained that capitalism has been successful because initially it was driven by competition between many small facilities not a few large. Capitalism afterwards declined not because of its social externalities but because it was ruled by large entities including monopolies. Kohr argued that large-scale development did not cause a rise in living standards. A rise in living standards should be expressed by a rise in consumer goods over the basic essential goods needed for survival. Producer goods should not be included since they do not directly satisfy human wants. In fact, the world witnessed an increase in production goods and facilities (not in consumer goods) which was necessary to meet the increasing demand for essentials not of luxuries. Kohr, therefore, reasoned that what appeared to be an improvement was a sheer decline in standard of living. The economics of large size was to blame for this impoverishment.

In brief, Kuznets can be appropriately regarded as the father of the economics of smallness as he laid down the framework for investigating small nations. The majority of the economists that addressed smallness have implicitly or explicitly followed his framework for researching small economies. To summarise, most scholars believe that smallness brings economic challenges and they often propose integration with other economies or regions as a

[4] According to Anckar "the more parties there are, the more dissenters from the majority perspective; the number of parties, therefore, reflects attitudinal differences" (Anckar 1999, p.37). The total number of parties was taken without discriminating the size and kind of parties. The obvious limitation of this measure is that it excluded countries where the free party system did not apply.

solution. Those who are more optimistic are those who believe in the new growth theories, and they often emphasise the positive impact of the social asset variable on economic performance.

4. SMALLNESS AND POLITICS

In the area of international politics and relations, the term state is almost always equated with power. Indeed, Neumann and Gstöhl (2006) noted that until the 20th century, states were commonly referred to as powers in the European languages. Nowadays, the term power is used to refer to a powerful state whereas small powers are referred to as small states, thereof implying the lack of power of the latter. Legally, all sovereign states, great or small are equal. Politically, they are far from being equal. Rothstein (1968) defined a small power as a state that believes that it cannot guarantee its security by its own means and, consequently, requires foreign assistance from other states or institutions. Under this definition, most contemporary states are small except the few super military or nuclear powers. This definition is merely "residual", that is, small states are defined by what they are not—they are not great powers (Neumann & Gstöhl 2006, p.6). In addition, such a definition allows for little functional analysis.

Keohane (1969) looked into systems theory for a better definition. Four types of states emerge when systems classification is applied to states: (i) system-determining states act like imperial powers as they shape and dominate the system—in modern terms, they are called the great powers; (ii) system-influencing states exert significant influence on the system generally through multilateral actions—they are secondary powers; (iii) system-affecting states cannot individually influence the system but act as small groups or through regional and international organisations—they are also known as middle powers; (iv) system-ineffectual states are those that do not seek to influence the system but are rather dominated by the system—these are the small powers. Keohane added a psychological dimension to these definitions. For instance, a small power is one whose leaders perceive itself to be a 'small' power. The perceived inability to act often works to the benefit of small states: they can let the capable larger states act while they free-ride.

The definition of micro-states seems to be more straightforward. According to Neumann and Gstöhl (2006), microstates are those states or territories that have issues maintaining an effective sovereignty, that depend on other polities in formulating and conducting policy and that are usually absent from the international society, that is, international organisations, embassies, etc. To cite an example from Neumann and Gstöhl, in 1920, Liechtenstein's application to the League of Nations was rejected as its sovereignty was shared and it possessed

no army. The problems of microstates emerge essentially from a lack of resources. The latter remark illustrates the major role that resources play both in politics and economics. Many microstates gained equal sovereignty within the international community in the 1990s as many of them, such as, Liechtenstein, Monaco and Andorra joined the UN.

The political status of small states varies widely and includes non-self governing territories, overseas territories integrated with a metropolitan state and republics among others. Small size or small population size does not necessarily imply a small-scale political system. The viability of a small state "depends precisely on the flexibility of the political system in the domestic and international context" (Sutton 1987, p.7). Although it is believed that smaller states tend to have larger governments, Sutton reported that the size of government is more often a function of colonial heritage; countries influenced by the British Commonwealth system appear to employ a larger number of civil servants.

Clarke and Payne (1987) stated that small states display more democratic practices than other group of states. However, this democratic tendency derives not from their smallness but from their ex-British colonial status. Politicians appear to exert a dominant and personalised influence in small states but this is not necessarily good or bad. However, these authors maintained that smallness confers "few economic advantages"; success should be pinned on institutional policies and management (p.61). The problems of small states, with regards to politics, society, economics and security, are not unique to small states but represent additional challenges which need examination. The authors proposed that regional economic integration should limit the size constraint but might enhance the inferior position of small economies vis-à-vis the world economy. Despite bringing few economic benefits, smallness can at best facilitate social changes. Clarke and Payne proposed that a political economy of small size would be more useful to address the practical matters of small economies rather than an economics of smallness. Their book examines a number of cases including both islands and non-islands. Sutherland (1987) reported the economic openness and indebtedness, factional unemployment and preferential treatment in Fiji's small economy. Cohen (1987) argued that the new-found independence of small states is not synonymous to freedom or liberalism.

Keohane (1969) stressed that alliances are crucial to the prosperity of small states. Broadly speaking, an alliance involves a reciprocal formal pledge by states to cooperate or aggregate their power to ensure internal security. The wartime diplomatic power of small states was researched by Baker Fox (1959). She studied how the small and military weak states of Finland, Sweden, Turkey, Norway and Spain resisted pressure from the great powers. She found out that their geostrategic neighbourhood and bargaining abilities were to be praised. In a

similar vein, Neumann and Gstöhl (2006) mentioned that membership to international organisations is one strategy to gain prestige which in turn can minimise the consequences of smallness. Krasner (1981) also praised the benefit of unification when he argued that structurally weak states are able to alter the international regime when they unify.

5. SMALLNESS AND SOCIETY

One of the earliest work on smallness was the book edited by the late social anthropologist Benedict in 1967. Entitled *Problems of Smaller Territories,* it resulted from a seminar on the same theme organised by the Institute of Commonwealth Studies of the University of London in 1962. The 1960s marked the beginning of the independence of many islands and enclaves which were, generally, small territories. The conference participants attempted to define smallness but without success: they argued it would be arbitrary since smallness is a comparative not an absolute concept. For the most part, the authors showed concern regarding the abilities of these small territories to prosper on their own with respect to their political and economic development. From a sociological viewpoint, it was emphasised that while their particularistic relationships engender, what is now termed, social capital[5], yet their deep factionalism tends to breed conflict[6]. As claimed by the political scientists, the sociologists thought that economic and military integration with larger or even similar territories were necessary to ensure the stability of small states. While the book laid down the foundation for addressing the socio-economics of smallness, the inclusion of very diverse territories, such as, Luxembourg, Swaziland and Tory Islands (off the coast of Ireland) rendered any comparative analysis and conclusion difficult (Lockhart et al. 1993).

Lowenthal (1987) exposed the socio-cultural characteristics of small states. According to him, substantiality, of area and population, and durability over time are the two criteria that the common man has in mind when thinking of a state. Small states lack both. Small states lack substantiality because the extant of area, population, or GNP by which size is measured depends on variables whose weights shift with context and over time. Smallness was the norm until the late 19th century. Aristotle's ideal state was made up of 5040 inhabitants. Later, in the days of the Empires, states gained in size and power. However, by the end of World War II, small states emerged in the Balkans and the Baltic. Further, as of the 1960s, numerous small states gained independence. Lowenthal argued that small states are barely durable. At the time he wrote his

[5] Portes (1998) provides an interesting review of the concept of social capital.
[6] This argument derived directly from Grenada's political conflict between Eric Gairy, the elected chief minister and the colonial administrator in the late 1950s and 1960s.

article, many of these states were only a few generations old. In addition, the post-war downfall of Estonia, Latvia and Lithuania added to this sentiment. He mentioned that the economic, political and social systems in small states tend to coincide rather than overlap. In sum, most of the social scientists believe that smallness brings a number of benefits on the social dimension but generally tends to deter economic performance.

6. SMALLNESS AND ISLANDNESS

As with smallness, islandness is not an easy concept to define[7]. An island can be defined as an area surrounded by sea, smaller than the smallest continent, and sharing no borders with any other nations. However, these areas can be anything from sandbanks, to pinnacles of rocks and to extensive land masses that can amount to millions of pieces. The use of international law is often the most logical way to find proper definitions. Yet, as reported in Dolman (1985), on-going disputes over maritime claims[8] render any definition of an island useless. In this thesis, the term island refers to an island economy which is a more straightforward concept. An island economy is an area bounded by sea sharing no borders with another economy and capable of sustaining human life in the long-term through the workings of its economy, socio-cultural and environmental dimensions and its relation with other nations.

Scholars from various disciplines study islands. The discrete nature of islands attracted anthropologists who qualify them as laboratories where theoretical hypotheses can be tested (Fitzhugh & Hunt 1997; Baldacchino 2005). However, "islands are not islands, in the sense that they are not closed unto themselves...boundaries are fractal, locality ephemeral" (Baldacchino 2004, p.2). One can argue that islands are not insular. For instance, trade connects islands with the rest of the world. In addition to economic relationships, colonial ties, cultural legacies and digital connectivity with the rest of the world have transformed the notion of hinterland. In light of these views, island studies are bound to become increasingly important in the next decades as is already evidenced by the growing literature. A number of seminars and conferences are regularly being held across the world to discuss issues related to islands: Islands of the World, International Small Islands Studies Association; the International Conference on Small Island Networks; the International Geographical Union's Commission on Islands; and Island Dynamics Conference among others. In addition, specialised journals are devoted to island studies, such as Island Studies Journal and Shima: The International Journal of Research into Island Cultures.

[7] The AOSIS which is a coalition of "islands" includes in its ranks some low-lying coastal states.
[8] For more information see the Law of the Sea Convention at http://www.un.org/Depts/los/index.htm

The economic literature on islands has considerably increased over the last decades. Studies on aid, growth, development, FDI and tourism are widespread. The attention devoted to islands came with the international recognition of the implications of islandness for economic development. In 1974, the United Nations (UN) established a New International Economic Order[9] which aimed at reducing the socio-economic gap between the developed and developing nations. Unprecedentedly, the UN acknowledged that developing *island* countries required special attention along with other groupings of developing countries, namely, landlocked, least-developed and countries severely affected by economic and natural crises (United Nations 1974). Thus, islands were given a status. Subsequently, various documents and articles on islands were published by the experts and scholars. In 1994, this group of islands (excluding the large islands) came to be referred to as Small Island Developing States (SIDS) by the UN.

Dolman (1985) provided one of the first and most comprehensive reviews of the specific problems of islandness over and above smallness. He stressed that the classical problems faced by most developing economies, such as, scale economies, economic concentration and so on, are greater in concentration and severity for small islands. In addition, islands encounter challenges to connect to their markets because of their remoteness. In contrast to developing countries, Dolman reported that small islands are limited in their agricultural development because of restricted climate, lack of land resources and soil quality among others. This limitation leads to concentration on a few agricultural products. There is even slower progress in small islands manufacturing sector. Aid, remittances and earnings from tourism help to cover the growth in imports but only tourism appears to be a reliable source of earnings; nonetheless, it is heavily dependent on external forces. Tourism also requires adequate internal infrastructure which is often lacking on small islands. Dolman elaborated on the valuable marine resources at the disposal of islands that have often been neglected because of a colonial history of exploiting inland resources.

Not all small states are islands but many islands are small states with a few exceptions, such as, Australia, New Zealand, Great Britain and Greenland. Small states are not necessarily low-income countries while many small island states are categorised as Third World states. The focus of this paper is on islands that are small. Thus, the problems elaborated in the previous section about smallness readily apply to but are more pronounced on small islands—particularly, their environmental fragility, proneness to disasters and problems associated with remoteness. Small islands manifest environmental vulnerability that clearly demarcates them from other small states. Environmental vulnerability refers to the risk of damage to a country's natural environment including "ecosystems, habitats, populations and communities of

[9] 3201 (S-VI) Declaration on the Establishment of a New International Economic Order

organisms, physical and biological processes, energy flows, diversity, genes, ecological resilience and ecological redundancy" (Kaly et al. 2002, p.1). Damage to the environment is often irreversible. Many small islands are endowed with a unique but fragile ecosystem and most of them are situated in eco-regions[10] and biodiversity hotspots[11]. Ecosystems are the foundations upon which human life and welfare depends. However, small islands' very quest for development and higher quality of life pose a threat to their ecosystems. The features that intensify this threat include: limited inland resources, dependency on marine and coastal resources, tourism externalities, rapid population growth, exposure to environmental hazards and exposure to global changes among others.

Using data that span over a 20-year period from the United Nations Disaster Relief Organisation, Briguglio (1995) showed that islands are more prone to disasters than non-islands. Thus, they are to some extent affected by climate change (UNEP/WMO 2007). Rasmussen (2004) reported that small islands have the highest frequency of natural disasters as many of them are located in areas prone to tropical cyclones. Using cross-country regressions, he showed that while human costs of disasters tend to decline with income, the extent of damage does not depend on the level of income and does not become less costly with economic development. This suggests that all islands whether developed or less developed are vulnerable to disasters. For example, in 2002, Mauritius was struck by Cyclone Dina that caused damage to food and cash crop. Growth rate in the sugar sector, the main foreign exchange earner of the country, declined from 9.9 per cent in 2001 to -19.3 per cent in 2002 (AfDB/OECD 2004). Pelling and Uitto (2001) reported the susceptibility of small islands to oceanic and climatic variations. The El Niño phases caused water shortages on Papua New Guinea, Marshall Islands, Federated States of Micronesia, American Samoa, Samoa, Tonga, Kiribati and Fiji, while Tuvalu, Samoa, Tonga, Cook Islands and French Polynesia have greater probability of facing cyclones. In addition, rising sea level might negatively affect coastal resources of many islands.

Given the challenges mentioned in the previous sections, small islands are characterised as vulnerable. Specifically, vulnerability denotes the exposure of small islands to external shocks over which they have little or no control (Briguglio 1995; Easter 1999; Briguglio & Galea 2004). The term vulnerability encompasses the economic, environmental and social dimensions where these dimensions do not operate separately, instead, they intricately overlap. For instance,

[10] World Wildlife Foundation defines an eco-region as "relatively large units of land or water containing a distinct assemblage of natural communities sharing a large majority of species, dynamics, and environmental conditions". For more information visit http://www.worldwildlife.org/science/ecoregions/item1847.html

[11] The NGO Consevational Internation identified biodiversity hotspots around the world. They are areas which contain the world's richest biodiversity. For more information visit http://www.biodiversityhotspots.org

environmental vulnerability causes economic vulnerability and vice versa. The literature focuses on economic vulnerability. Small island economies are size-induced open economies. Their dependency on external economies suggests that external shocks can rapidly be transmitted into their economies. These shocks might negatively affect the system of production, distribution and consumption, hence, disrupting economic stability which, in turn, will hinder economic progress. Small island economies are economically vulnerable. For instance, the elimination of the quota-allocation system, the Multifibre Agreement, led to the collapse of the textiles and clothing industry of Maldives, a small open island economy.

To assess the vulnerability of countries, researchers from the Commonwealth constructed a Commonwealth Vulnerability Index (CVI) while the UN constructed an Economic Vulnerability Index (EVI). These indices differ in methodology resulting in different country rankings and subsequent ambiguity. The vulnerability concept suffered further disputations as scholars showed that small states are good economic performers, some of them having very high income per capita (Armstrong & Read 2002). However, vulnerability does not measure economic performance but the extent to which a country is exposed to exogenous shocks. Some countries may have built resilience and are able to mitigate the effects or withstand those exogenous shocks through various mechanisms. Thus, performance of a country would depend on both vulnerability and resilience. Briguglio et al. (2009) developed a resilience index which includes a country's macroeconomic stability, microeconomic market efficiency, governance and social development.

7. REMOTENESS

Spatial separation raises trade costs, and an increase in trade costs reduces trade and other economic transactions, and consequently, hampers economic progress. There is consensus among scholars that small islands have a high dependence on international trade. A significant subset of these islands is located away from the main trading centres; most of them are geographically positioned in mid-ocean. To the extent, therefore, that spatial separation limits economic transactions, many small island economies are at a double disadvantage: first, through their smallness and second, through their remoteness.

The impact of distance on trade and, hence, economic performance is well-documented in the international economics literature. Among other methods, gravity models have been particularly useful in establishing the extent of distance effect on trade. In its earliest form, the gravity equation demonstrates that bilateral trade flows between pairs of countries are well-

explained by the product of the countries' GDP. In other words, trade will tend to be larger between large countries and between countries that are more identical in their relative sizes. Since the seminal work of Tinbergen (1962), the above relationship has been empirically validated.

However, prices differ between countries due to distance and other costs. Hence, the standard assumption of identical prices in the Heckcsher-Ohlin model of trade has faced severe criticisms. Thus, the gravity model often used to explain bilateral trade between countries *i* and *j* is given in equation 1 below. X_{ij} denotes exports from *i* to *j*. Sizes of countries are measured by their GDPs and trade costs by the distance between them.

$$X_{ij} = G\frac{Y_i^{\propto}Y_j^{\beta}}{d_{ij}^{\delta}} \tag{1}$$

where G, α, β, and δ are parameters to be estimated. The parameter δ measures the sensitivity of trade to distance between countries *i* and *j.* When the estimated parameter δ is high it indicates that distance between countries is important in determining trade while a low value points to the contrary. The parameters in the above equation are often estimated by taking the logarithm of the equation. The resultant log-linear relationship is as follows:

$$lnX_{ij} = \ln G + \propto \ln Y_i + \beta \ln Y_j - \delta \ln d_{ij} + \varepsilon_{ij} \tag{2}$$

In equation 2, the parameter δ measures the elasticity of trade with respect to distance and ε_{ij} denotes an error term that controls for measurement errors. When the parameter δ is zero, it suggests that distance has no impact on trade. This parameter has more than often been estimated as positive although with varying intensities.

Three approaches are used in the literature to estimate the gravity equations while allowing for price differences. The first approach makes use of price indices to account for price effects as in Bergstrand (1985; 1989) and Baier and Bergstrand (2001). However, the use of published price indices to measure country prices may not accurately reflect border effects since the various costs associated with time, money and currency risks may not be adequately accounted for through these indices.

The second approach was developed by Anderson and van Wincoop (2003) who made use of the market clearing condition to estimate the border effects. This approach accounts for price differences by modelling c.i.f. prices as differing from f.o.b. prices. One important finding

from Anderson and van Wincoop (2003) is that border effects are asymmetric for countries of different sizes; in particular, they have larger impacts on small countries. The estimation procedure of Anderson and van Wincoop requires considerable programming. The third approach is computationally less demanding: the unobserved price effects are accounted for in ordinary least squares through fixed effects as in Hummels (1999) and Rose and van Wincoop (2001). As reported by Feenstra (2002), the latter method is the preferred method as it is simpler to estimate and produces consistent estimates of the average border effects across countries.

Whatever methods have been used, the effect of distance on trade is evident. Disdier and Head (2008) reported that the elasticity of distance with respect to trade volumes tends to vary between -0.6 and -1.5. They conducted a meta-analysis of 1467 estimates from 103 papers and found that, on average, a 10 per cent increase in distance reduces bilateral trade by 9 per cent. Neither the use of different sample sizes and methodologies nor the use of recent data reduced the distance effect. Their findings are in contrast with researchers who claim that progress in transportation and communication technologies have led to the death of distance (Cairncross 2001; Friedman 2006). Disdier and Head suggested the following reasons why transportation costs did not decline with technological progress. Firstly, advances in technology, such as, emailing and teleconferencing have little impact on distance costs for trade in goods. Secondly, as income increases, time has gained extra value, thus increasing distance costs (Hummels 2001). Thirdly, the composition of trade shifted towards distance-weighted goods. According to neoclassical theory, the absence of barriers to trade will ultimately lead to factor price equalisation, in other words, convergence of income. Instead, Brakman and van Marrewijk (2008) found that between 1950 and 2003 there was an increase in income dispersion and no global convergence. They concluded that the death of distance argument is questionable and that "it's a big world after all" (p. 431).

The above paragraphs point to the conclusion that distance still matters. Hence, remote islands are at a disadvantage[12]. Firms in remote islands face higher transportation costs and longer shipping time than firms located in countries which are geographically closer to their markets. Transport costs comprise a significant part of trade costs. According to Redding and Venables (2002), they account for 28 per cent of the value of goods shipped. Shipping costs are largely determined by monopolies in the carrier companies and Fink et al. (2002) reported that these monopoly practices raise transport prices by 25 per cent. The doubling of distance

[12] One of the difficulties of the gravity model is that it does not separate the scale effect. For example, Australia and New Zealand present challenges to the model as they benefit from scale despite the fact that they are remote.

increases transport costs by 20 per cent or more (Limao & Venables 2001). Small islands have an insignificant share of world trade; as a result, they are not typically located on the major trading routes of shipping companies. Consequently, their unit cost of transport is higher. Longer shipping time and increased costs make remote islands less competitive; they may incur great losses when they have to ship perishable or strategic products. They cannot take advantage of just-in-time techniques; they usually have to maintain large stocks. In addition, transit time costs are considerably larger. An extra day of travel accounts for 0.3 per cent of the value of goods shipped; the number increases to 0.5 per cent if manufacturing goods are considered (Hummels 2001).

Distance not only raises transportation costs but hinders foreign direct investment, cross border equity transactions (Portes & Rey 2005), technology flows and the development and application of R&D (Keller 2001). Redding and Venables (2002) reported that countries which are distant from large foreign export markets have a low degree of foreign market access. They further documented that access to raw materials, intermediate goods and capital are not only limited but are more expensive. To illustrate how geography matters, they manipulated country locations in some experiments. They observed the effect on income of shifting country 1's to country 2's location. They found that being either islands or landlocked reduces income. Around 7 per cent of GDP is lost by being an island. The two islands considered were Sri Lanka and Australia and the effect would vey probably be of greater magnitude if SRIEs were to be considered. In a more recent paper emphasising economic geography, Redding and Venables (2004) found that halving distance between trading partners leads to an increase in per capita income of 25 per cent.

More recently, Head and Mayer (2011) provided further evidence that geography matters. They showed that the impact of geography on income as in Redding and Venables (2004) generalises to panel data. In line with the New Economic Geography literature, they derived a structural estimation that explained the level of factor incomes in a country by its proximity to large markets. Access to market is measured by an index of market potential. The latter is an expenditure-weighted average of relative access where the weights are bilateral trade costs from country *i* to each of its export markets. They found a positive relationship between market potential and income per capita. Countries that have small markets and few or small neighbours are worse off than larger and/or more centrally located countries. For instance, Switzerland benefits from its location while USA and China benefit from their internal market sizes. By changing the low market potential of the Congo Democratic Republic with the higher market potential of Thailand, GDP per capita of the Congo Democratic Republic is predicted to increase by 24 times.

Both the work of Redding and Venables (2004) and Head and Mayer (2011) derive from the new economic geography literature. This branch of literature was initiated by the work of Krugman (1991) which modified the standard new trade model with monopolistic competition à la Dixit and Stiglitz to analyse regional concentration of economic activities. Core-periphery models are the outcome of this literature and they explain geographic concentration through a self-reinforcing agglomeration process. Agglomeration forces result from two main effects: first, market access effects, that is, economic activities would be concentrated where demand is larger to benefit from economies of scale; second, costs of living effects, that is, prices are competitive when there is concentration of activities, hence, higher consumer surplus which, in turn, reinforces the first effect. However, agglomeration is discouraged by transportation costs and market crowding out effects that encourage the spreading of activities.

According to the above core-periphery framework, small and remote islands are more or less located in the periphery given their limited market size and expected low market access as compared to other countries. World-systems analysts would also identify remote islands as peripheral. This school of thought views the social and economic behaviours of countries or regions as integrated into the greater global system. The core-periphery hierarchy emerged from the work of Wallerstein (1974, 1979) which refers to the functional international division of labour that divides the world into three, not necessarily proximal, regions called the core, semi-periphery and periphery. This is usually regarded as a power structure where the core dominates the periphery which is structurally constrained to a subordinate developmental status. Political scientists refer to this hierarchy as the North-South divide[13].

Chase-Dunn (1998) proposed that *regions* should be considered as the unit of coreness or peripherality as opposed to the nation state since economic networks are not limited to state boundaries. Core regions are characterised by a concentration of capital-intensive production, hence, consist of the more developed and powerful countries. It follows that peripheral regions include the less developed countries, often characterised by labour-intensive type of production. In between these two regions lies a continuum of semi-peripheral regions. In the context of the present paper, the disadvantages encountered by small and remote islands partly precluded the development of capital-intensive production. In view of that, and given that many small and remote islands are classified as less developed countries, this group of countries are expected to be positioned in the periphery. However, as reported in Chase-Dunn (1998), capital-intensive production may not necessarily, although more often than not, yield higher returns.

[13] Besides economic inequality, the core-periphery framework displays also political-military inequality. Historically, the core dominated the periphery through colonialism and other direct form of control. Today, this dominance takes the form of military or economic aid among others. Part III of Chase-Dunn (1998) provides a detailed literature on the core-periphery structure and relations.

The emergence of core regions does not depend solely on capital-intensive production but on all activities that generate high returns.

Given the above literature, remote regions are more likely to be disadvantaged in their economic and social interactions as compared to non-remote regions. However, in assessing the impact of remoteness, economists most usually consider trade in tangible goods. Nevertheless, there might be high-yielding prospects in the services sector. Indeed, many small countries have developed high-valued and niche products and services in various activities such as banking, finance, brokerage, hospitality and tourism (Baldacchino 2002). Remoteness may provide opportunities, in particular, when they are combined with smallness and islandness. The "accident of geography" of remote islands can be transformed into "precious marketing assets" (Baldacchino 2002, p.254). Many scholars have suggested that islands would be better off as services economy specialising in sectors, such as, tourism and off-shore banking rather than relying on export manufacturing (Armstrong & Read 2000; Bertram 2004). Many types of tourism activities, for example, nature-based tourism are not capital-intensive but can generate high returns. As far as island countries are concerned, tourism is often claimed to be a better development strategy than the export of goods because islands have "natural, cultural or social attractiveness, which normally cannot be exchanged, and thus can be valorized at a premium through tourism" (Croes 2006:453).

While distance costs tend to make exports in general more expensive for remote islands, the effects of distance on tourism exports are more complicated. Some high-status and luxury goods and services are desired because of their very expensiveness. These goods are called Veblen goods whereby the willingness to pay for these goods and services increases with their prices. A decrease in the prices of these goods renders them unattractive as they are no longer perceived as being of high-status and exclusive. This idea was proposed by Veblen (1934) who introduced the theory of conspicuous consumption. According to Veblen, individuals strive to improve their status in society and they usually do so by displaying their wealth conspicuously. The theory of conspicuous consumption represented a critique to the neoclassical theory of consumption. The latter theory postulates that the individual maximises utility according to exogenous preferences. Contrarily, Veblen's approach argues that preferences are determined in a social framework depending on the social position of other individuals.

Some types of high-end tourism are affected by the Veblen effect. The more expensive and inaccessible is a destination, the more willing is the tourist to go there. The demand to go to small and remote islands is more likely to represent a form of conspicuous consumption. I refer to a broader definition of conspicuous consumption as suggested in Trigg (2001). Trigg claimed

to lay more emphasis on the original conception of the term conspicuous consumption by drawing from both Veblen (1934) and Bourdieu (1979). He argued against those who criticise conspicuous consumption on the basis that the display of wealth is not as overt nowadays as it was in the time when Veblen formulated his ideas. He reported that Veblen acknowledged that conspicuous consumption is not necessarily a conscious act but is rather an outcome of a set of principles that shape consumption decisions in an evolving environment.

Thus, the small and remote destinations may not only be desired for their expensiveness and for their status-enhancing effects but also for a desire to do things differently from other individuals. This brings us to the concept of positional goods as introduced by Hirsch (1976). Positional goods are desired because they are scarce, for example, paintings from old masters, antiques and exclusive access to scenic sights. Therefore, the supply of positional goods cannot generally be increased when there is a rise in demand. Many positional goods tend to be associated with status and, hence, they are affected by the Veblen effect. However, status goods are not always positional goods as their supply can be increased, for instance, the supply of high fashion goods can be increased to satisfy rising demand.

Tourism in SRIEs can be categorised as positional. The small and remote are more likely to be endowed with particular natural and socio-cultural characteristics. These characteristics are often unique to each of these destinations and, therefore, scarce. Tourists are attracted to exotic and unique places. This idea is well explained by Hoyle and Biagini (1999, p.359) who contended that "the very remoteness of some inhabited islands—Tonga, Tristan da Cunha—undoubtedly moulds their character and compounds their problems but adds to their attraction". From a demand perspective, there is a desire for being far and away. This attraction to remoteness is referred to as the "Robinson Crusoe" factor as postulated by Butler (1993). The arguments in the above paragraphs point to the fact that remoteness can be an advantage for SRIEs if they engage in high-end tourism. Despite the fact that remoteness can be an advantage, the cost of overcoming distance barriers may still be limiting. The success of remote island tourism depends to a large extent on the accessibility of these locations.

8. SMALL REMOTE ISLAND ECONOMIES

This paper addresses a gap in the existing literature on small islands: it proposes a novel categorisation, small remote island economies (SRIEs). Existing research acknowledges the main characteristics of smallness and islandness. The existing literature analyses small but often confounds remote and non-remote islands. Researchers attempted to define smallness

(Crowards 2002) and investigated its advantages and disadvantages (Kuznets 1960). Other researchers looked at the impact of trade on and established the determinants of economic growth of small countries (Armstrong & Read 1998; 2003). The vulnerability and resilience of islands (Briguglio & Galea 2004; Briguglio et al. 2009) and the impact of islandness on development are well-documented (Biagini & Hoyle 1999). Several aspects of island tourism and the impact of tourism on welfare of islanders have been widely studied (Apostolopoulos et al. 2002; McElroy 2003). Many others have investigated small island developing states (SIDS). Most of these scholars acknowledged the problems of remoteness and a few of them also exposed its opportunities. However, not many studies of small remote islands as a group have been undertaken per se. This new categorisation is a useful step to address this lacuna.

The classification of countries as SRIEs is not an attempt to proliferate categories but an effort to group countries that have similar structural characteristics and face similar challenges, hence, might be subject to similar policies. Other categories of small states, such as, SIDS, are useful because they group countries that face specific problems. Nevertheless, membership to these bodies seems to face political pressure. SIDS include members which are diverse in size, resources, and development level; they even include non-islands, for example, Belize. The categorisation SRIE has the strength that it focuses on remoteness and does not attempt to consider political status. Remoteness is a relatively simple term to understand and measure. In addition, as previously documented, there is ample evidence in the economics literature demonstrating the mostly negative effects of remoteness. The relative remoteness of some islands is one of their most essential problems as far as their development is concerned (Hoyle & Biagini 1999). It follows that the economic consequences of their particular geography—the combined characteristics of remoteness, islandness and smallness—are worth investigating. SRIE is a functional classification of countries that can be used for analytic and comparative purposes.

8.1 CATEGORISING SRIES

Any categorisation is to some extent arbitrary but, nonetheless, useful for economic analysis. However, defining the category SRIE is not an easy undertaking. One of the fundamental difficulties faced by researchers working on small economies is the availability of data; the smaller and more remote an economy is the less frequent and less accurate are the economic statistics. This problem is acknowledged in the literature, for example, Armstrong et al. (1998) reported that while the best economic statistics available internationally are usually per capita GDP and GNP, these data are frequently absent or only available in a non-harmonised way for

small states. The non-availability and inaccuracy of data often limit the type of analysis that could be undertaken. For instance, an analysis of trade at the intra-industry level cannot be undertaken because the data are often sparsely available with a lot of blank fields. Such problems can be partially resolved by extrapolation but the validity of the resulting figures is questionable. In this respect, the researcher has to take advantage of the different array of international data sets available to compensate for missing values from any single source but more often, the researcher is obliged to drop certain observations because of non-availability of data.

In this paper, data were mainly sourced from the World Development Indicators (World Bank 2010) which was complemented by data from the CIA World Factbook (Central Intelligence Agency 2011) and where necessary from the *Institut National de la Statistique et des Études Économiques* (INSEE 2011). Data on distance were sourced from the *Centre d'Études Prospectives et d'Informations Internationales* (CEPII) database.

8.2 DEFINING AN ISLAND ECONOMY

As documented in section 6, a further ambiguity lies in the definition of an island. The term island in SRIEs refers to an economy which is surrounded by sea and does not share a border with any other countries. Uninhabited islands, such as, Heard and McDonald Islands are excluded from the sample of island economies. Also excluded are islands which are only temporarily inhabited, for example, by military personnel. Tonga is an island but both Haiti and the Dominican Republic fail to qualify as islands since they share a border. Further, islands that are closely connected and proximal to neighbouring countries are not considered as islands as they have a somewhat contested island status. This includes Singapore which is connected to neighbouring Malaysia by the Johor-Singapore causeway, a man-made connecting structure, and Bahrain which is connected to Saudi Arabia by the King Fahd causeway.

An SRIE can be either a dependent or an independent state, hence, an island jurisdiction. The use of this broad category, often referred to as an island economy, is common in the literature as in Poirine (1993), Armstrong et al. (1998) and McElroy (2003). The economic ground for using a wide definition is that the distinction between economically and politically independent islands is not clear-cut (Armstrong et al. 1998): many dependent states are, today, highly autonomous in their economic affairs, for instance, the Canary Islands and French Polynesia. According to the CIA World Factbook, the latter is often referred to as an overseas country given its high degree of autonomy. It would be misleading to divide countries based on

their political status since there seems to be degrees of independencies rather than a dichotomous division of dependent and independent islands.

In this paper, the category SRIE focuses on economies that are small and remote regardless of their political status; although some islands have direct connections with their mainland, they may still be remote from other economic centres. It would be arbitrary to eliminate these entities. Moreover, depending on the purpose of the research, and if deemed necessary, political status can be controlled for in the analysis the researcher is undertaking. For instance, although formulated within a broader framework, tourism planning and policy are often regional or local. A preference for local administration is motivated by the fact that the different regions of a country differ in what they are capable of offering to the tourist, more so, detached regions of a country; particularly, island territories would more likely differ from their mainland. As an example, tourism in Réunion Island would differ from tourism in mainland France. Thus, it would not be justified to consider only independent states if one is investigating issues regarding *island* tourism performance[14].

On the other hand, if one is considering the effects of a policy that affects only independent countries, then political status matters. To set an example, the elimination of the textile and clothing multi-fibre agreement quotas affected many islands but its impact on independent exporting islands is of greater interest to the researcher since only these islands were allocated quotas[15]. Nevertheless, there could be spill-over effects on neighbouring economies. It is important to point out again that the number of islands included in any study would depend on the availability of data.

8.3 HOW REMOTE IS REMOTE?

For economic analyses, an island is usually considered remote if it is far away from its main trading and economic centres. An island's main economic partner often coincides with one of the major trading and economic centres of the world. This is because most economic activities and most of the world income are concentrated around these economo-political centres. Today,

[14] In the fourth essay of this thesis, I analysed the impact of islandness, remoteness and nature on tourism performance and tourism demand. It was deemed appropriate to consider both dependent and independent islands based on the explanations given above. Furthermore, due to data availability, not all the SRIEs listed in this paper appear in the fourth essay. In addition, the number of observations would be considerably reduced if I consider only independent states.

[15] The aim of the network analysis paper of this thesis was not only to investigate the impact of the quota elimination on independent SRIEs but also to investigate relocation of production in the post-quota period. Hence, I also included a number of dependent entities which were expected to play a regional role in the textile and clothing trade.

we can identify three of these centres, namely, Brussels (EU), Washington D.C. (US), and Tokyo (Japan) as in Armstrong and Read (2006) and Gallup et al. (1998). How far from these centres is an island at a disadvantage or an advantage is not so obvious. According to common logic, the island of Malta is not a remote island as it is easily accessible from many parts of continental Europe. Similarly, many of the Caribbean islands, such as, the Bahamas and the British Virgin Islands, cannot be considered remote because they are some of the most popular destinations and relatively close to the US. Contrarily, Fiji, in the Pacific and Mauritius in the Indian Ocean are suitable candidates for being remote islands. They are far from the main world centres and located amidst vast oceans.

Any definition is arbitrary. Finding the best measure of remoteness is fraught with difficulty. One measure of remoteness could be to select islands which are at least 4000 km away from one of the nearest world economic centres. This measure would exclude islands such as Malta, in the Mediterranean Sea, and Anguilla, in the Caribbean, as they are 1851 and 2717 kilometres away from their nearest trading centres respectively. They should not be considered as remote. This measure would also rightly include islands such as Mauritius and Kiribati which are genuinely far from the rest of the world and, hence, are limited in their economic transactions. This measure would suit our purpose. However, such a measure tends to exclude islands which might be very proximal to their nearest economic centre but still on average far from all the world economic centres. For instance, the Northern Mariana Islands would be excluded when using this measure as they are 2355 km away from Tokyo, Japan, hence less than 4000km. Nevertheless, they are on average still very far from the main economic centres of the world. To address this issue, the criterion used to measure remoteness is the following: an island is considered remote if it is at least 4000 km away from the one of its nearest economic centre or has an average distance of 8500 km[16] to the three major world economic centres.

Distance data are sourced from the CEPII database[17]; CEPII provides data on the geodesic distances using the great circle formula. Where data were not available, distance was manually calculated using distance calculators available on the internet[18].

8.4 HOW SMALL IS SMALL?

[16] This threshold has been used as it allows one to make a distinction between the Caribbean islands and other islands. As such, it suits the purpose of this thesis.
[17] http://www.cepii.fr/anglaisgraph/bdd/distances.htm
[18] http://www.daftlogic.com/projects-google-maps-distance-calculator.htm

The question of how small is small is not straightforward as documented in section 2. First and foremost, smallness is a relative concept, therefore, precludes any rigid definition. Smallness in relation to economic size is usually defined by one or a combination of the following variables: GDP per capita[19], land area and population size. The use of any one or combined criteria, as often adopted by international organisations, depends on the purpose of the study. Most common, however, is the use of the population criterion; a small population usually implies a small market, limited resources and limited scale economies, hence, a small economy. Nevertheless, the converse is not always true: a large population does not mean a large economy. Madagascar is large by population size (of more than 19 million) but has a very small economy measured by GDP per capita. Similarly, Sri Lanka has a large population of more than 20 million but its level of development is comparable to other small and remote islands. Hence, if level of development or external trade is used as a measure of size, Sri Lanka and Madagascar would be considered as SRIEs. One has to be careful and flexible with definitions because poor definitions might undermine the results of any studies.

In principle, an SRIE should not be incontestably large by land area and population size. However, putting a limit on the level of development would undermine the very purpose of the category SRIE; it is not presupposed that a small country cannot fare economically well. Hence, as far as SRIEs are concerned, GDP per capita is not a suitable indicator of smallness. Islands, such as, Australia and New Zealand, are certainly large by area and by population, therefore, they cannot be considered as SRIEs. For the sample of small remote islands used here, land area and population are positively correlated; thus the single variable population would be sufficient to categorise small islands. Taking into account the above points, in the present essay, a small island is one which has a population of less than 1.5 million. This threshold has been frequently used by the Commonwealth Secretariat in its work on small states.

Along these lines, a list of SRIEs is generated and is reported in Table 1. To sum up, they are small with a population of less than 1.5 million, they include dependent and independent island countries, they have a permanent population, they are at least 4000 km away from their nearest trading centre or they have an average distance of at least 8500 km to the three world major trading centres. The islands included in the list are limited by the datasets used.

There are 34 SRIEs including 17 independent, 9 self-governing and 8 non self-governing islands. The status of the islands is in accordance with the list of non-self governing islands of the UN and the dependency status as per the CIA World Factbook. The population size ranges from about 50 to 1.3 millions, GDP per capita ranges from $1000 to $35400 and land area

[19] Other derived criteria, such as, the size of exports in GDP, are often adopted.

ranges from 12 km^2 to about 28000 km^2. The distance to their nearest trading centre is on average about 7000 km away and the mean distance to the three trading centres is on average 12000 km.

Figure 1 graphically compares the mean statistics of the dependent with the independent SRIEs using percentage stacked columns. On average independent SRIEs tend be larger both by population and by land area but have a smaller GDP per capita than dependent SRIEs. They are more or less equally remote both by distance to the nearest trading centre and by average distance to the three main trading centres. Figure 2 graphically compares the two types of dependent territories: self-governing with the non self-governing SRIEs. The statistics of self-governed SRIEs much resemble those of independent ones with the exception of land area. Self-governing SRIEs are smaller by land area than non-self-governing ones. The appendix describes the detailed statistics for the different types of SRIEs.

TABLE 1 LIST OF SRIES AND SELECTED STATISTICS

Country Name	GDP per capita, PPP^	Population, total	Land area (km^2)	~Distance-Nearest(km)	¬Distance-Average(km)	Status
American Samoa	8000	67190	200	7603	11613	Non self-governing
Cape Verde	3644	505606	4030	4712	8162	Independent
Christmas Island	n.a.	1402	135	6252	11540	Non self-governing
Cocos (Keeling) Islands	n.a.	596	14	7007	11679	Self-governing
Comoros	1183	659098	1860	7910	10804	Independent
Cook Islands	9100	11124	236	8977	12210	Self-governing
Falkland Islands (The Malvinas)	35400	3140	12173	10408	13666	Non self-governing
Fiji	4526	849218	18270	7243	12128	Independent
French Polynesia	18000	269043	3660	9502	11764	Self-governing
Guam	15000	177718	540	2481	9057	Non self-governing
Kiribati	2432	98045	810	5142	10361	Independent
Maldives	5476	309430	300	7612	9950	Independent
Marshall Islands	2500	61026	180	4509	9830	Independent
Mauritius	12838	1275323	2030	9453	11675	Independent
Mayotte	4900	196519	370	8088	11002	Self-governing
Micronesia, Fed. Sts.	3088	110728	700	3715	9788	Independent
Nauru	5000	11500	21	4916	10526	Independent
New Caledonia	15000	250326	18280	7035	12532	Non self-governing
Niue	5800	1311	260	8072	12133	Self-governing
Norfolk	n.a.	2169	36	7786	13128	Self-governing
Northern Mariana Islands	12500	86895	460	2355	8905	Self-governing
Palau	8100	20398	460	3199	9710	Independent
Pitcairn Islands	n.a.	48	47	9338	12062	Non self-governing
Réunion	17520	821168	2504	9415	11694	Self-governing
Samoa	4405	178846	2830	6455	11754	Independent
Sao Tome and Principe	1820	162755	960	5640	9537	Independent
Seychelles	19587	87972	460	7855	10419	Independent
Solomon Islands	2547	523170	27990	5453	11359	Independent
St. Helena, Ascension and Tristan da Cunha	2500	7700	261	7494	10967	Non self-governing
Tokelau	1000	1384	12	7090	11266	Non self-governing
Tonga	4466	103967	720	7904	12363	Independent
Tuvalu	1600	11810	30	6423	11256	Independent
Vanuatu	4438	239788	12190	6664	12121	Independent
Wallis and Futuna Islands	3800	16025	142	7153	11670	Self-governing

~Distance-Nearest means distance from one of the nearest trading centres and ¬Distance-Average means average distance from the three world trading centres

* Population, land area and GDP per capita figures were sourced from the World Development Indicators, the CIA World Factbook and for the French regions, the INSEE. The latest data were used (2009 and 2010 where available)

^ current international $

FIGURE 1 COMPARING DEPENDENT AND INDEPENDENT SRIES (STACKED COLUMN CHARTS)

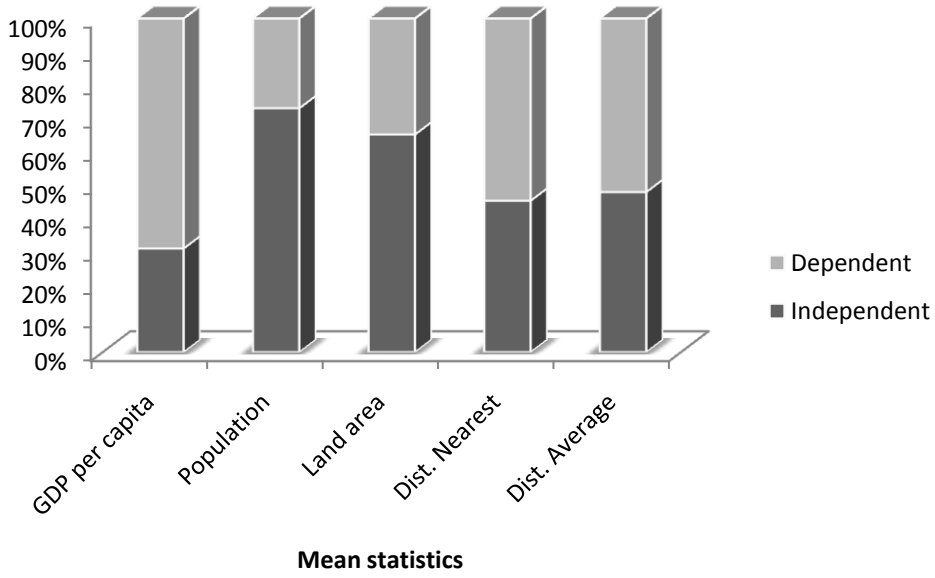
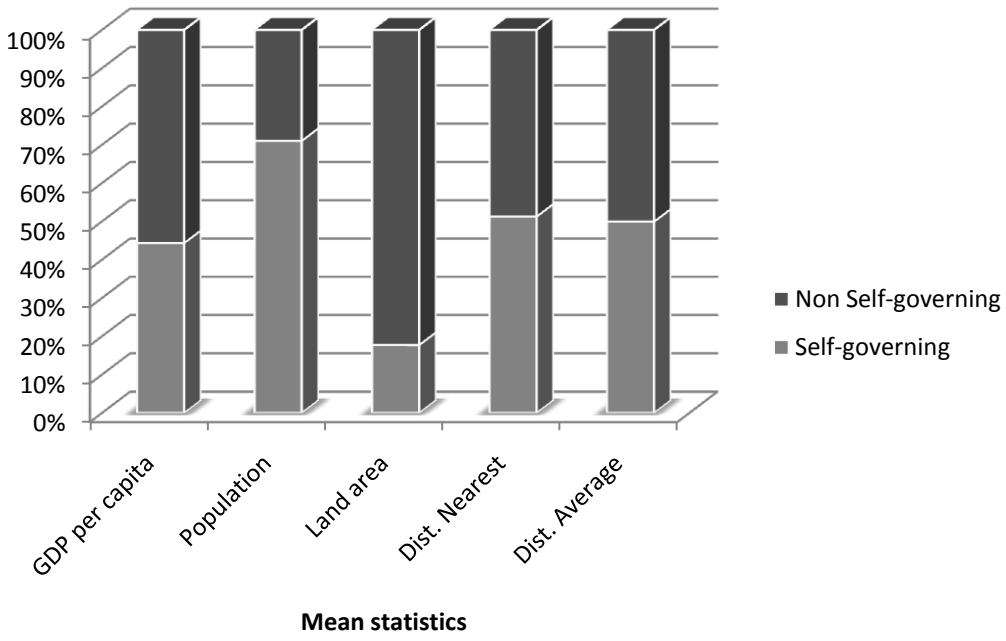


FIGURE 2 COMPARING SELF-GOVERNING AND NON SELF-GOVERRNING SRIES (STACKED COLUMN CHARTS)



REFERENCES

AfDB/OECD, 2004. *African Economic Outlook*, OECD Development Centre. Available at: http://www.oecd.org/dataoecd/24/25/32430158.pdf [Accessed March 4, 2011].

Alesina, A. & Wacziarg, R., 1998. Openness, country size and government. *Journal of Public Economics*, 69(3), pp.305–321.

Anckar, D., 1999. Homogeneity and smallness: Dahl and Tufte revisited. *Scandinavian Political Studies*, 22(1), pp.29–44.

Anderson, J. & van Wincoop, E., 2003. Gravity with gravitas: a solution to the border problem. *American Economic Review*, 93(1), pp.170–192.

Apostolopoulos, Y., Apostolopoulos, Y. & Gayle, D.J., 2002. *Island tourism and sustainable development: Caribbean, Pacific, and Mediterranean experiences*, Praeger Publishers.

Armstrong, H.W. & Read, R., 2000. Comparing the economic performance of dependent territories and sovereign microstates. *Economic Development and Cultural Change*, 48(2), pp.285–306.

Armstrong, H.W. & Read, R., 2006. Geographical "handicaps" and small states: some implications for the Pacific from a global perspective. *Asia Pacific Viewpoint*, 47(1), pp.79–92.

Armstrong, H.W. & Read, R., 2003. The determinants of economic growth in small states. *The Round Table*, 92(368), pp.99–124.

Armstrong, H.W. & Read, R., 2002. The phantom of liberty? Economic growth and the vulnerability of small states. *Journal of International Development*, 14(4), pp.435–458.

Armstrong, H.W. & Read, R., 1998. Trade and growth in small states: the impact of global trade liberalisation. *World Economy*, 21(4), pp.563–585.

Armstrong, H.W. et al., 1998. A comparison of the economic performance of different micro-states, and between micro-states and larger countries. *World Development*, 26(4), pp.639-656.

Baker Fox, A., 1959. *The power of small states: diplomacy in World War II*, University of Chicago Press.

Baldacchino, G., 2002. A taste of small-island success: a case from Prince Edward island. *Journal of Small Business Management*, 40(3), pp.254–259.

Baldacchino, G., 2005. Editorial: Islands—objects of representation. *Geografiska Annaler: Series B, Human Geography*, 87(4), pp.247–251.

Baldacchino, G., 2004. The coming of age of island studies. *Tijdschrift voor economische en sociale geografie*, 95(3), pp.272–283.

Bertram, G., 2004. On the convergence of small island economies with their metropolitan patrons. *World Development*, 32(2), pp.343–364.

Biagini, E. & Hoyle, B., 1999. *Insularity and development: international perspectives on islands*, Pinter.

Bourdieu, P., 1979. La distinction: critique sociale du jugement.

Brakman, S. & van Marrewijk, C., 2008. It's a big world after all: on the economic impact of location and distance. *Cambridge Journal of Regions, Economy and Society*, 1(3), pp.411 - 437.

Briguglio, L., 1995. Small island developing states and their economic vulnerabilities. *World Development*, 23(9), pp.1615-1632.

Briguglio, L. & Galea, W., 2004. Updating and augmenting the economic vulnerability index. *Occasional Paper, Islands and Small States Institute of the University of Malta*.

Briguglio, L. et al., 2009. Economic vulnerability and resilience: concepts and measurements. *Oxford Development Studies*, 37(3), pp.229–247.

Butler, R.W., 1993. Tourism development in small islands: past influences and future directions. In *The development process in small island states*. pp. 71-91.

Cairncross, F., 2001. *The death of distance: How the communications revolution is changing our lives*, Harvard Business Press.

Central Intelligence Agency, 2011. CIA - The World Factbook. Available at: https://www.cia.gov/library/publications/the-world-factbook/ [Accessed March 25, 2011].

Chase-Dunn, C., 1998. *Global formation: structures of the world-economy*, Rowman & Littlefield Pub Inc.

Clarke, C.G. & Payne, A., 1987. *Politics, security, and development in small states*, Allen & Unwin.

Cohen, R., 1987. An academic perspective. In *Politics, development and security in small states*. Allen & Unwin, pp. 203–213.

Crowards, T., 2002. Defining the category of "small" states. *Journal of International Development*, 14(2), pp.143-179.

Dahl, R.A. & Tufte, E.R., 1973. *Size and democracy: the politics of the smaller European democracies*, Stanford, Calif.,: Stanford University Press.

Damijan, J.P., 2001. Main economic characteristics of small countries: Some empirical evidence. In *Small countries in a global economy: New challenges and opportunities*. pp. 71-129.

Damijan, J.P., 1996. Small countries in world trade. *Ljubljana: Krt*.

Damijan, J.P., 1993. The size of the country and the level of development. *Slovenian economic review*, 44(6), pp.510–530.

Disdier, A.C. & Head, K., 2008. The puzzling persistence of the distance effect on bilateral trade. *Review of Economics and Statistics*, 90(1), pp.37-48.

Dolman, A.J., 1985. Paradise lost? The past performance and future prospects of small island developing countries. In *States, microstates, and islands*. Routledge Kegan & Paul, pp. 40-69.

Dommen, E., 1985. What is a Microstate? In *States, Microstates and Islands*. London: Croom Helm, pp. 1–15.

Easter, C., 1999. Small states development: A commonwealth vulnerability index. *The Round Table*, 88(351), pp.403–422.

Easterly, W. & Kraay, A., 2000. Small states, small problems? Income, growth, and volatility in small states. *World development*, 28(11), pp.2013–2027.

Feenstra, R.C., 2002. Border effects and the gravity equation: consistent methods for estimation. *Scottish Journal of Political Economy*, 49(5), pp.491–506.

Fink, C., Mattoo, A. & Neagu, I.C., 2002. Trade in international maritime services: how much does policy matter? *The World Bank Economic Review*, 16(1), p.81.

Fitzhugh, B. & Hunt, T.L., 1997. Introduction: Islands as laboratories: Archaeological research in comparative perspective. *Human Ecology*, 25(3), pp.379–383.

Friedman, T.L., 2006. *The world is flat: A brief history of the twenty-first century*, Farrar Straus & Giroux.

Gallup, J.L., Sachs, J.D. & Mellinger, A.D., 1998. Geography and economic development. *National Bureau of Economic Research Working Paper Series*, No. 6849. Available at: http://www.nber.org/papers/w6849 [Accessed May 25, 2011].

Griffith, W.H., 2007. Caricom countries and the irrelevance of economic smallness. *Third World Quarterly*, 28(5), pp.939–958.

Head, K. & Mayer, T., 2011. Gravity, market potential and economic development. *Journal of Economic Geography*, 11(2), pp.281 -294.

Hirsch, F., 1976. *Social Limits to Growth* First Edition., Harvard University Press1976.

Hoyle, B. & Biagini, E., 1999. Islands, insularity and development strategies. In *Insularity and Development*. London & New York: Pinter.

Hummels, D., 2001. *Time as a trade barrier*, Purdue University.

INSEE, 2011. National Institute of Statistics and Economic Studies. Available at: http://www.insee.fr/en/default.asp [Accessed May 30, 2011].

Jalan, B., 1982. *Problems and policies in small economies*, Taylor & Francis.

Kaly, U., Pratt, C. & Howorth, R., 2002. A framework for managing environmental vulnerability in Small Island Developing States. *Development Bulletin(Canberra)*, pp.33–38.

Keller, W., 2001. The geography and channels of diffusion at the world's technology frontier. *NBER Working Paper*.

Keohane, R.O., 1969. Lilliputians' dilemmas: small states in internatinal politics. *International Organization*, 23(02), pp.291-310.

Kohr, L., 1957. *The breakdown of nations*, Routledge.

Krasner, S.D., 1981. Transforming international regimes: what the third world wants and why. *International Studies Quarterly*, 25(1), pp.119–148.

Krugman, P., 1991. Increasing returns and economic geography. *The Journal of Political Economy*, 99(3), pp.483-499.

Kuznets, S., 1960. Economic growth of small nations. In *The Economic Consequences of the Size of Nations*. pp. 14–32.

Limao, N. & Venables, A.J., 2001. Infrastructure, geographical disadvantage, transport costs, and trade. *The World Bank Economic Review*, 15(3), p.451.

Lockhart, D., Drakakis-Smith, D.W. & Schembri, J., 1993. *The Development process in small island states*, Psychology Press.

Lowenthal, D., 1987. Social features. In *Politics, Security and Development in Small States*. Allen & Unwin, pp. 26–49.

McElroy, J.L., 2003. Tourism development in small islands across the world. *Geografiska Annaler: Series B, Human Geography*, 85(4), pp.231–242.

Neumann, I.B. & Gstöhl, S., 2006. Introduction: Lilliputians in Gulliver's World? In *Small States in International Relations*. University of Washington Press.

Pelling, M. & Uitto, J.I., 2001. Small island developing states: natural disaster vulnerability and global change. *Global Environmental Change Part B: Environmental Hazards*, 3(2), pp.49-62.

Poirine, B., 1993. Le développement par la rente dans les petites économies insulaires. *Revue économique*, 44(6), pp.1169-1199.

Portes, R. & Rey, H., 2005. The determinants of cross-border equity flows. *Journal of international Economics*, 65(2), pp.269–296.

Rasmussen, T., 2004. Macroeconomic implications of natural disasters in the Caribbean. *IMF Working Paper*.

Redding, S. & Venables, A.J., 2004. Economic geography and international inequality. *Journal of International Economics*, 62(1), pp.53–82.

Redding, S. & Venables, A.J., 2002. The economics of isolation and distance. *Nordic Journal of Political Economy*, (28), pp.93-108.

Robinson, E.A.G., 1960. *Economic consequences of the size of nations*, Macmillan London.

Rose, A. & van Wincoop, E., 2001. National money as a barrier to international trade: the real case for currency union. *The American Economic Review*, 91(2), pp.386-390.

Rothstein, R.L., 1968. *Alliances and small powers*, Columbia university press.

Selwyn, P., 1975. *Development policy in small countries*, Croom Helm in association with the Institute of Development Studies.

Sutherland, W.M., 1987. Fiji. In *Politics, Development and Security in Small States*. Allen & Unwin, pp. 113-124.

Sutton, P., 1987. Political aspects. In *Politics, security and development in small states*. Allen & Unwin Australia, pp. 3–25.

Svennilson, I., 1963. The concept of the nation and its relevance to economic analysis. *The Economic Consequences of the Size of Nations, edited by EAG Robinson. London: Macmillan*.

Svetličič, M., Salvatore, D. & Damijan, J.P., 2001. Small countries in a globalised world: their honeymoon or twilight? In *Small countries in a global economy: New challenges and opportunities*. pp. 1-21.

Tinbergen, J., 1962. Shaping the world economy; suggestions for an international economic policy.

Trigg, A.B., 2001. Veblen, Bourdieu, and conspicuous consumption. *Journal of Economic Issues*, 35(1), pp.99-115.

UNEP/WMO, 2007. *Intergovernmental panel on climate change Fourth Assessment Report*, Available at: http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml [Accessed June 10, 2011].

United Nations, 1974. Declaration on the Establishment of a New International Economic Order - A/RES/S-6/3201. Available at: http://www.un-documents.net/s6r3201.htm [Accessed February 1, 2011].

Veblen, T., 1934. The theory of the leisure class. *New York, United States: Modern Library*.

Wallerstein, I.M., 1979. *The capitalist world-economy: essays*, Cambridge Univ Pr.

Wallerstein, I.M., 1974. *The modern world-system*, Academic Press New York.

World Bank, 2010. World Development Indicators | Data. Available at: http://data.worldbank.org/data-catalog/world-development-indicators [Accessed March 25, 2011].

APPENDIX

TABLE 2 SUMMARY OF STATISTICS

Independent SRIEs	Mean	Std. Dev.	Min	Max	No. of observation
GDP per capita	5156	4646	1183	19587	17
Population	306393	351072	11500	1275323	17
Land area	4344	7826	21	27990	17
Dist. Nearest	6165	1704	3199	9453	17
Dist. Average	10691	1140	8162	12363	17
Dependent SRIEs	**Mean**	**Std. Dev.**	**Min**	**Max**	**No. of observation**
GDP per capita	11425	9218	1000	35400	13
Population	112574	205647	48	821168	17
Land area	2314	5074	12	18280	17
Dist. Nearest	7415	2183	2355	10408	17
Dist. Average	11582	2184	8905	13666	17
Self-governing SRIEs	**Mean**	**Std. Dev.**	**Min**	**Max**	**No. of observation**
GDP per capita	10231	5907	3800	18000	7
Population	156094	267855	596	821168	9
Land area	854	1304	14	3660	9
Dist. Nearest	7595	2161	2355	9502	9
Dist. Average	11576	1153	8905	13128	9
Non self-governing SRIEs	**Mean**	**Std. Dev.**	**Min**	**Max**	**No. of observation**
GDP per capita	12817	12560	1000	35400	6
Population	63614	97439	48	250326	8
Land area	3956	7147	12	18280	8
Dist. Nearest	7212	2340	2481	10408	8
Dist. Average	11588	1327	9057	13666	8

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THE IMPLICATIONS OF THE ELIMINATION OF THE MFA FOR SMALL REMOTE ISLAND ECONOMIES (SRIES)

A NETWORK ANALYSIS

THE IMPLICATIONS OF THE ELIMINATION OF THE MULTI-FIBRE ARRANGEMENT FOR SMALL REMOTE ISLAND ECONOMIES: A NETWORK ANALYSIS

SUMMARY

This paper explores the topological structure of the network of trade in textiles and clothing (T&C) that were governed by the multi-fibre arrangement (MFA)—a quantitative restriction on developing countries' exports to developed countries. Trade relations between small remote island economies (SRIEs) and major world exporters are investigated. Many SRIEs benefited because their MFA quotas were not binding and they had unprecedented access to lucrative developed markets. However, they were subsequently disadvantaged by the elimination of the quota system. Network analysis reveals that the MFA influenced the geography of T&C manufacturing and altered the pattern of network formation. The evolution of network statistics shows that SRIEs became more interconnected among themselves during the post-MFA period suggesting an increased preference to trade with closer partners. The network of textiles products is less dense and more stable than that of clothing. On a global stance, post-MFA trade declined but there is evidence of trade convergence.

Keywords: Small islands, multi-fibre agreement, network analysis, trade

JEL classification: F13, F14, L14, L67, R12

1. INTRODUCTION

For more than 30 years, the multi-fibre arrangement (MFA)[20] governed trade in textiles and clothing (T&C) products. The MFA was a quantitative restriction, set up in the 1970s to restrict a surge of imports from the developing countries into the developed countries. It covered trade in cotton, wool, synthetic fibre products and silk. The Agreement on Textiles and Clothing (ATC), negotiated under the Uruguay Round of Multi-lateral Trade Negotiations, succeeded the MFA from 1 January 2005. The ATC was designed to align global trade in T&C with the rules of the World Trade Organisation. Scholars and policymakers argued that the MFA, a protectionist measure, altered the efficient workings of market forces and "prompted a scattering of global production and sourcing and strongly influenced locational decisions of global textile and garment producers" (Kowalski & Molnar 2009, p.49).

The MFA quota system allowed the developed countries to bilaterally negotiate trade in T&C with exporting countries; above a certain share of imports from the importing country, exports from the exporting country are subject to quotas. While quotas were restrictive to large producing economies, they offered advantages to small and developing economies. They gave small economies unprecedented access to the two main world markets, the European Union and the US while limiting the export capacity of large manufacturing producers, such as, China. Trade in T&C was, to a great extent, shaped by negotiated quotas from the large developed countries and not by the dynamics of the open market. Production of T&C spread across the developing countries and remote islands often as a result of multinational industries decentralising their activities to locations where quotas were not binding and policies were attractive. T&C industries emerged with little respect to long term comparative advantages.

Proponents of free trade viewed the MFA as discriminatory. Its dismantlement was meant to eliminate inefficiencies that developed in the sector by integrating T&C products into the normal rules and disciplines of the General Agreement on Trade and Tariffs (GATT). However, the benefits of freer trade have not been distributed evenly as evidenced by the decline of the industry in some small producer economies and the boom in other low-cost high-productivity economies. Many small economies that built their manufacturing sector through the stimulus given by the MFA became heavily dependent on the quota system for export earnings. The post-quota period has weakened—and, in some cases, devastated—the textiles and clothing industries in these vulnerable economies.

[20] Exports of T&C from developing countries were initially regulated by the Short-Term Cotton Arrangement, which became the Long–Term Arrangement and later the Multi-fibre Arrangement (MFA). The MFA expanded its coverage of T&C products to practically all fibres (UNCTAD 2008).

This paper investigates the implications of the elimination of the MFA for a selected group of countries, namely, small remote island economies (SRIEs). These countries are not necessarily prepared to face trade shocks. Their geographical handicap, in other words, their *smallness* and *remoteness* hinder their ability to adjust smoothly and quickly to external shocks as compared to larger economies. SRIEs are size-induced open economies, often, relying on a few exports and export markets; consequently, changes in international trade policies can substantially influence their economies. While they initially benefited from the MFA, many of them were destabilised by its elimination. The aim of this paper is to understand how SRIEs have coped with trade liberalisation in the T&C sector, how some of them subsequently survived as exporters and how their relations with their trading partners have evolved.

The international trade network is complex where trade channels become communication channels capable of spreading the dynamics of one country into another even though they are not directly connected (Li et al. 2003). Thus, focusing on bilateral trade may obscure the dynamics of any global or regional effects. While standard trade indicators, such as openness to trade, capture the effects of bilateral trade, they do not take into account the spill-over effects of economic shocks on indirectly connected countries (Fagiolo 2010). The present essay employs network analysis which allows probing into the multi-nodal topological changes of the network of trade between small islands and the major world traders both during and following the MFA periods. Both binary and weighted network analyses are used to examine SRIEs' trade in MFA products. In particular, the evolution of network statistics, such as, the distribution of node degree and node strength, *betweenness* centrality, and network centrality among others, are investigated.

The contribution of this paper is fourfold: first, it investigates the consequences of the ending of the MFA on SRIEs, a group of countries and territories often neglected in the literature on trade liberalisation since their share of exports is small compared to larger countries. Second, it uses network analysis, a novel approach, to capture the evolution of trade in the textiles and clothing industry. Most studies on trade networks do not focus on a specific industry but on aggregate statistics that cannot capture important relations about sectors and locations. Third, this study analyses textiles and clothing product separately. It, thus, dissects intermediates from final products as these two components have different bases and their patterns might be different. Fourth, the use of more recent data ensures that the full-effect of the change in T&C policy has taken place and, thus, the analysis might produce more reliable results.

2. THE MFA AND SRIES

T&C was one of the most protected industries in the developed world. The MFA was a major breach of the GATT principle that prohibited quantitative restrictions. Such restrictions might have distorted the patterns of international trade. When the MFA ended in January 2005, it left all countries—small and large, clustered and remote, developing and developed—on the same competitive field. This change in global policy environment impacted each of these groups of countries differently as their capacities to absorb shocks differ.

TABLE 1 PACE OF QUOTA ABOLITION BY STAGES OF THE ATC

Quota allocators	US	EU	Canada	Norway
Total number of quotas at start of ATC	937	303	368	54
Phased-out at Stage 1 (1995-1997)	0	0	8	46
Phased-out at Stage 2 (1998-2001)	15	21	26	8
Phased-out at Stage 3 (2002-2004)	88	70	42	0
Quotas abolished on 1st Jan. 2005	834	212	292	0

Source: UNCTAD 2008, p.4

The integration of the MFA into the World Trade Organisation rules was meant to be done gradually so that the quotas could be phased-out over a 10-year period. But this so-called phase-out was referred to as a "misnomer"; most countries kept their major quotas until the end of the process by back-loading the bulk of the quotas at one time (Rivoli 2009, p.138). It was left to the discretion of each country to choose which products would be integrated and at which stage. As such, it is not clear whether the real objective of the gradual integration process was achieved since, with the exception of Norway, all countries chose to back load their quotas.

Table 1 provides information on the total number of quotas and on the stages by which they have been phased out. About 90 per cent of quotas from the US and 70 per cent from the EU were eliminated on the ultimate day of the phase-out period, that is, on the 31st of December 2004. For most large countries the abolition of the MFA was a smooth transition and it allowed them to benefit from their comparative advantages in T&C. For smaller countries, which are small-scale producers and less competitive, the transition was more challenging.

2.1 HOW DID SRIES BENEFIT FROM THE MFA?

The establishment of the T&C industry in many SRIEs was made possible through the MFA quota-allocations which induced foreign investors to set up their plants on these islands. The examples of Fiji, Mauritius and Maldives are briefly examined below to better understand the implications of the MFA on SRIEs.

The MFA contributed largely to the launch and sustainability of the T&C sector in the island of Fiji. Besides the advantages secured by export processing zones (EPZ), notably, the Tax Free Factory (TFF) and Tax Free Zones (TFZ) where investors who exported a certain level of their output received incentives and import duty concessions on raw materials, cheap labour was also attractive to investors. In 1998, the Fijian garment industry was 53 per cent foreign-owned namely by Australians (24 per cent), New Zealanders (9 per cent) and Asian ownership (Narayan 2001). Other preferential trading arrangements, notably the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA)[21] and the Import Credit Scheme (ICS)[22], contributed to a large extent in the functioning of Fiji's T&C industry.

Similarly, Hong Kong investors established plants in Mauritius to benefit from quotas (Joomun 2006). The number of firms increased from 90 in 1982 to 300 in 1990. Mauritian manufacturers not only assembled finished clothing products but also had to complete at least one pre-assembly operation (such as spinning, weaving or knitting) to qualify for preferential access under EU rules of origin. In Maldives, foreign direct investment in its T&C sector came from Hong Kong and Sri Lanka (Adhikari & Weeratunge 2007). Larger developing countries, namely India and Pakistan, which were eventually restrained by their quotas, set up firms on the small island to expand their output.

SRIEs benefited from the labour-intensive segment of the T&C industry, particularly, the low- and semi-skilled operations. Hence, employment was created. However, the extent to which employment benefited the local population is controversial, in particular, for Fiji and the Maldives. The Fijian T&C industry employed about 20,000 people in the year 2000 and 70 per cent were women. Nevertheless, most of them were foreigners. In its peak period, 2002, the Maldives garment industry employed 70 per cent of expatriate out of which 90 per cent were women (Adhikari & Yamamoto 2009). The T&C industry led to the rapid industrialisation in Mauritius. It created employment and contributed to the emancipation of women. Joomun

[21] SPARTECA allows garment manufacturers of many Pacific island countries preferential but non-reciprocal access to the markets of Australia and New Zealand in the form of duty-free and unrestricted access or concessional access.
[22] The ICS had provided Australian exporters with import credits and gave them incentives to add value in Australia then exporting to Fiji for processing.

(2006) reported that, over the period 1995-2003, about 60 per cent of the T&C labour force was female. T&C activities led to a rise in house ownership and an increase in household income and expenditure.

2.2 WHAT HAS BEEN THE IMPACT OF ELIMINATING THE MFA?

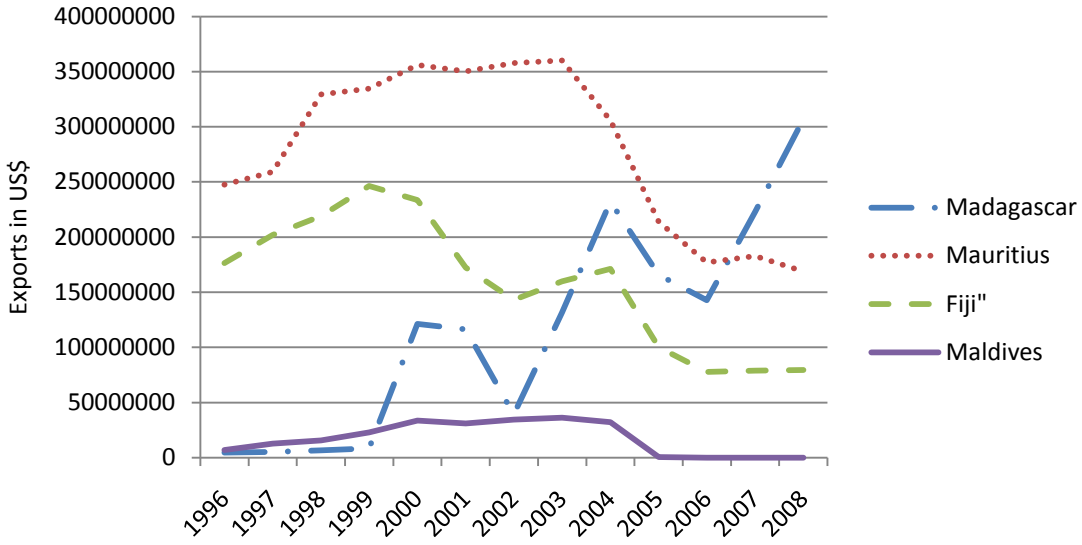
It was predicted that the Maldives and Mauritius would lose half of their exports. Indeed, these countries experienced a sharp drop in their T&C exports as shown in Figure 3. Similarly, as expected the T&C industry in Fiji markedly declined. In 2005, income from garments decreased by 43 per cent. Production in the Fiji's garment and footwear industry, measured in physical output, fell by 55 per cent between 2004 and 2005. Although local Mauritian entrepreneurs were restructuring the industry, some foreign textiles companies, mainly the Asian exporters, based their hopes on getting derogation from the AGOA yarn-forward rule[23] which did not happen quickly. Consequently, they moved out of the country in 2004 and 2005 and left behind unemployment and loss of export value. The real growth rate in T&C as a percentage over previous years fell by 7.2 per cent in 2004 and 14.7 per cent in 2005.

In 2003, T&C foreign investors in the Maldives started to move out, resulting in a massive drop in its exports. Adhikari and Yamamoto (2006) mentioned that existing reports on the effects of the quota elimination on the economy are mixed. On one hand, since most workers were migrants, it was expected that the impact on employment would be low. In addition, as most inputs required for the industry were imported, it was expected that the economy would not suffer.

On the other hand, some analysts reported "loss of income and fear of long-term unemployment since alternative job opportunities are hardly available" on the atolls where the factories were located (Adhikari & Weeratunge, 2007). However, despite the absence of backward linkages, value-addition was still possible. In fact, manufacturing output showed a declining trend, decreasing from 8.5 million Rufiyaa in 2003 to 6.7 million Rufiyaa in 2007 (Maldives Monetary Authority 2010).

[23] The African Growth and Opportunity Act (AGOA) provides eligible sub-Saharan African economies preferential access to the US market. The yarn forward rule requires yarn and fabric to be manufactured either in the African region or in the US. Least-developed countries benefit from a derogation to this rule whereby they can source inputs from third parties.

FIGURE 3 TRADE IN T&C OF SELECTED SRIES, 1996-2008



DATA SOURCED FROM THE UNCOMTRADE "CORRESPONDING IMPORTS FROM PARTNERS WERE USED

The questions that remain are: (i) what happened to the T&C trade of SRIEs with the rest of the world before and after the MFA removal? (ii) How are they surviving in this new economic environment? (iii) Are they still trading with their previous quota-allocators or did they find new markets? (iv) And have there been lasting effects of the MFA on SRIEs? These questions are examined in the following sections using network analysis.

3. NETWORKS AND TRADE

Network or graph analysis is useful for extracting information from complex systems. A network representation of a problem enables the researcher to see beyond individual elements. It allows penetrating into the structural properties of a system, in particular, its connectivity. The interplay of multiple interacting elements can be seen from a global perspective, enabling the researcher to observe the effects of shocks, both direct and indirect, into the system. Since trade is a complex interaction between countries and is about flows over space and time, its topological features are best analysed from a network theoretical perspective.

Network analysis has been used to study various social and economic phenomena. In the last decade, this form of analysis has been applied to the international trade network (ITN)[24]. In

[24] The ITN is also widely referred to as the world trade web (WTW) in this literature.

general, a network or graph is a collection of nodes connected by links at a given point in time. In the case of trade networks, countries or actors are represented by nodes and trade flows by links or ties. Weighted analyses also allow the intensity of such links to be accounted for. Different weights can be assigned, for example, the volume or value of trade flows. For a thorough understanding of network terminologies, consult Jackson (2008). Appendix A provides the essential concepts required to understand this paper.

Some of the earlier trade network studies based their analyses on the world-system approach where countries are stratified into core-periphery positions. Depending on whether a nation is core or peripheral, it produces different classes of commodities: core countries produce high-tech sophisticated goods whereas peripheral countries produce cheap raw materials and some services (Breiger 1981). Core nations' economic advantages stemmed from their proximity to the few major markets that existed at the time. Similarly, peripheral nations' relative disadvantages were attributed to their location and inability to exploit scale economies. According to this school, to have an adequate theory of world system requires looking into interactions among core-periphery networks. Since those early discourses, the world trade system has evolved so that formerly peripheral countries, such as China and India, are emerging as major markets. Today, the applicability of the early core-periphery dualism is doubtful. However, many smaller and remote nations, including SRIEs, appear to be still in the periphery.

Trade has gained momentum as the world witnessed increased globalisation. Globalisation implies greater connectedness of countries while at the same time their connectedness is becoming more complex—connections occur at different levels and speed. Trade networks are one of the most important interaction channels of nations and through it flow not only goods and services but also economic problems. The recent financial crisis is an obvious example of how economic problems can rapidly spread across the continents (Battiston et al. 2007). Whereas most of economic theory has been concerned with elements, complex system is essentially about connections (Foster 2005). Trade networks are complex networks. By complex, it is meant that the network is of an irregular type, with heterogeneous elements that usually evolve in time[25]. Core-periphery analysis becomes irrelevant in a complex system. As such, the complexity of international trade has triggered a number of physicists and economists to use complex network analysis to extract information on the economic relations between nations.

[25] A formal definition would attribute the following properties to complex networks: scale-free degree distribution; small-world property; high clustering coefficient, that is, the probability of a node's neighbours being interconnected is high; and assortativity, where highly connected nodes connect to other highly connected nodes or disassortativity, highly connected nodes connect to poorly connected ones (Serrano & Boguna 2003). For definitions of the technical terms, consult Appendix A.

The presence or absence of a link is useful in understanding the web of trade relations. Such relations are of a binary nature, that is, a link is either present or not present. The early studies on trade networks have mainly explored this type of relation (Serrano & Boguná 2003; Garlaschelli & Loffredo 2004a; Garlaschelli & Loffredo 2004b). However, a complex system is made up of heterogeneous elements and binary relations may confound such heterogeneity. For instance, the intensity of trade is likely to differ between nodes: Fiji may have more export partners than Canada but the volume of trade of the latter is likely to be higher. Where binary analysis fails, its weighted counterpart emphasises the heterogeneity in trade linkages by taking into account the volume or value of trade. In the case of the ITN, the network statistics provided by binary and weighted approaches diverge considerably (Fagiolo et al. 2008; Fagiolo et al. 2009). In the present paper, both approaches are used.

Garlaschelli and Loffredo (2004a) contended that a hidden variable, which is GDP in the case of the world trade web, can determine the probability of connectedness of countries. Economists have long acknowledged the role of GDP in determining trade namely through gravity models (Bergstrand 1985). The degree of a node is the number of trade partners of that node. The correlation between node degree and GDP was also confirmed by Kastelle (2010). Further investigations have revealed the dynamical nature of the fitness variable. The fitness value both depends on and determines the network topology in a continuous feedback (Garlaschelli et al. 2007).

Kastelle (2010) used the ITN to assess the economic convergence or divergence of nations. First, if there is a correlation between degree and GDP as Garlaschelli and Loffredo (2004b) found, convergence of economies should lead to a convergence in degree. Thus, over time the degree distribution should tend to normal. Second, economic convergence is more probable when nodes that are poorly connected become bridges, i.e., they connect very dense networks. A low correlation between degree and betweenness centrality can facilitate convergence. Betweenness centrality measures the role played by a node in connecting other nodes[26]. Kastelle's betweenness measure showed convergence till the 1990s and divergence afterwards. With stability in the degree distribution, the author concludes that no divergence or convergence occurred. This result is not surprising as the use of world trade web which uses aggregated trade data confounds all industries.

[26] Appendix A provides details on how centrality measures are computed.

3.1 THE IMPLICATIONS OF THE MFA PHASE-OUT FOR SRIES

The textiles and clothing industry was behind the industrialisation and economic diversification of many of the now advanced economies. Today, many countries, especially the small developing ones, still see the export of T&C products as a pathway for growth. The abolition of the MFA changed the T&C map. Previous studies looked into the consequences of a quota-less environment but the focus was mainly on the major exporters and on the large low-cost developing countries. However, as mentioned before, T&C forms a large percentage of the manufacturing exports of many SRIEs, and it deserves to be investigated closely.

Table 2 lists small and remote islands and their major T&C trade partners. Some islands although not genuinely small and remote have been included to assess the role they play in the region in which they are located. For instance, Papua New Guinea is not considered an SRIE as it shares a border with Indonesia but it is relatively proximal to many of the Pacific-Oceania islands. It is included in the analysis as it potentially plays a bridging role for neighbouring islands. Madagascar and Sri Lanka SRIEs are included because they both have an important T&C sector as far as remote islands are concerned. Although they are not small by size and population, they are nonetheless economically small countries and rely heavily on the sector. Dependent SRIEs, such as New Caledonia and American Samoa, are included to assess their regional importance.

TABLE 2 SELECTED ISLANDS AND THEIR T&C MAJOR TRADING PARTNERS

Islands			Major partners
American Samoa	Maldives	Samoa	Australia
Cape Verde	Marshall Isds	Sao Tome and Principe	Bangladesh
Christmas Isds	Mauritius	Seychelles	Brazil
Comoros	Mayotte	Solomon Isds	Canada
Cook Isds	N. Mariana Isds	Sri Lanka	China
Falkland Isds (Malvinas)	Nauru	Tokelau	EU-27
Fiji	New Caledonia	Tonga	India
French Polynesia	Niue	Tuvalu	Japan
FS Micronesia	Norfolk Isds	Vanuatu	New Zealand
Kiribati	Palau	Wallis and Futuna Isds	USA
Madagascar	Papua New Guinea		

Most studies on trade networks are of an aggregative nature; they study the world trade web which confounds sectoral information. Indeed, they found no changes in the structural properties of the network over time (Fagiolo et al. 2009). Here, a specific industry is studied, the textiles and clothing industry within which MFA products are considered. In the present study, changes in the network structure are observed both in the network of intermediate and final products. Thus, this thesis adds to the network literature by considering a particular industry not previously looked at using such an approach. In addition, it also contributes to the trade literature, by studying very small players which are often neglected in trade studies due to their insignificant share of trade in the world market. While the impact of the elimination of the quota system has been studied widely, its impact on remote island economies as a group has not been looked at. Network analysis allows one to investigate both direct and indirect impacts (regional) of this trade shock on producer island economies and their partners.

3.2 HYPOTHESES AND RESEARCH QUESTIONS

The MFA encouraged SRIEs to maintain a preference-dependent T&C industry. It procured them an artificial comparative advantage in T&C which might have precluded them from shifting to more profitable and efficient activities. Removal of such preference eroded the "comparative advantages" of many of them and brought structural changes to their economy. The following questions will be addressed:

1. How are SRIEs connected between themselves and with the major world players?
2. How did such connectivity evolve over time, in particular, following the elimination of the MFA? This will be achieved by looking at the network statistics such as density, mean degree and degree distributions among others.
3. Is there evidence of clustering among SRIEs? Did it change following the MFA phase-out?
4. How does geography affect trade relations?
5. How do networks of trade in intermediates compare with those of final products? Are there any evidences of specialisation?

The findings of Fagiolo et. Al (2009) act as a benchmark against which to compare the network statistics. They found no changes in the network statistics of the world trade web over the last 20 years. If MFA has influenced T&C sector of SRIEs, the structural properties of the networks pre- and post-MFA should differ. The hypotheses are explained below:

I. The quota allocation system should have influenced network formation and should have led to the scattering and fragmentation of production in T&C. Network statistics pre-

and post-quota periods should, therefore, differ. If there has been trade convergence, network variance, centrality and density should be lower post-MFA.

The first hypothesis stems from standard trade theory. Economic theory has widely documented the potential gains from trade which result from specialising in the production of goods where one has a comparative advantage. However, interference in the workings of the free market is more likely to cause inefficiency in production allocation and, consequently, distort trade patterns and create welfare losses. In other words, a trade distortion, such as the MFA, is likely to divert resources to locations where rents can be appropriated with little respect to long-term comparative advantages. Subsequently, removal of quotas should have restored allocation of production and resources with the most efficient producers replacing the less efficient ones.

II. The abolition of the MFA should have led to the deletion of some existing links and creation of new ones (in search for new markets).

III. The abolition of the MFA should have led to the reduction in intensity (trade value) of some existing links and increase in intensity of others.
Since deletion of links will be offset by creation of other links (trade divergence), the network statistics may not prove useful. It would be possible to assess the extent of trade divergence by looking at the pre- and post-quota network maps and listing the trading partners of each country pre-and post-quota.

Trade liberalisation will encourage countries to export products or sub-products which they produce more efficiently while importing other products. Thus, the abolition of the MFA will generate dynamics that will compel exporters to search for more competitive sources of inputs and encourage importers to search for more efficient market opportunities. It is also expected that small producers will specialise in niche products which would yield higher value-addition.

IV. The abolition of the MFA should have induced SRIEs to shift their trade away from distant markets (formerly guaranteed markets) towards closer markets.

Gravity models showed that distance is a major determinant of trade between countries (Disdier & Head 2008). Distance increases trade costs and an increase in trade costs limits trade and other economic transactions. In the absence of protectionist measures, it is expected that the more remote two countries are, the less will they trade. While the MFA was in place, little consideration was given to trade costs and trade between distant

partners was motivated by guaranteed markets. It is expected that post-MFA the distance effect will be evident.

3.3 DATA

The products covered by the ATC are quite elaborate. It includes products defined by the Harmonized Commodity Description and Coding System (HS) codes at the six-digit level from 50 to 63 and some products from 39 to 40 and 60 to 94 as listed in the Annex of the legal text on ATC. The UN Comtrade[27] database is used to source T&C exports data of SRIEs and the major world exporters and importers. Export flows are reported in current US dollars. Exports of both final products such as apparel and clothing (those with HS codes ranging from 60 to 66 and other final products with varied codes) and intermediate/fibre products such as cotton (those with HS codes ranging from 50 to 59) are considered.

The time periods, 2000 to 2009[28] are used to assess the evolution of trade in MFA products both before and after the abolition of the quota system. As mentioned previously, the MFA was abolished on 31st December 2004. A link is defined whenever country *i* exports a positive amount[29] to country *j* at time t ($e^t_{ij} > 0$) and in the binary setting the entry of the adjacency matrix $G_{ij} = 1$ or 0 otherwise. In later sections of this paper, the matrices are weighted to reflect intensity of trade where the $w_{ij} = e^t_{ij} / \max(e^t_{ij})$, where $\max(e^t_{ij})$ is the highest export value in the matrix. The resulting graph is asymmetric and directed. A directed graph implies that the flow to and from a node is specified. In this paper, the directedness is maintained contrarily to other studies such as Fagiolo et al. (2008). Using directed graphs, a distinction can be made between import and export partners and these two flows are expected to differ significantly, that is, in-degree should be different from out-degree. This is because SRIEs have a much smaller share of trade than the major world players.

[27] http://comtrade.un.org/db/default.aspx

[28] Initially, three time periods were considered namely, 2000, 2005 and 2007. Subsequently, to mitigate the impact of missing data, I considered averages as suggested by colleagues at the TradeNetWorshop2.0. The averages did not prove useful in tracking the evolution of trade. Finally, I considered the time series from 2000 to 2009 in order to have a comprehensive appreciation of the evolution of the statistics.

[29] A cut-off value of US$1000 (annual) was used to avoid one-off transactions. Initially, no cut-off value was applied as has been done in previous studies (Garlaschelli & Loffredo 2004a; Kastelle 2010) for the obvious reason that some SRIEs trade links are very weak. The conclusions from the two datasets are not different. I also experience with other cut-off values and found no major differences.

4. RESULTS AND DISCUSSION—TRADE IN FINAL PRODUCTS

4.1 SRIES AND MAJOR WORLD TRADERS

Table 3 reports the evolution of the network statistics for the years 2000 to 2009 and the average network statistics in the period 2000-2004 (pre-MFA) and 2005-2009 (post-MFA). The total number of links fluctuated throughout the period but the trend has a more or less inverted u-shape reaching its maximum in 2006 (two years after the end of the quota system). There is a net decline in the total and average number of links between the trade partners towards the end of the period. Links fell by 16 per cent. The year 2008 and to some extent 2002 seem to be quite anomalous. Omitting them does not alter the interpretations of the statistics. Trading countries had more variability in their export than in their import links as reported by their high out-degree variance. However, both in- and out-degree variances decreased in the post-quota period suggesting slight convergence of trade. Indeed, the former quota-environment had encouraged a dispersion of trade as claimed in the trade literature (Mayer 2004).

TABLE 3 NETWORK STATISTICS OF FINAL PRODUCTS- SRIES AND MAJOR PLAYERS

Network Statistics	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Pre MFA	Post MFA
Number of nodes	42	42	40	42	42	42	42	42	40	42	**42**	**42**
Total links	319	324	304	352	337	352	367	325	124	280	**327**	**290**
Average degree	7.6	7.7	7.2	8.4	8	8.4	8.7	7.7	3	6.7	**7.8**	**6.9**
Variance												
Out-degree	109	114	86	116	117	119	133	102	51	99	**108**	**101**
In-degree	22	21	30	23	19	21	18	28	5	18	**23**	**18**
Network Centralisation												
Out-degree	58%	78%	62%	77%	77%	72%	73%	63%	75%	63%	**70%**	**69%**
In-degree	31%	30%	39%	34%	25%	27%	31%	33%	13%	21%	**32%**	**25%**
Density	0.19	0.19	0.18	0.20	0.20	0.20	0.21	0.19	0.07	0.16	**0.19**	**0.17**

The networks of trade relations had a higher centrality[30] in out- than in in-degrees; in other words, exports of clothing are more rigorous between a few nodes than are imports. Network centrality decreased in the post-quota environment which is suggestive of a tendency towards a flatter trade hierarchy or equality between nodes (See the section Betweenness

[30] The Freeman centrality measure expresses the variance or inequality in a network as a percentage of a perfect star network.

centrality for an account of the importance of nodes pre- and post-MFA). Network density is the ratio between the observed number of links over the possible number of links, hence, measuring the level of integration of a network. Fagiolo et al. (2007) reports that most economic networks are sparsely connected and they have an average density of 0.15. Thus, the final products network of SRIEs and the major players has a density higher than average. This indicates that quotas distorted trade in clothing. However, the average density decreased from 0.19 in the pre-MFA to 0.17 in the post-MFA period. The density of the network was highest in 2006.

Average node degrees in pre- and post-MFA periods are reported in Table 4 and node degrees for all of the periods are reported in ANNEX C – In and Out-Degrees. In the post-MFA period, export links decreased for all the major players except for Brazil and Canada, who had an addition of 5 and 4 partners respectively. Ten SRIEs had more export links post MFA (Fiji, Sri Lanka, French Polynesia, American Samoa, Christmas Island, Niue, Cape Verde, Nauru, Norfolk and Vanuatu) while eleven had fewer links. Import links decreased for most of the major players: China experienced the highest decline of 45 per cent followed by USA of 24 per cent. Import links increased for more than half of the SRIEs, in particular, the smaller SRIEs such as Mayotte or Cook islands. In concrete number, import partners of Mayotte increased by 500 per cent.

It seems that SRIEs were more active in connecting with trading partners in the post- than the pre-MFA period. This is presumably a result of their attempts to search for new markets following the change in their trade environment. Nonetheless, the end of the quota system reduced trade in MFA products and forced the players to select specific trade partners which explain the reduction in overall trade links. It is not surprising that most major traders, namely, EU-27, US, China, Japan, Australia, New Zealand, Canada and India have high degrees in each of the time periods considered. However, their relative positions changed in the post-quota environment (See ANNEX A – Trade networks for final products).

The EU apart, Australia and India experienced a lower decline in the percentage of export partners than the other players. India's and Brazil's comparative advantages in the clothing industry might be supported by cheap labour available to fuel the industry. They maintained their positions alongside the other major players. New Zealand took a central role as a market for the islands of the Pacific-Oceania region. This is better illustrated in the network maps.

TABLE 4 AVERAGE IN-DEGREES AND OUT-DEGREES PRE- AND POST-MFA

	Average Out-Degree			Average In-Degree		
Country	**Pre MFA**	**Post MFA**	**%Δ**	**Pre MFA**	**Post MFA**	**%Δ**
Major players						
EU-27	36	35	**-3%**	22	18	**-20%**
China	31	27	**-13%**	10	6	**-45%**
Australia	29	28	**-5%**	16	15	**-10%**
USA	26	20	**-22%**	20	15	**-24%**
India	25	23	**-11%**	13	11	**-17%**
New Zealand	25	21	**-15%**	14	14	**0%**
Japan	22	16	**-27%**	15	13	**-12%**
Bangladesh	14	10	**-30%**	9	9	**0%**
Brazil	13	18	**35%**	11	10	**-5%**
Canada	12	16	**30%**	16	15	**-9%**
Remote islands						
Fiji	17	18	**3%**	12	10	**-15%**
Mauritius	14	13	**-4%**	10	10	**0%**
Sri Lanka	14	15	**10%**	12	10	**-14%**
Madagascar	13	12	**-11%**	9	8	**-11%**
French Polynesia	7	7	**6%**	12	11	**-10%**
New Caledonia	6	5	**-21%**	10	11	**17%**
Maldives	5	1	**-79%**	8	9	**21%**
Samoa	5	2	**-58%**	8	7	**-10%**
Cook Isds	4	0	**-90%**	6	7	**16%**
American Samoa	4	5	**44%**	3	3	**7%**
Mayotte	3	2	**-15%**	1	4	**157%**
Seychelles	2	1	**-67%**	8	8	**5%**
Christmas Isds	2	3	**60%**	2	1	**-22%**
Niue	2	3	**40%**	3	2	**-50%**
Papua New Guinea	2	0	**-100%**	8	8	**-5%**
Cape Verde	2	2	**11%**	4	4	**11%**
Nauru	2	4	**125%**	4	2	**-62%**
Comoros	1	0	**-100%**	6	5	**-17%**
Solomon Isds	1	1	**-14%**	7	6	**-15%**
Tonga	1	0	**-100%**	8	8	**-10%**
Norfolk Isds	0	1	**150%**	5	2	**-52%**
Vanuatu	0	2	**900%**	8	7	**-15%**
Falkland Isds (Malvinas)	0	0		2	2	**33%**
FS Micronesia	0	0		5	5	**-11%**
Kiribati	0	0		6	7	**6%**
Marshall Isds	0	0		7	7	**0%**
N. Mariana Isds	0	0		4	3	**-11%**
Palau	0	0		4	3	**-11%**
Sao Tome and Principe	0	0		3	4	**29%**
Tokelau	0	0		2	3	**67%**
Tuvalu	0	0		3	3	**31%**
Wallis and Futuna Isds	0	0		6	6	**7%**

Figures 6, 7 and 8 in ANNEX A show the network maps of trade in clothing for the years 2000, 2006 and 2009. The size of each node is proportional to its total degree. The

size of the lines reflects the intensity of trade as weighted by trade value. The number of nodes remain stable throughout the three periods, in other words, all the players in 2000 were still involved in 2006 and 2009. Intensity of clothing trade is the highest between China and Japan. Post-quota, China's intensity of trade with the US and Europe also increased as can be seen from Figure 7 and Figure 8 of Annex A. In 2006, trade activities in clothing were the highest but declined in 2009 as is evident by comparing the two maps. However, the 2009 network map shows increased centralisation.

From these results, the effects of the quota-elimination on SRIEs are quite mixed. While many of them lost their export markets, a number of them recovered after the 2005 period. The recovery of some SRIEs may be attributed to the competitive environment created by the removal of quotas that triggered clothing plants to be more innovative and efficient. In the Indian Ocean region, Mauritius and Madagascar seemed to have smoothly managed the quota-free environment. Fiji performed well in the Pacific-Oceania region. Later in the periods under study, trade activities in final products seemed to have stabilised but with a decline.

Table 16 (in annex E) lists the countries to which SRIES were exporting clothing products in the year 2000 and 2009. Table 17 lists the countries from which they sourced intermediates products. From table 16, it can be seen that New Zealand became an important market for islands in the Pacific. American Samoa, Christmas Island, French Polynesia and Samoa started exporting final products to New Zealand. Import partners were diverse in both periods. Table 18 and 19 compares the pre- and post-quota export and import partners in intermediates products. The market for fibre products did not seem to have changed much for the few islands that were exporting these products.

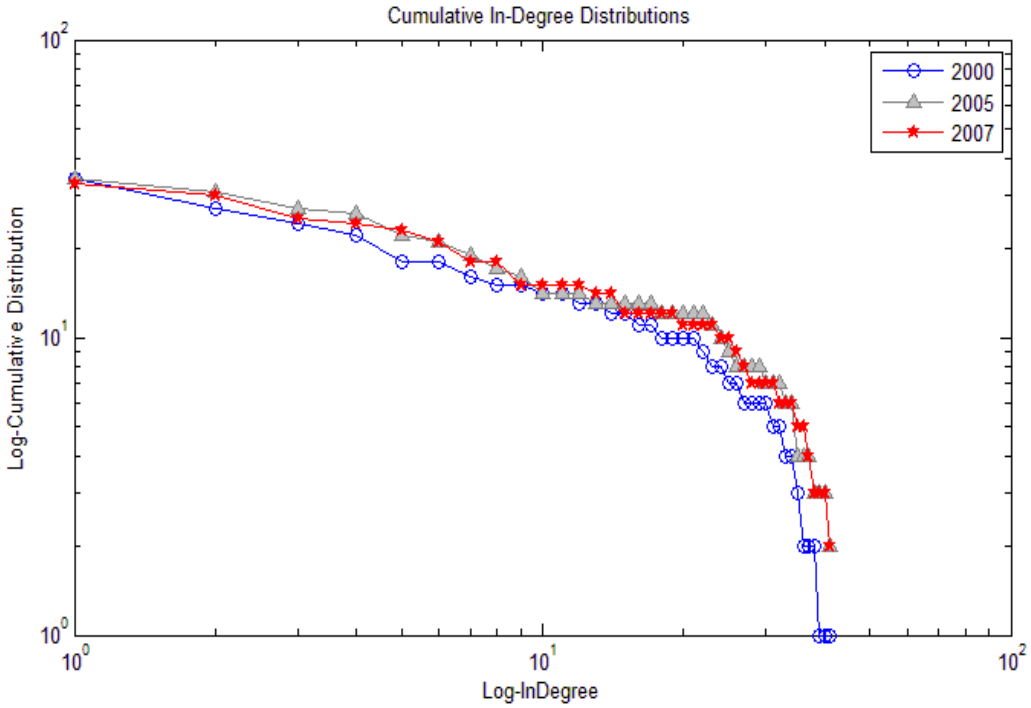
The results of table 19 are of interest: 17 of the SRIEs abandoned the US as a market for intermediates products. These islands were both from the Indian Ocean and the Pacific-Oceania regions. Australia, China and India became important trade partners for intermediates products. These results are in line with the claim that in a quota-free environment, SRIEs would prefer to trade with proximal partners rather than the distant ones. The US is a distant partner for SRIEs which are mainly located in the Indian and the Pacific Oceans.

4.2 CUMULATIVE DEGREE DISTRIBUTIONS

The degree distribution of a network refers to the probability distribution of degrees (the number of links) over the network. Figure 4 reports the cumulative degree distributions of the networks in 2000, 2005 and 2007. The degree distributions of economic networks usually take a log-normal form with a power-law tail (Kastelle 2010). It means that a small number of nodes

are well connected while a large number of nodes are poorly connected. The cumulative degree distributions in Figure 4 are power law in their tails[31] which implies that a few countries have many trade partners while the majority of countries have a small number of partners. The method provided by Clauset et al. (2009) was used to confirm the power law fit as shown in figure 7 in Annex A. The degree distributions did not change much over the period; they shifted slightly outward reflecting an increase in the number of ties. Thus, highly connected nodes remained relatively highly connected throughout the period.

FIGURE 4 CUMULATIVE IN-DEGREE DISTRIBUTIONS, 2000-2007



4.3 BETWEENNESS CENTRALITY—FINAL PRODUCTS

Table 5 reports the betweenness centrality of SRIEs and the major players. Betweenness centrality measures the relative importance of a node in a network. Flow betweenness centrality on weighted networks is used in this paper. Centrality measure is an absolute count; therefore, it increases with network size and network density and renders comparison between networks inaccurate. To allow comparison, normalised centrality is favoured here. See Network terminologies in the appendix for more information on flow betweenness centrality.

[31] Since *n* (the number of countries) in our analysis is small, it is difficult to distinguish a power-law from any other heavy-tailed distribution (Clauset et al. 2009). This does not in any case affect the interpretation given as it generalises to all heavy-tailed distributions.

Interconnectivity of nodes implies a certain level of dependency between them. Centrality measure allows one to determine how influential a node is in the trade network. For instance, an exogenous shock hitting a very influential node is likely to have consequences on nodes that depend on it, whether directly or indirectly. Thus, this measure is relevant for our understanding of the impact of the MFA on SRIEs and their trading partners.

TABLE 5 AVERAGE FLOW BETWEENNESS CENTRALITY

Countries	pre-MFA	Countries	post-MFA
USA	8.35	**EU-27**	5.38
EU-27	8.09	**USA**	5.36
New Zealand	7.49	**India**	5.32
Australia	7.38	**New Zealand**	5.08
Japan	7.36	**Australia**	5.06
India	7.34	**Japan**	4.96
Bangladesh	7.12	**Canada**	4.92
Canada	6.86	**Brazil**	4.34
Mauritius	6.67	**French Polynesia**	4.28
Sri Lanka	6.55	**Mauritius**	4.25
China	6.50	**Madagascar**	4.24
Brazil	6.32	**Fiji**	4.13
Madagascar	5.93	**Sri Lanka**	3.78
Fiji	4.98	**Bangladesh**	3.29
French Polynesia	4.78	**China**	2.80
New Caledonia	4.07	**New Caledonia**	2.73
Cape Verde	3.47	**Vanuatu**	1.76
Maldives	3.01	**Mayotte**	1.46
Cook Isds	2.83	**American Samoa**	1.22
Samoa	2.43	**Seychelles**	1.20
Niue	2.06	**Nauru**	0.59
Papua New Guinea	1.92	**Cape Verde**	0.40
Seychelles	1.20	**Cook Isds**	0.26
Nauru	1.15	**Christmas Isds**	0.19
Comoros	0.90	**Samoa**	0.13
Mayotte	0.59	**Niue**	0.09
American Samoa	0.34	**Maldives**	0.05
Solomon Isds	0.15	**Solomon Isds**	0.00
Vanuatu	0.15	**Comoros**	0.00
Christmas Isds	0.13	**Falkland Isds**	0.00
Norfolk Isds	0.01	**FS Micronesia**	0.00

As depicted in table 5, the major trading partners of SRIEs which are also major world players are obviously influential nodes with EU, USA, and New Zealand top-ranked. If these nodes were to be hit by any shocks, trade between their partners would also be affected. While, on a global stance, centrality has decreased in the post-quota environment, the relative importance of players in the network has also changed; for instance, India gained three positions in the post-quota period, in other words, India's relative power increased as it allowed

other pair of nodes to trade between themselves. Post-MFA, India's centrality is greater than Australia's although it is less connected (refer to table 4), thus, having more partners is not conditional for being more central. New Zealand and Australia maintained their central positions in the Oceania region. USA, which was a major quota allocator, lost its influence by 36 per cent and moved from first to second position. Brazil's gained four positions upwards. Among the SRIEs, the importance of Madagascar, Fiji, and French Polynesia increased. Mauritius was one of the highest ranked SRIEs just behind French Polynesia. Sri Lanka moved downwards but was still among one of the well performing SRIEs.

The smaller islands' post-MFA performances were mixed. Comoros and FS Micronesia lost their importance in the network. Maldives moved downwards by 10 positions. Cape Verde, Cook Islands, Samoa and Niue also lost their relative importance. On the contrary, both American Samoa and Mayotte gained nine positions upwards while Vanuatu gained twelve. In sum, following the elimination of the MFA, a few strong SRIEs became relatively more important nodes while most of the others lost their importance in the networks. The good performance of some SRIEs may be attributed to their relative comparative advantage they had in the sector. Mauritius had restructured its T&C sector and even delocalised certain activities in Madagascar. Though, initially it did not have an advantage in T&C, over the years, it acquired the technologies, know-how and scale economies necessary for its survival.

Fiji is a beneficiary of SPARTECA which could explain its good performance. SPARTECA is a non-reciprocal trade agreement in which Australia and New Zealand offer duty-free and quota-free access into their markets for a wide range of goods from Forum Island Countries. It is interesting to note the decline in the relative importance of the major players as the SRIEs shifted away from them and moved towards closer partners as hypothesised. For example, betweenness centrality of the US fell from 6.7 in 2000 to 6.0 in 2009 while that of Mauritius rose from 3.4 in 2000 to 5.7 in 2009.

4.4 NETWORK OF SRIES ONLY

To better capture the role of SRIEs and understand their connectivity, the following discussion focuses only on trade relations of SRIEs excluding their major trading partners. A threshold of US$1000 per year was used to exclude one-off trade between the islands. Not all SRIEs are connected with every other SRIE. In addition, the number of isolates fluctuated throughout the period. For example, the Falkland Islands was always an isolate as it did not trade with any other SRIEs. This is an expected situation as the Falkland is geographically remote from the

other SRIEs. Table 6 reports the network statistics of SRIEs only. The average statistics for the pre- and post-MFA periods show that the connectedness of SRIEs decreased throughout the period, the total number of links fell by 5 per cent. As in the whole network, there is more variability in out- than in-degree. Out-degree network centralisation increased in the post-MFA period suggesting growing inequality in trade amongst SRIEs.

TABLE 6 NETWORK STATISTICS OF FINAL PRODUCTS- SRIES ONLY

Network Statistics	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Pre MFA	Post MFA
Number of nodes	23	17	21	23	24	23	28	23	11	20	**22**	**21**
Total links	34	32	39	47	44	47	51	45	9	31	**39**	**37**
Average degree	1.5	1.9	1.9	2	1.8	2	1.9	2	0.8	1.6	**1.9**	**1.7**
Variance												
Out-degree	8.5	4.8	6.6	11.4	9.9	12	14.8	10.3	5.2	9	**9**	**10**
In-degree	0.9	0.7	1.1	1	1.1	0.9	0.9	1.3	0.1	0.5	**0.95**	**0.74**
Network Centralisation												
Out-degree	50%	34%	48%	52%	51%	62%	60%	48%	79%	52%	**50%**	**60%**
In-degree	7%	7%	11%	9%	10%	9%	8%	10%	2%	8%	**9%**	**7%**
Density	0.07	0.12	0.09	0.09	0.08	0.09	0.07	0.09	0.08	0.08	**0.08**	**0.09**

There are two subgroups in the network with a fitness[32] of 0.72 in 2000 and 0.49 in 2006 and 2009. As indicated in figures 10, 11 and 12 in Annex A: they are more or less divided geographically, an Indian Ocean group represented by the down-triangles and a Pacific-Oceania group represented by the up-triangles. In 2000, Niue from Pacific-Oceania was included in the Indian Ocean region and in 2006 Palau and Tokelau. Fiji played a highly central role in the Pacific-Oceania region. It has direct links with almost every other node in the region. The Pacific-Oceania sub-network has a star-like structure throughout the periods, with Fiji dominating at the centre. The most complex network structure was observed in 2006 but such complexity decreased in 2009, with less reciprocal links.

The Africa-Indian Ocean subgroup was less central with Sri Lanka, Madagascar and Mauritius having higher importance than the other smaller islands. The high intensity of trade between Madagascar and Mauritius is striking. Following the end of the quota system, Mauritius seems to play more of a central role in the Indian Ocean region; its intensity of trade with other trade partners namely, Mayotte, Seychelles and Sri Lanka also increased. French Polynesia and

[32] Fitness measures how well the data actually fits the ideal type of grouping (Hanneman & Riddle 2005).

New Caledonia acted as bridges, connecting the Pacific-Oceania and Africa-Indian Ocean subgroups.

4.5 WEIGHTED NETWORK STATISTICS

The network statistics presented so far deal only with binary relations while the all the network maps presented in this paper are weighted. Weighted analysis accounts for heterogeneity in trade links. The node degree counterpart for weighted analysis is node strength. It measures the intensity of trade relations. Table 7 reports the weighted network statistics for SRIEs and the major players.

TABLE 7 WEIGHTED NETWORK STATISTICS OF FINAL PRODUCTS

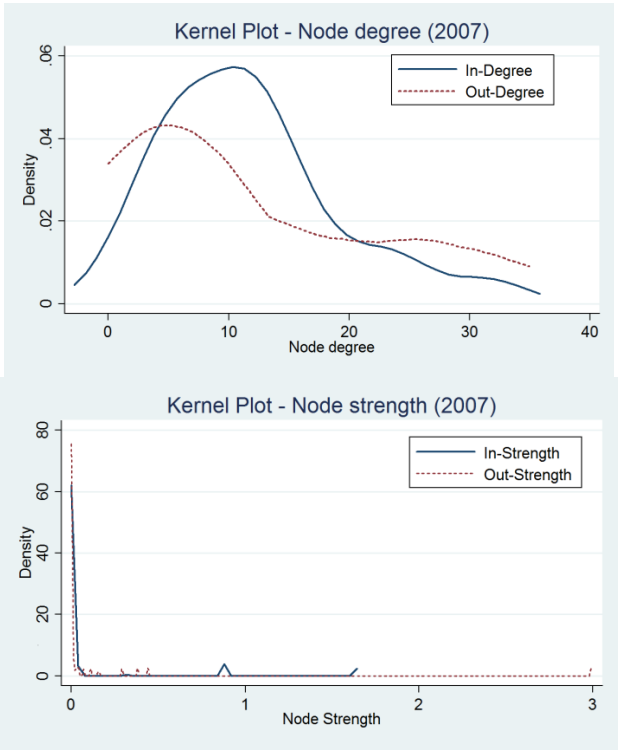
Weighted Network Statistics	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Pre MFA	Post MFA
Average Node Strength	0.08	0.08	0.09	0.10	0.10	0.12	0.10	0.11	0.05	0.08	**0.09**	**0.09**
Variance												
Out-strength	0.09	0.09	0.11	0.13	0.14	0.24	0.18	0.23	0.06	0.16	**0.11**	**0.17**
In-strength	0.08	0.08	0.09	0.10	0.10	0.16	0.11	0.13	0.04	0.07	**0.09**	**0.10**
Correlation												
In Degree-Strength	0.61	0.59	0.64	0.64	0.61	0.60	0.57	0.55	0.59	0.49	**0.62**	**0.56**
OutDegree-Strength	0.52	0.53	0.53	0.50	0.50	0.44	0.42	0.47	0.31	0.46	**0.52**	**0.42**

On average, intensity of trade remained fairly stable in the pre- and post-MFA periods. Intensity of trade was the highest in 2005, the immediate post-MFA period. There is more variation in out-strength than in in-strength. Variation in out-strength increased considerably post-MFA implying a greater variance in value of exports. This result contrasts with the result of the binary networks which showed less variability.

Node degree and node strength have a fairly high correlation. Consequently, these trends are not very different from the evolution of the binary statistics reported previously. These correlations decreased in the post-MFA period suggesting that having many partners does not always imply having high trade intensity. The difference between degree and strength can be pointed out through the kernel plots of the year 2007. The weighted figure at the bottom of figure 5 shows polarised plots with a vast majority of links carrying very little trade value.

This is particularly true for out-strength. The picture is different in the case of node degree. Though it is true that the plots are skewed, yet in-degree is stronger than out-degree as indicated in the top figure. Thus, weighted analysis provides a better picture of trade intensities and is useful where node degree and strength are not correlated.

FIGURE 5 KERNEL PLOTS (TOP: NODE DEGREE, BOTTOM: NODE STRENGTH)



5. RESULTS AND DISCUSSION—TRADE IN FIBRES

5.1 SRIES AND MAJOR WORLD TRADERS

The manufacturing of T&C involves various stages and a considerable amount of trade is in intermediate products. Investigating the trade networks of both final and intermediate products can provide some insights into the extent of division of labour between the players. Moreover, it can give information on the regional commodity chain and the workings of comparative advantage. Intermediate products in T&C include products ranging from silk to cotton yarns.

The network statistics of trade in fibres are reported in table 8. The trend is similar to those of final products as documented in the previous section: the number of links as well as the average degree decreased. This is true both for the whole network and the network of SRIEs. The intermediates network has a lower density but higher out-degree centralisation than the final products network reported in the previous section. Low density is the result of the nature of fibre production processes; its capital intensity as compared to clothing production renders the production of fibres more difficult for developing countries. Thus, only textiles producing countries would be exporting fibres which explain the high out-degree centralisation.

TABLE 8 NETWORK STATISTICS FOR INTERMEDIATE PRODUCTS- SRIES AND MAJOR PLAYERS

Network Statistics	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Pre MFA	Post MFA
Number of nodes	42	42	42	42	42	42	42	42	41	42	**42**	**42**
Total links	267	266	278	294	296	310	304	292	135	235	**280**	**255**
Average degree	6.4	6.3	6.6	7	7	7.4	7.2	7	3.2	5.6	**6.7**	**6.1**
Variance												
Out-degree	104	107	102	115	114	118	112	107	67	106	**108**	**102**
In-degree	13	14	13	13	15	14	17	15	4	7	**14**	**11**
Network Centralisation												
Out-degree	69%	82%	73%	80%	80%	72%	74%	73%	82%	78%	**77%**	**76%**
In-degree	26%	22%	18%	17%	27%	22%	24%	20%	9%	16%	**22%**	**18%**
Density	**0.16**	**0.15**	**0.16**	**0.17**	**0.17**	**0.18**	**0.18**	**0.17**	**0.08**	**0.14**	**0.16**	**0.15**

Table 9 reports average in- and out-degrees in intermediates trade for all the players. ANNEX D – In and Out-Degrees for fibres provides their detailed in- and out-degrees. On average, major players were both importing and exporting fibres from fewer partners in the post-MFA period. USA experienced the greatest decline in export links followed by Bangladesh. Most SRIEs were exporting to fewer countries than in the pre-MFA period; for instance, Comoros, Maldives, Samoa and Seychelles were not exporting at all after 2005. American Samoa and Cape Verde appear to have benefited from the end of the quota system as their trade links increased; they had both more import and export partners. Many remote islands are only importers of fibres. It is known that the technology behind fibres, in particular, specialty and high-value fibre products are complex and less price-competitive and often beyond the means of small producers (NAE 1983). However, larger islands that have a well-established T&C have fared well pre- and post-MFA in fibres production. For instance, Fiji, Sri Lanka, Mauritius and Madagascar were leading exporters among the SRIEs.

TABLE 9 AVERAGE IN- AND OUT-DEGREES FOR TRADE IN FIBRES

	Average In-Degrees			Average Out-Degrees		
Country	**Pre MFA**	**Post MFA**	**change**	**Pre MFA**	**Post MFA**	**change**
			Major players			
Australia	11.6	11.4	**-2%**	29.6	28.4	**-4%**
Bangladesh	10.6	9.4	**-11%**	12.8	8.6	**-33%**
Brazil	9.6	8.2	**-15%**	13.4	15.0	**12%**
Canada	10.0	10.0	**0%**	12.4	14.4	**16%**
China	11.4	10.4	**-9%**	28.8	29.0	**1%**
EU-27	15.4	12.0	**-22%**	37.4	36.4	**-3%**
India	11.2	10.0	**-11%**	26.0	20.4	**-22%**
Japan	11.4	9.8	**-14%**	0.0	0.0	
New Zealand	10.8	9.8	**-9%**	26.8	23.0	**-14%**
USA	13.2	11.8	**-11%**	25.4	15.4	**-39%**
			Remote islands			
American Samoa	2.2	5.0	**127%**	1.2	4.2	**250%**
Cape Verde	3.2	3.6	**13%**	0.4	0.6	**50%**
Christmas Isds	2.8	2.2	**-21%**	1.4	0.8	**-43%**
Comoros	5.2	5.0	**-4%**	0.2	0.0	**-100%**
Cook Isds	5.8	4.8	**-17%**	0.0	0.0	
Falkland Is. (Malvinas)	1.4	1.2	**-14%**	0.0	0.0	
Fiji	8.6	8.0	**-7%**	15.4	15.4	**0%**
French Polynesia	7.8	7.8	**0%**	5.2	5.0	**-4%**
FS Micronesia	4.4	3.0	**-32%**	0.0	0.0	
Kiribati	4.8	4.6	**-4%**	0.0	0.0	
Madagascar	8.6	7.8	**-9%**	8.4	7.6	**-10%**
Maldives	7.2	7.0	**-3%**	0.2	0.4	**100%**
Marshall Isds	5.0	6.0	**20%**	0.0	0.0	
Mauritius	9.6	8.0	**-17%**	13.4	11.6	**-13%**
Mayotte	1.2	2.6	**117%**	1.6	0.8	**-50%**
N. Mariana Isds	1.8	1.4	**-22%**	0.0	0.0	
Nauru	4.4	2.8	**-36%**	2.0	1.4	**-30%**
New Caledonia	8.2	7.4	**-10%**	4.6	2.6	**-43%**
Niue	2.0	2.6	**30%**	0.4	0.4	**0%**
Norfolk Isds	3.0	3.0	**0%**	0.2	0.8	**300%**
Palau	2.8	2.2	**-21%**	0.0	0.0	
Papua New Guinea	7.6	7.8	**3%**	1.0	0.0	**-100%**
Samoa	6.2	5.6	**-10%**	0.8	0.0	**-100%**
Sao Tome &Principe	2.4	2.4	**0%**	0.0	0.0	
Seychelles	6.0	5.4	**-10%**	0.4	0.0	**-100%**
Solomon Isds	6.4	5.0	**-22%**	0.0	0.2	
Sri Lanka	11.2	9.4	**-16%**	10.6	12.6	**19%**
Tokelau	3.0	2.2	**-27%**	0.0	0.0	
Tonga	6.4	5.4	**-16%**	0.0	0.0	
Tuvalu	3.2	2.8	**-13%**	0.0	0.0	
Vanuatu	7.2	6.0	**-17%**	0.2	0.2	**0%**
Wallis & Futuna Isds	5.4	4.4	**-19%**	0.0	0.0	

Figures 13, 14 and 15 in Annex B illustrate the network maps of all the players for the years 2000 and 2009 respectively. From the maps of 2009 one can clearly see the decline in the importance of the US as a fibre market; both its node size and intensity of trade appear to have declined. China and the EU seem to have more central roles in the fibres network. The densest network was recorded in the year 2005 where total links was 310 as compared to only 267 in 2000. One striking fact coming out from the 2000 map is the centralisation of trade intensities between Europe, US and Canada. In contrast, the map of 2009 exhibited dispersed trade intensities including countries such as Brazil and Bangladesh.

5.2 BETWEENNESS CENTRALITY—FIBRES

TABLE 10 FLOW BETWEENNESS CENTRALITY- FIBRES NETWORKS PRE-& POST-MFA

Countries	pre-MFA	post-MFA	Change
Australia	5.89	4.80	-18%
EU-27	5.59	4.65	-17%
China	5.50	5.08	-8%
Brazil	5.30	4.02	-24%
Bangladesh	5.28	2.25	-57%
Canada	5.21	4.61	-12%
India	5.17	4.25	-18%
New Zealand	5.12	4.61	-10%
USA	5.09	4.23	-17%
Mauritius	4.76	3.69	-23%
Madagascar	4.25	3.61	-15%
Sri Lanka	3.29	2.99	-9%
Fiji	3.04	3.60	19%
French Polynesia	1.56	1.80	16%
New Caledonia	1.26	0.93	-26%
Cape Verde	1.23	0.50	-59%
Nauru	0.80	0.11	-87%
Christmas Isds	0.78	0.87	11%
Niue	0.35	0.02	-95%
Mayotte	0.19	0.12	-37%
Maldives	0.18	0.02	-86%
Papua New Guinea	0.15	0.00	-100%
American Samoa	0.13	2.50	1900%
Norfolk Isds	0.12	0.18	56%
Samoa	0.11	0.00	-100%
Seychelles	0.02	0.00	-100%
Vanuatu	0.01	0.02	100%
Comoros	0.01	0.00	-100%
Solomon Isds	0.00	0.01	100%

Weighted flow betweenness centrality gives a better indication of the roles of the nodes in the fibres trade network. Table 10 above reports the betweenness centrality for the different players and their change from the pre- to the post-MFA period. While, the importance of most of the players declined, it is more pronounced for smaller SRIEs: for instance, Samoa, Seychelles and Comoros centralities fell by 100 per cent. This is a clear indication of the inability of small producer countries to cope with capital-intensive production, namely, fibres. Among the major players, Bangladesh's centrality was the most affected, falling by 57 per cent. Australia was the most influential player in the network of fibres but lost its position to China in the post-MFA period. While USA was among the most influential players in final products, contrarily its influence is relatively low in the fibres network. Mauritius, Madagascar, Sri Lanka and Fiji are the most important SRIEs in the fibres network. American Samoa gained importance in the post-MFA period.

5.3 NETWORK OF SRIES ONLY

The SRIEs' network maps of fibres trade are illustrated in figures 16, 17 and 18 for the years 2000, 2006 and 2009 respectively. The 2009 map shows less connectivity than that of 2000 but trade activity was higher in 2006. Sri Lanka lost its bridging role to the Pacific-Oceania islands in 2009. As a result, the two subgroups were separated. Consequently, Fiji's role in the sub-network became more important. This is also the case for Mauritius in the Indian Ocean. Trade intensity between Madagascar and Mauritius remained strong throughout the periods.

TABLE 11 NETWORK STATISTICS FOR INTERMEDIATE PRODUCTS- SRIES ONLY

Network Statistics	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Pre MFA	Post MFA
Number of nodes	19	16	23	21	20	21	22	23	6	22	**19.8**	**19**
Total links	28	20	38	36	34	32	37	40	5	28	**31**	**28**
Average degree	1.5	1.3	1.7	1.7	1.7	1.8	1.7	1.7	0.8	1.3	**1.6**	**1.5**
Variance												
Out-degree	9.5	2.4	9.4	9.7	8.7	9.6	9.6	11.7	3.4	10.1	**8**	**9**
In-degree	0.6	0.6	0.7	1.2	0.9	0.6	0.5	0.6	0.1	0.2	**1**	**0**
Network Centralisation												
Out-degree	68%	20%	59%	65%	57%	59%	56%	63%	100%	63%	**54%**	**68%**
In-degree	9%	12%	6%	12%	13%	6%	7%	11%	4%	4%	**10%**	**6%**
Density	**0.08**	**0.08**	**0.08**	**0.09**	**0.09**	**0.09**	**0.08**	**0.08**	**0.17**	**0.06**	**0.08**	**0.10**

Table 11 reports the fibres network statistics of SRIEs only. The trends in the statistics are not different from those of trade in clothing: out-degree variance and centralisation also increased indicating increased inequality in exports in the post-quota period. However, given the specific nature of the production of textiles, there are fewer nodes involved and also fewer links than in the clothing networks. Not all SRIEs have invested in textiles manufacturing.

6. ANALYSIS OF RESULTS IN LIGHT OF HYPOTHESES

In relation to the first hypothesis, the analyses reveal that the quota-allocation system distorted T&C international trade patterns. This is demonstrated by different network statistics. The network statistics before the elimination of quotas differ from the post-quota period. This conclusion holds for both the networks of final and intermediate products. Thus, trade liberalisation changed the T&C map. In addition, there was less variability in trade links for the whole network suggesting trade convergence in textiles and clothing trade following the removal of quotas. This interpretation is supported by a decline in network centralisation which implies a tendency towards a flatter trade hierarchy. In addition, the importance of many of the major exporters declined as revealed by the betweenness centrality measure. Network density decreased implying less trade in MFA-products and a decline in the scattering of production over the world. This happened because inefficient producing countries reduced or exited production while more efficient producers remained in the industry.

Post-MFA, the total number of connections between countries declined for both final products and intermediates. However, this decline was mainly resulting from the decrease in trade links of the major players. Contrarily, many SRIEs reported an increase in the number of export partners for final products. Nevertheless, they reported a decrease in the number of export partners for intermediates. This implies that the workings of the free-market in post-quota period encouraged SRIEs to specialise in products in which they are relatively more efficient. The production of intermediates is relatively more capital intensive and SRIEs lack the capacity and technological resources to compete efficiently in this segment. As some researchers reported, remoteness can hinder FDI, technology flows and sourcing of raw materials (Keller 2001; Redding & Venables 2002). Indeed, many smaller SRIEs, such as the Comoros and Maldives, did not export any fibre products in the years following the elimination of the MFA. This fact supports the second hypothesis. As revealed by the weighted statistics and weighted maps, intensity of trade did not vary much from pre- to post-quota period. This is because, in both periods, the major traders were still the major traders in our analysis as compared to SRIEs which remained relatively smaller traders. However, among major traders,

the US showed a declining intensity in fibres trade. It is thus possible to confirm the third hypothesis although with less confidence. An investigation into individual country's data would shed more light on this issue.

By analysing the relative positions of SRIEs in the network, those who appeared to have developed a comparative advantage in the sector, have gained in importance relative to other players. Furthermore, there is an increase in the density of the network comprising of just SRIEs and a decrease in the network of SRIEs with the major players. SRIEs are trading more between themselves. This confirms the fourth hypothesis that trade shifted from distant towards proximal partners. A comparison of the 2006 and 2000 network maps of SRIEs only for both final and intermediate products revealed an increase in trade between SRIEs.

7. CONCLUSION

The textiles and clothing industry has been one of the most protected industries in the records of trade. The industry has been contributing and sustaining employment in many sub-regions of the developed economies which encouraged these economies to perpetuate trade protection in the form of MFA quotas. The MFA, however, was violating the principles of GATT: it applied quantitative restrictions, discriminated against developing countries and was often not transparent. At the end of the Uruguay round, it was agreed to lift up all quotas by 1st January 2005. Developing countries had the most to benefit from the end of the quota system.

On one hand, where quotas were binding, they were restrictive to large-producing developing countries. On the other hand, quota allocations were a windfall for small producers in small developing economies; quotas guaranteed them access to large developed markets which would have been previously inaccessible. Island economies, in particular, had the most to fear from the liberalised environment as they would have to face fierce competition from large producers. Of these islands, remote islands had yet other challenges; trade in goods involve transportation and other distance costs.

This paper analysed the trade patterns of SRIEs with the major world players during and following the abolition of the MFA using a network approach. The results suggest that quota-allocations influenced network formation. A quota-free environment urged SRIEs to diversify their trade partners. They traded more between themselves and with closer partners than during the MFA, suggesting a preference to reduce transportation costs. A few SRIEs became more important players as a result of the new competitive environment while the

weaker ones lost their importance. On a global stance, trade activities in textile and clothing were reduced.

Since the manufacturing of T&C involves various stages, the network of intermediate products or fibres were also analysed. The patterns of trade did not differ much from those of final products; however, the densities of the fibres network were lower. Fewer SRIEs were involved in fibres production given the more complex technologies required for their production. Smaller island fibre producers faced even more difficulties to cope with the elimination of the quota system.

One of the main interpretations from the results is that many SRIEs had an artificial comparative advantage in T&C in the pre-MFA period. Post-MFA, they had to struggle to survive and smaller islands such as the Maldives had to shut down production. Others, such as Mauritius and Fiji, who had an established industry, managed to fare well even in the post-quota environment. Whether these economies have a comparative advantage in T&C is dubious: it is difficult to draw firm conclusions given the complexity of trade environment. The avenue of AGOA may have encouraged African economies to sustain their T&C while SPARTECA in the Pacific-Oceania region gave a boost to some of the islands.

Network analysis provides a comprehensive picture of the topological evolution of T&C trade of SRIEs and well-demonstrated the role of geography on trade. However, to better understand the underlying reasons behind the success and failure of each SRIE, further investigations are required.

8. REFERENCES

Adhikari, R. & Weeratunge, C., 2007. Textiles & clothing sector in South Asia: coping with post-quota challenges. *South Asian Yearbook of Trade and Development*.

Adhikari, R. & Yamamoto, Y., 2006. *Sewing thoughts:how to realise human development gains in the postquota world*, Colombo: UNDP Asia Pacific Regional Centre.

Adhikari, R. & Yamamoto, Y., 2009. Textile and clothing industry: adjusting to the post-quota world. *Unveiling Protectionism: Regional Responses to Remaining Barriers in the Textiles and Clothing Trade*, p.3.

Barabasi, A.L., 2009. Scale-free networks: a decade and beyond. *Science*, 325(5939), p.412.

Battiston, S. et al., 2007. Credit chains and bankruptcy propagation in production networks. *Journal of Economic Dynamics and Control*, 31(6), pp.2061-2084.

Bergstrand, J.H., 1985. The gravity equation in international trade: some microeconomic foundations and empirical evidence. *The Review of Economics and Statistics*, 67(3), pp.474-481.

Breiger, R.L., 1981. Structures of economic interdependence among nations. In *Continuities in structural inquiry*. pp. 353-380.

Clauset, A., Shalizi, C.R. & Newman, M.E.J., 2009. Power-law distributions in empirical data. *SIAM Review*, 51(4), p.661.

Disdier, A.-C. & Head, K., 2008. The puzzling persistence of the distance effect on bilateral trade. *Review of Economics and Statistics*, 90(1), pp.37-48.

Erdős, P. & Rényi, A., 1960. On the evolution of random graphs. *Publ. Math. Inst. Hungar. Acad. Sci*, 5, pp.17–61.

Fagiolo, G., 2010. The international-trade network: gravity equations and topological properties. *Journal of Economic Interaction and Coordination*, 5(1), pp.1-25.

Fagiolo, G., Reyes, J. & Schiavo, S., 2007. International trade and financial integration: a weighted network analysis. *Documents de Travail de l'OFCE*, 11.

Fagiolo, G., Reyes, J. & Schiavo, S., 2008. On the topological properties of the world trade web: A weighted network analysis. *Physica A: Statistical Mechanics and its Applications*, 387(15), pp.3868–3873.

Fagiolo, G., Reyes, J. & Schiavo, S., 2009. World-trade web: Topological properties, dynamics, and evolution. *Physical Review E*, 79(3), p.36115.

Foster, J., 2005. From simplistic to complex systems in economics. *Cambridge Journal of Economics*, 29(6), pp.873-892.

Garlaschelli, D. & Loffredo, M.I., 2004a. Fitness-dependent topological properties of the world trade web. *Physical review letters*, 93(18), p.188701.

Garlaschelli, D. & Loffredo, M.I., 2004b. Wealth dynamics on complex networks. *Physica A: Statistical Mechanics and its Applications*, 338(1-2), pp.113–118.

Garlaschelli, D. et al., 2007. Interplay between topology and dynamics in the World Trade Web. *The European Physical Journal B*, 57(2), pp.159-164.

Hanneman, R.A. & Riddle, M., 2005. *Introduction to social network methods*, Riverside, CA. Available at: http://faculty.ucr.edu/~hanneman/nettext/ [Accessed November 14, 2010].

Jackson, M.O., 2008. *Social and economic networks*, Princeton University Press.

Joomun, G., 2006. The textile and clothing industry in Mauritius. In *The future of the textile and clothing industry in sub-Saharan Africa*. Bonn.

Kastelle, T., 2010. The impact of the evolution of the international trade network on economic development. In *DRUID Summer Conference 2007 on Appropriability, Proximity, Routines, and Innovation*. pp. 1–33.

Keller, W., 2001. The geography and channels of diffusion at the world's technology frontier. *NBER Working Paper*.

Kowalski, P. & Molnar, M., 2009. Economic impacts of the phase-out in 2005 of quantitative restrictions under the agreement on textiles and clothing. In *Unveiling protectionism: regional responses to remaining barriers in the textiles and clothing trade*. UNESCAP, pp. 49-85. Available at: http://ideas.repec.org/p/oec/traaab/90-en.html [Accessed November 22, 2010].

Li, X., Ying Jin, Y. & Chen, G., 2003. Complexity and synchronization of the world trade web. *Physica A: Statistical Mechanics and its Applications*, 328(1-2), pp.287-296.

Maldives Monetary Authority, 2010. Research and statistics. *Maldives Monetary Authority*. Available at: http://www.mma.gov.mv/statis.php [Accessed November 10, 2010].

Mayer, J., 2004. *Not totally naked: textiles and clothing trade in a quota free environment*, United Nations Conference on Trade and Development. Available at: http://ideas.repec.org/p/unc/dispap/176.html [Accessed November 9, 2010].

NAE, 1983. *The Competitive Status of the U.S. Fibers, Textiles, and Apparel Complex: a Study of the Influences of Technology in Determining International Industrial Competitive Advantage*, National Academy Press.

Narayan, P., 2001. Globalisation of the garment industry: Implications for Fiji's economy. *Development Bulletin*, 55, pp.36–8.

Padgett, J.F. & Ansell, C.K., 1993. Robust action and the rise of the Medici, 1400-1434. *American Journal of Sociology*, 98(6), pp.1259–1319.

Paperin, G., Green, D. & Leishman, T., 2008. Dual phase evolution and self-organisation in networks. *Simulated Evolution and Learning*, pp.575–584.

Pool, I. & Kochen, M., 1978. Contacts and influence. *Social Networks*, 1(1), pp.5-51.

Redding, S. & Venables, A.J., 2002. The economics of isolation and distance. *Nordic Journal of Political Economy*, (28), pp.93-108.

Redner, S., 1998. How popular is your paper? An empirical study of the citation distribution. *The European Physical Journal B*, 4(2), pp.131–134.

Rivoli, P., 2009. *The travels of a T-shirt in the global economy: an economist examines the markets, power, and politics of world trade*, John Wiley and Sons.

Serrano, M.Á. & Boguná, M., 2003. Topology of the world trade web. *Physical Review E*, 68(1), p.15101.

Solomonoff, R. & Rapoport, A., 1951. Connectivity of random nets. *Bulletin of Mathematical Biology*, 13(2), pp.107–117.

Travers, J. & Milgram, S., 1969. An experimental study of the small world problem. *Sociometry*, 32(4), pp.425-443.

UNCTAD, 2008. *Training module on trade in textiles and clothing the post-atc context*, Available at: http://www.unctad.org/ [Accessed October 4, 2010].

Watts, D.J. & Strogatz, S.H., 1998. Small world. *Nature*, 393, pp.440–442.

ANNEX A – TRADE NETWORKS FOR FINAL PRODUCTS

FIGURE 6 TRADE NETWORK (FINAL PRODUCTS)- SRIES AND THE MAJOR PLAYERS (2000)

Total links: 319; The major players are represented by circular nodes while SRIEs in rounded-square nodes. The size of the nodes is proportional to degree. The size of the lines represents the intensity of trade.

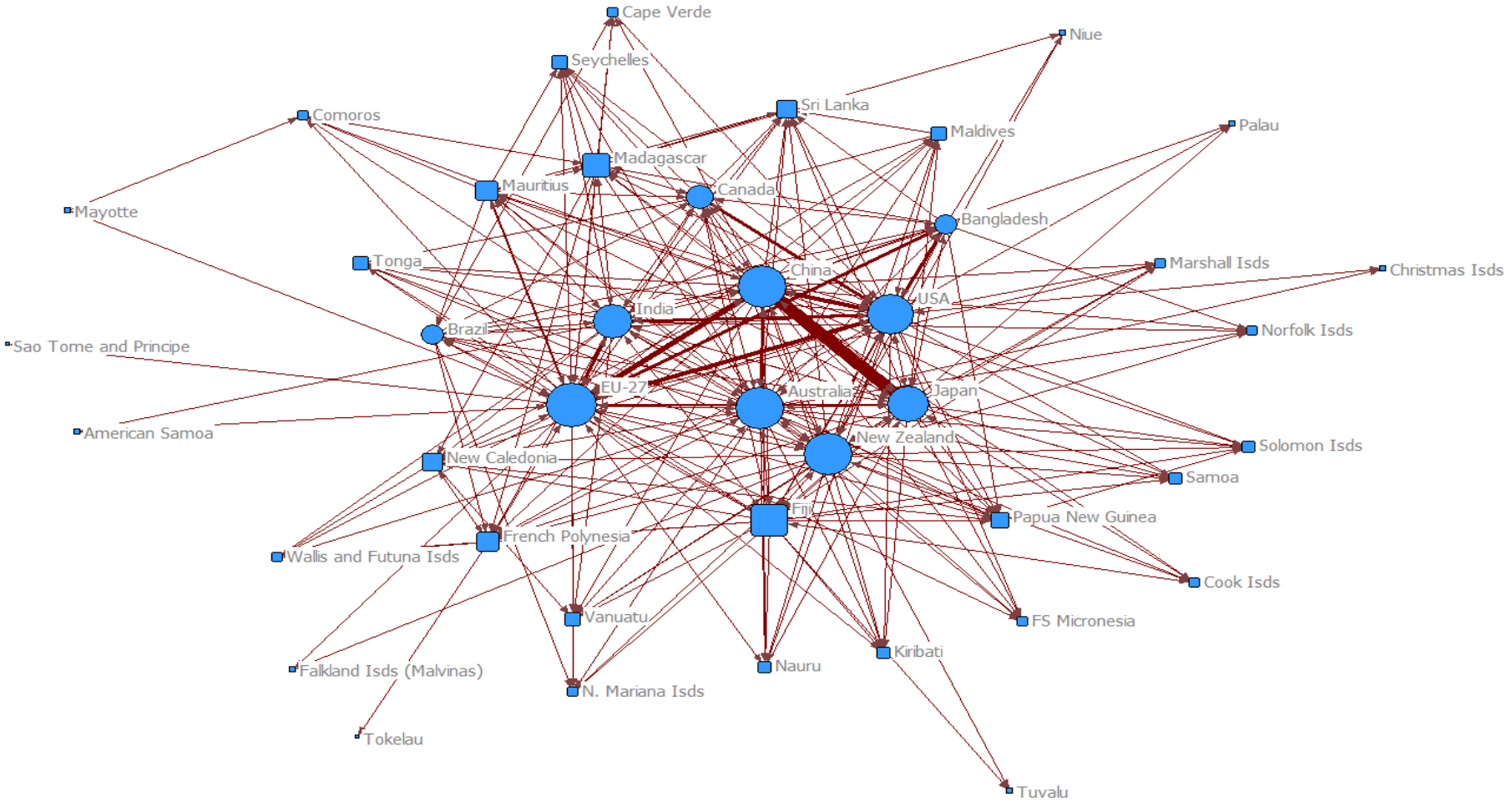


FIGURE 7 TRADE NETWORK (FINAL PRODUCTS)—SRIES AND THE MAJOR PLAYERS (2006)

Total Links: 367

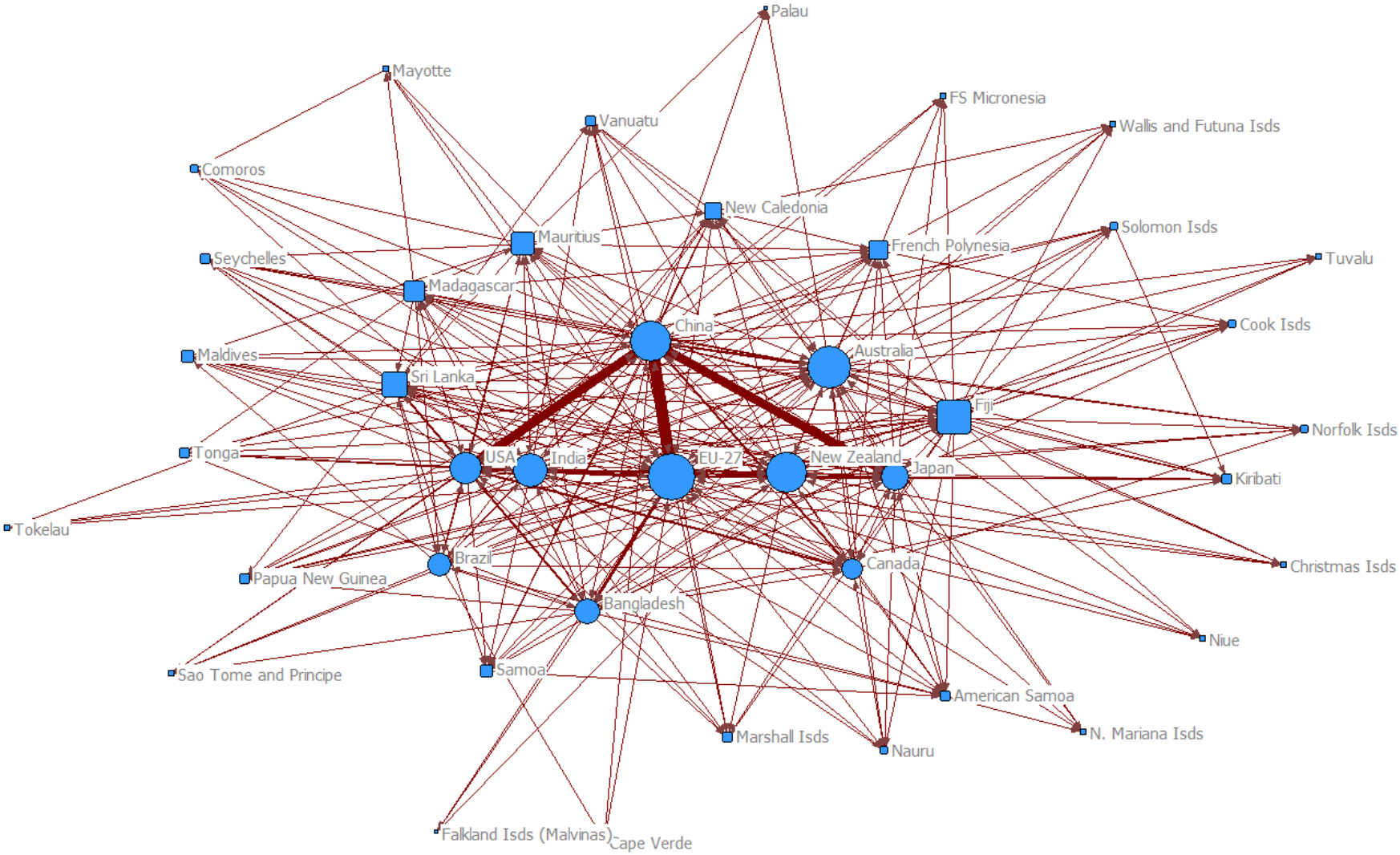


FIGURE 8 TRADE NETWORK (FINAL PRODUCTS)- SRIES AND THE MAJOR PLAYERS (2009)

Total links : 280

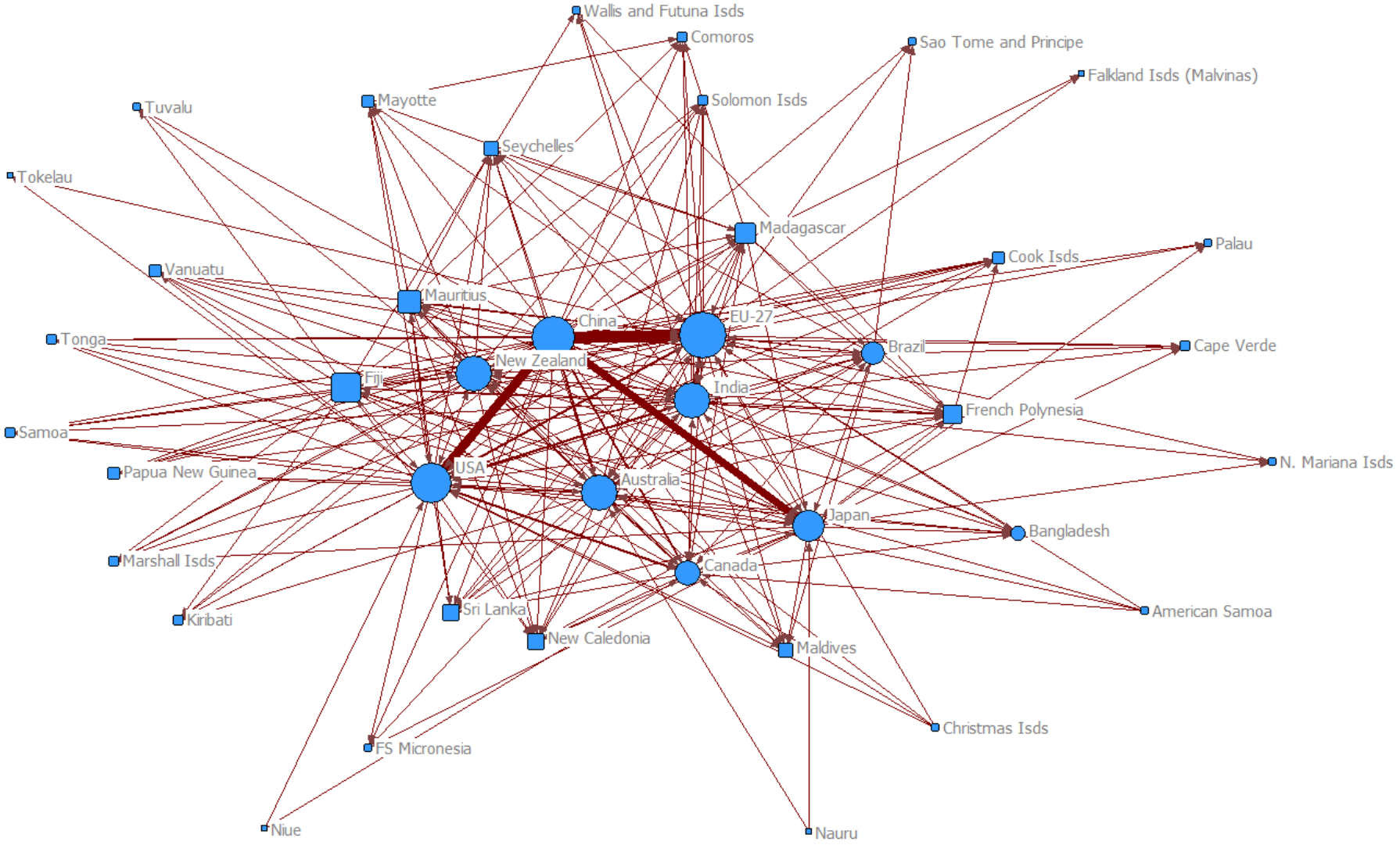


FIGURE 9 POWER LAW FIT

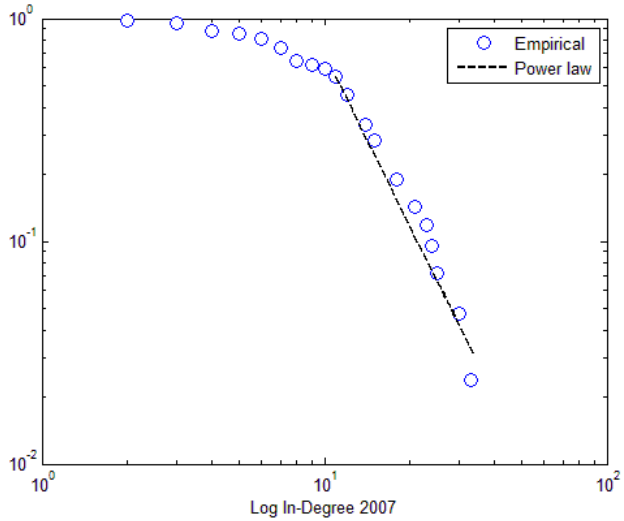


FIGURE 10 TRADE NETWORK (FINAL PRODUCTS)—SRIES ONLY (2000)

Total links: 34;The network has 2 factions divided geographically: the African-Indian Ocean islands (with the exception of Niue) represented by the down-triangles and the Pacific-Oceania islands represented by up-triangles. Intensity of trade between Madagascar and Mauritius is quite important.

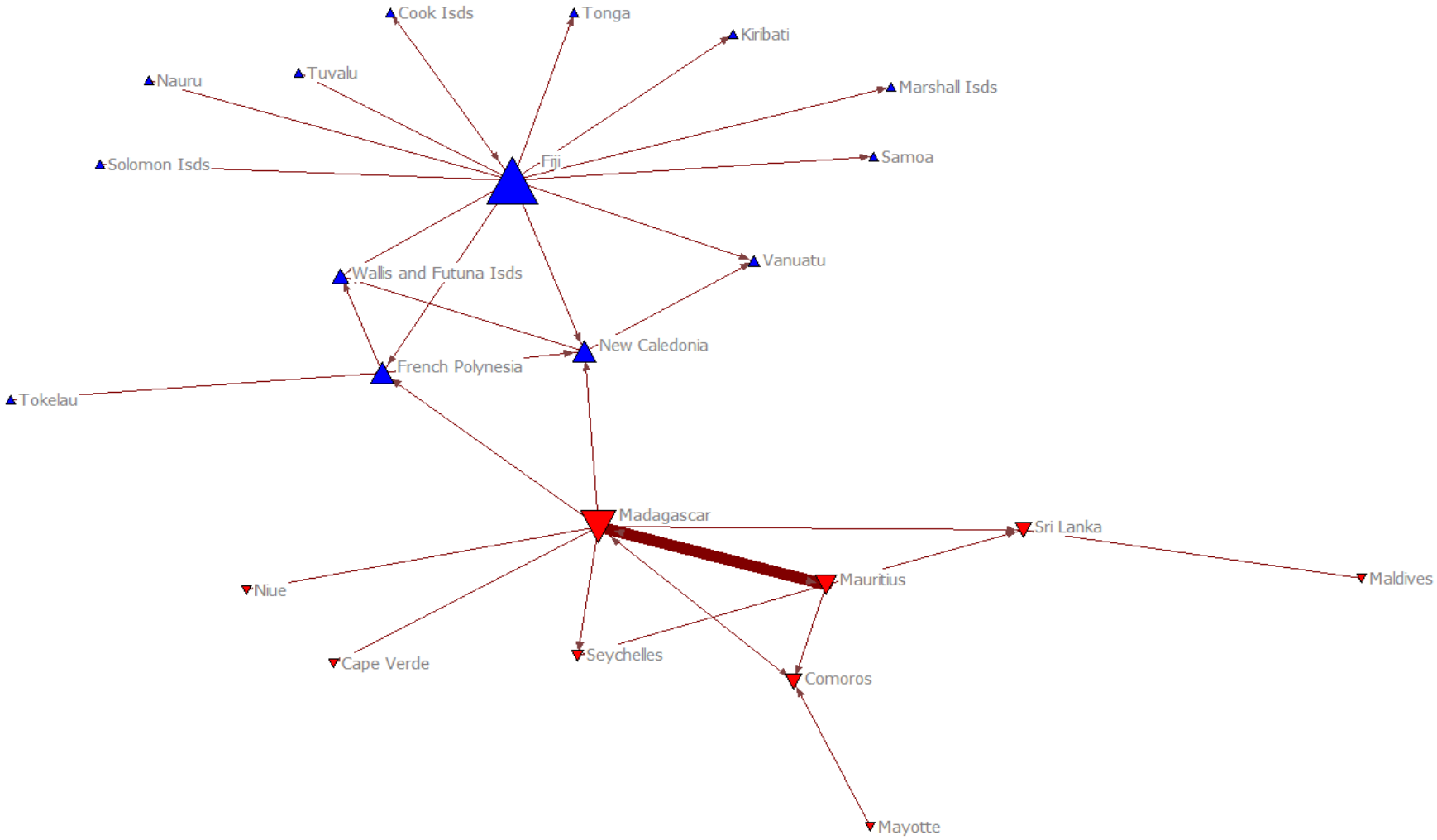


FIGURE 11 TRADE NETWORK (FINAL PRODUCTS)—SRIES ONLY (2006)

Total links: 51; The densest network was in 2006 with also the highest number of nodes and links.

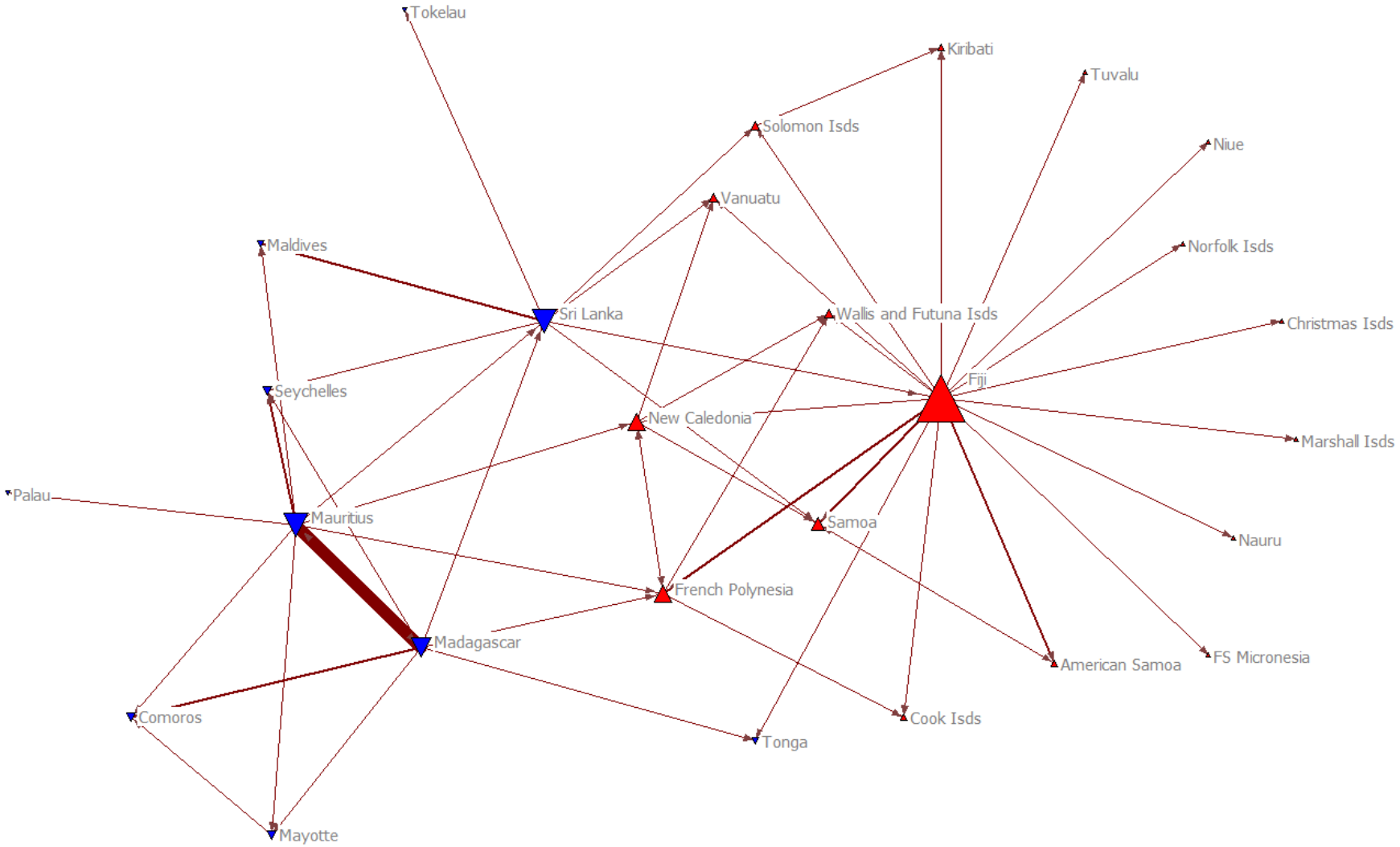
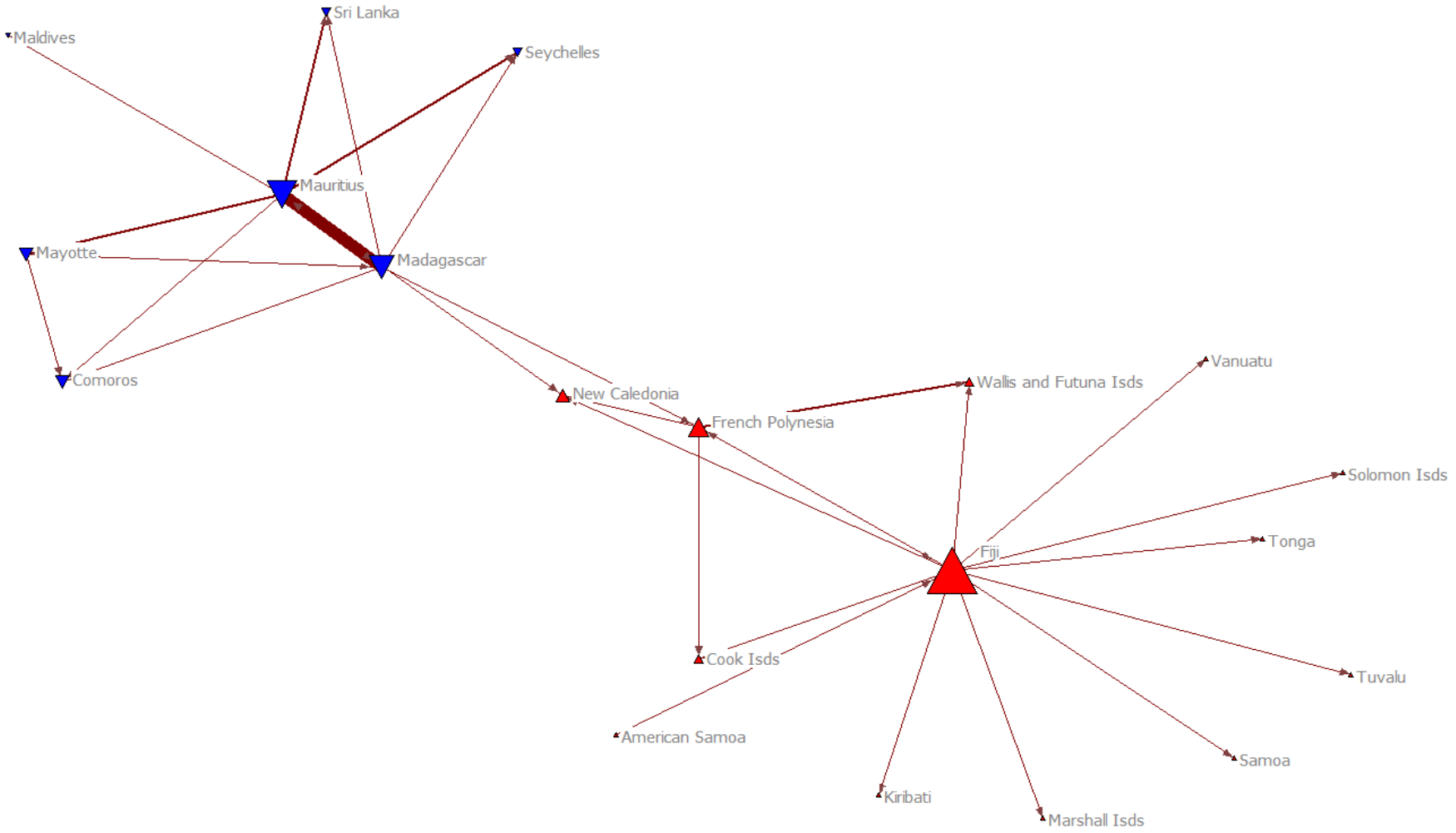


FIGURE 12 TRADE NETWORK (FINAL PRODUCTS)—SRIES ONLY (2009)
Total links: 31



ANNEX B – TRADE NETWORKS FOR INTERMEDIATES/FIBRES

FIGURE 13 TRADE NETWORK (INTERMEDIATES)—SRIES AND MAJOR PLAYERS (2000)

Total links: 267

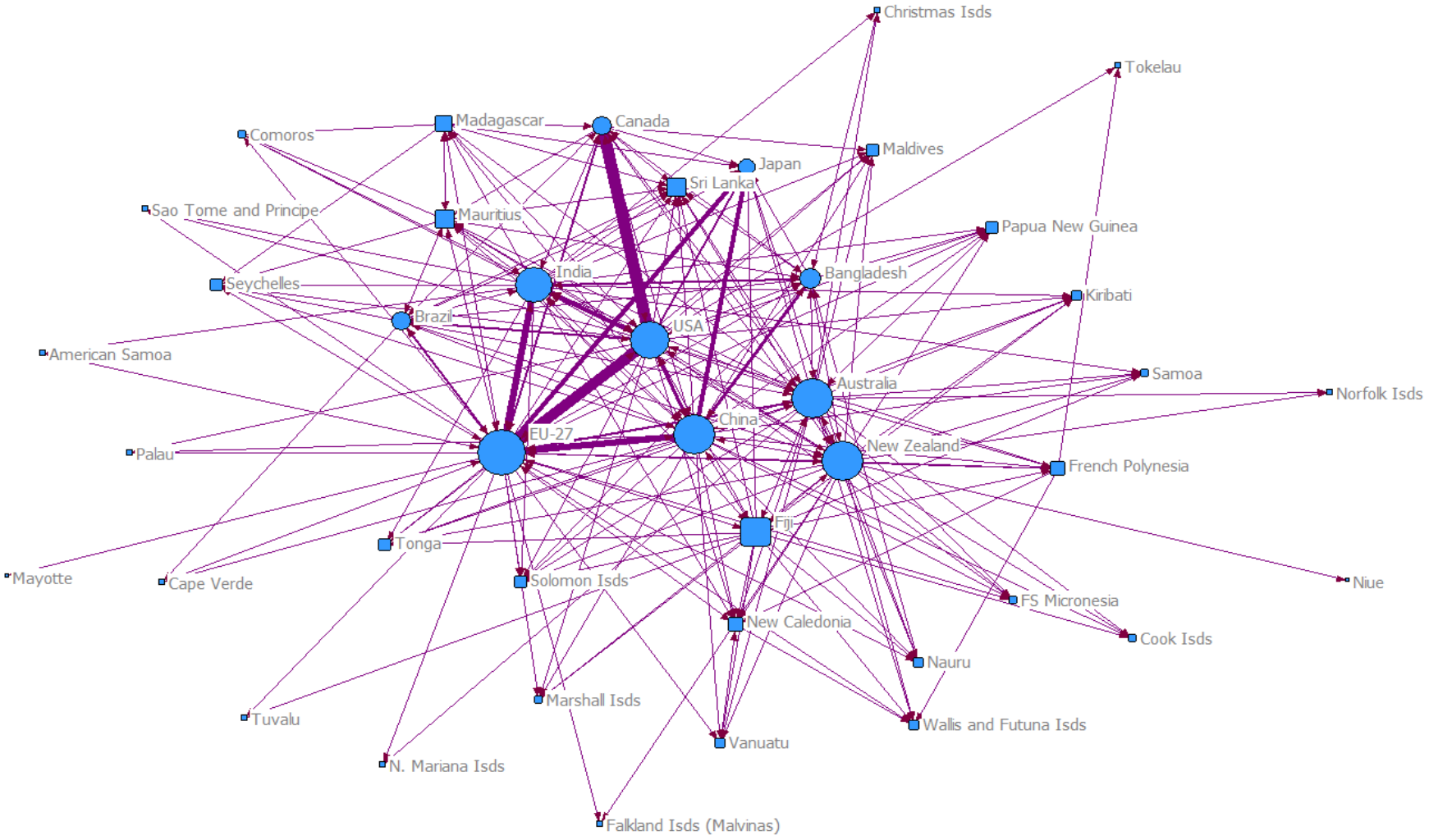


FIGURE 14 TRADE NETWORK (INTERMEDIATES)—SRIES AND MAJOR PLAYERS (2005)
Total links: 310

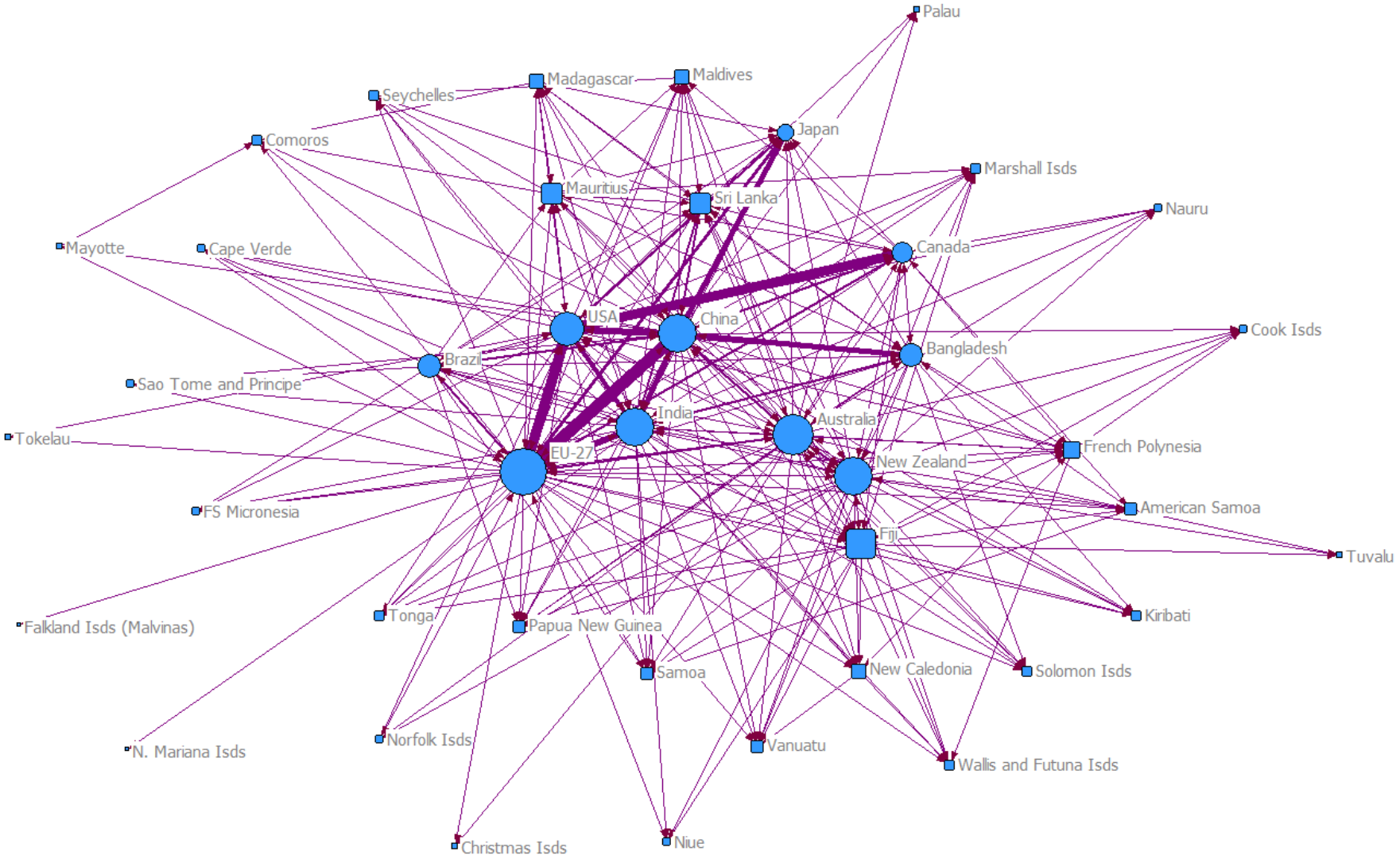


FIGURE 15 TRADE NETWORK (INTERMEDIATES)—SRIES AND MAJOR PLAYERS (2009)
Total links: 235

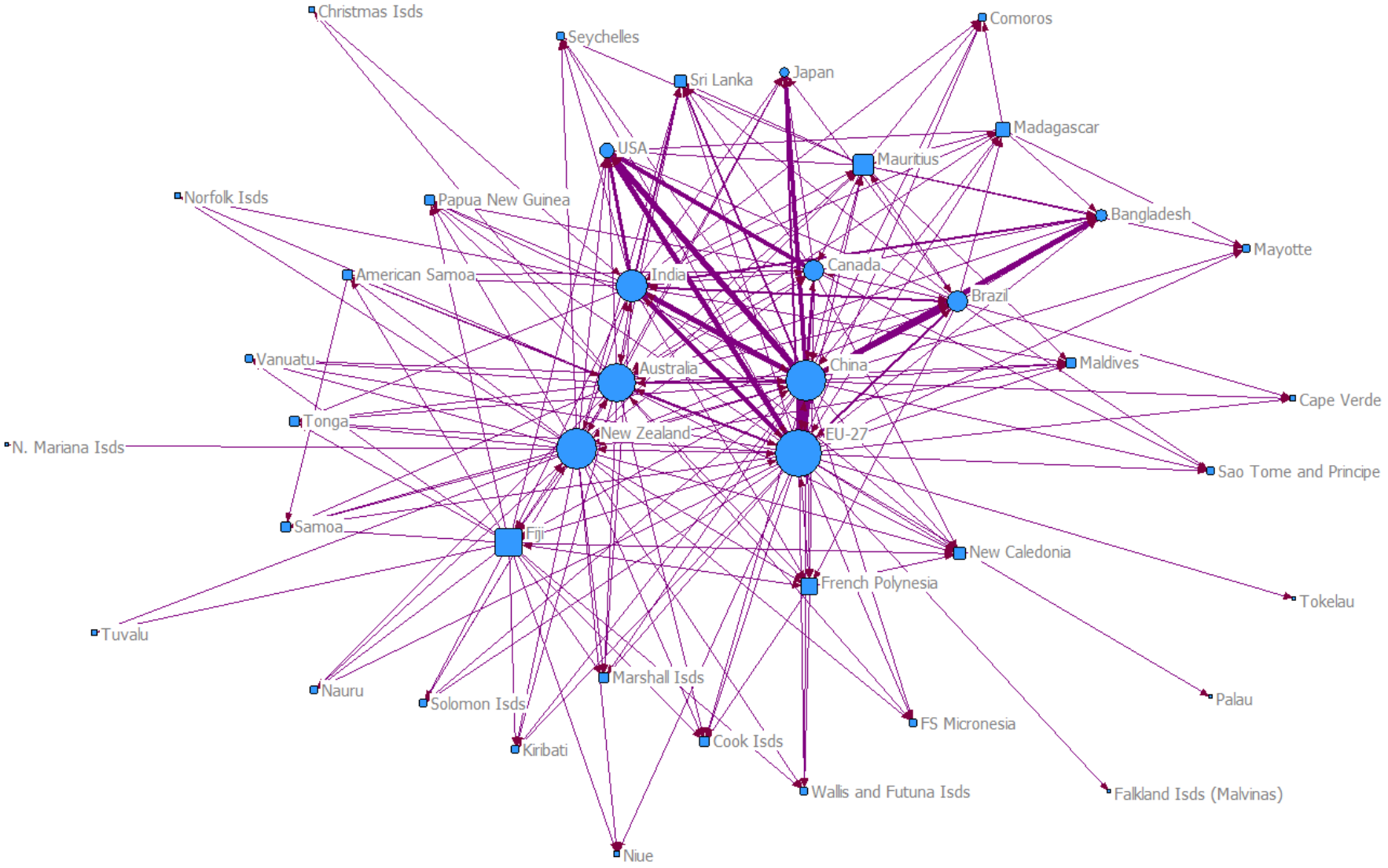


FIGURE 16 TRADE NETWORK (INTERMEDIATES)—SRIES ONLY (2000)

The fibres network is also divided geographically: the African-Indian Ocean islands represented by the down-triangles and the Pacific-Oceania islands represented by up-triangles. The geographical division of trade partners is obvious in the case of trade in intermediates; only Sri Lanka has a link with the Pacific-Oceania region. Trade intensity between Mauritius and Madagascar is again high.

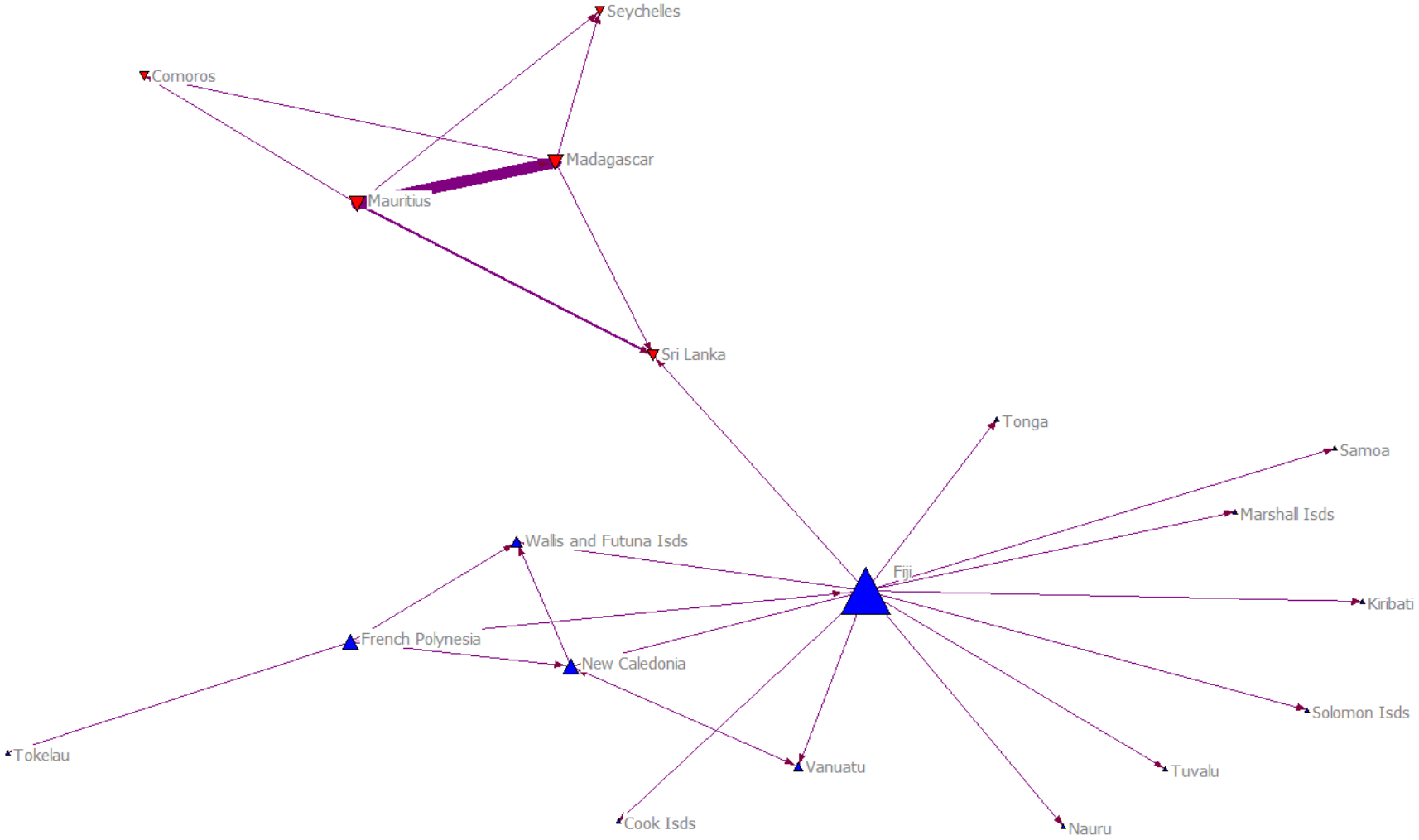


FIGURE 17 TRADE NETWORK (INTERMEDIATES)—SRIES ONLY (2006)

Marshall Islands and Sri Lanka are acting as bridges between the two subgroups. Marshall Island falls into the African-Indian Ocean subgroup.

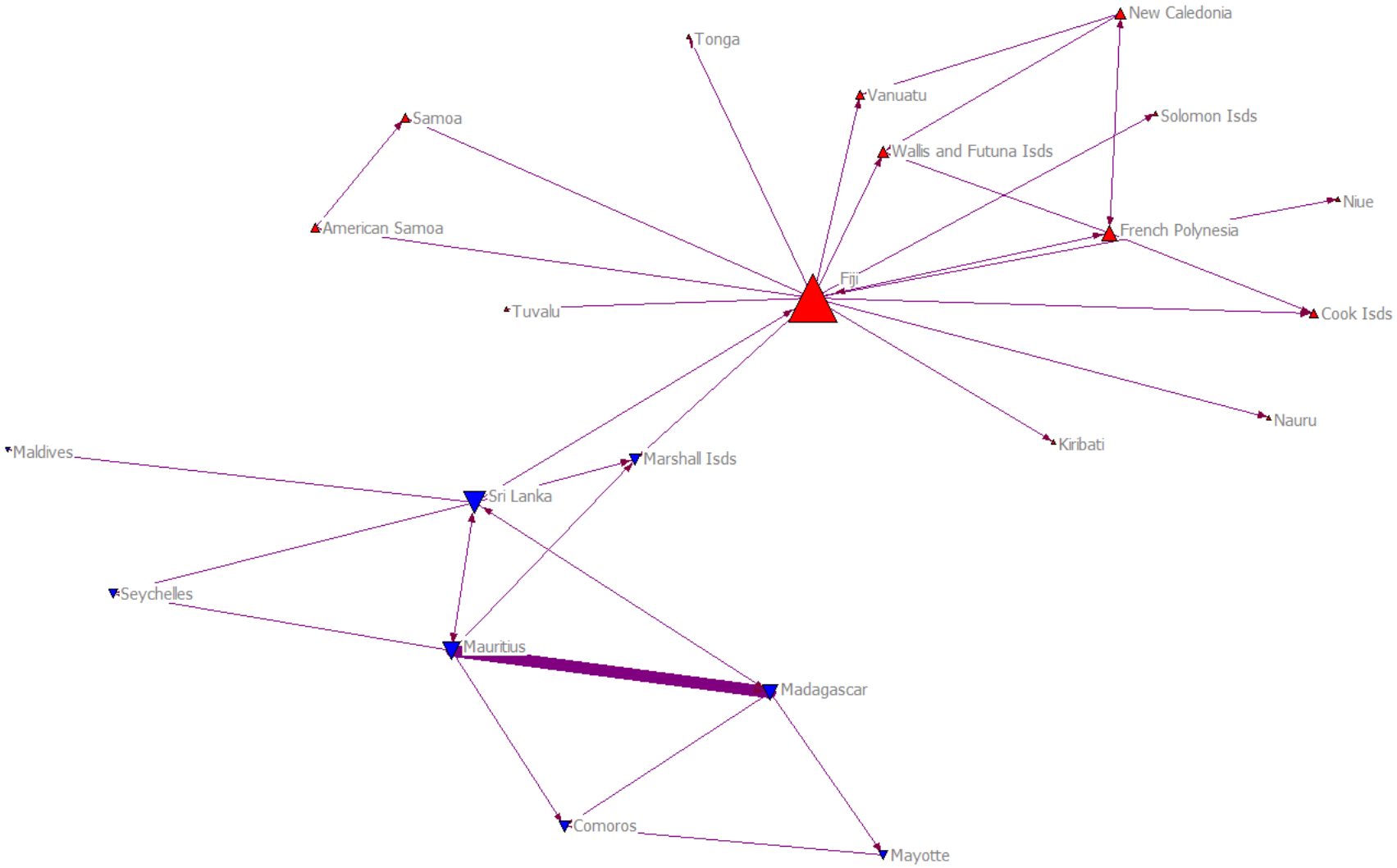
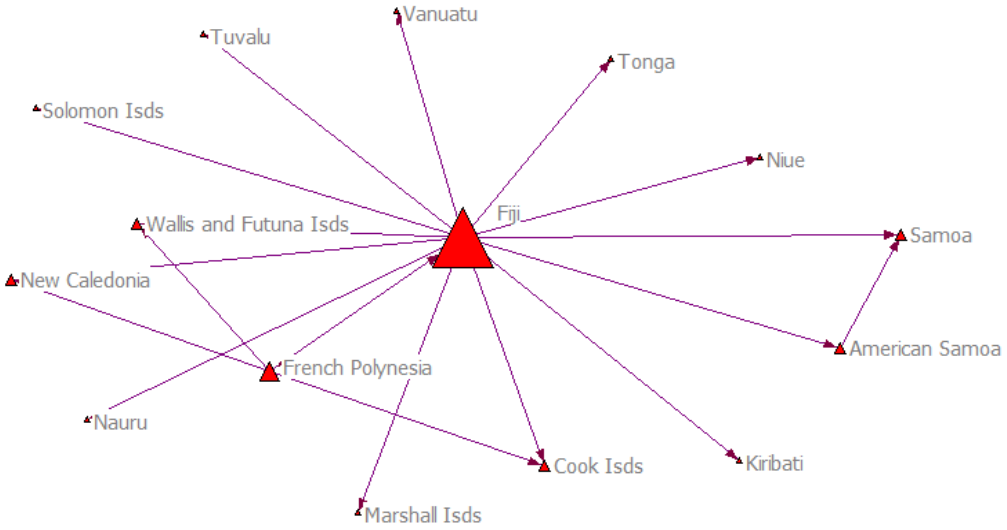
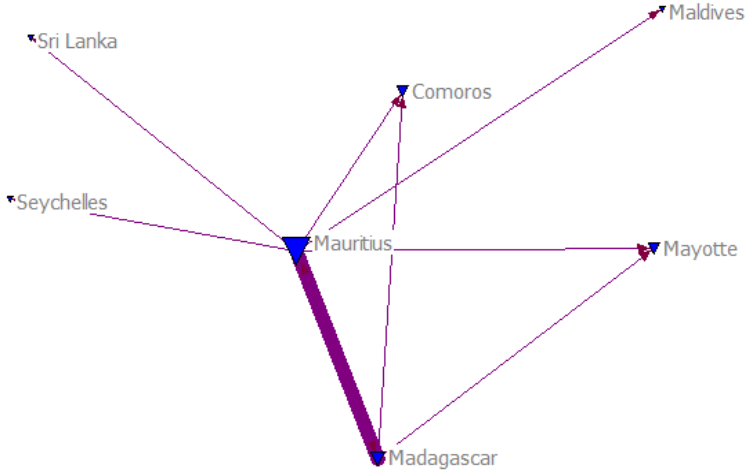


FIGURE 18 TRADE NETWORK (INTERMEDIATES)—SRIES ONLY (2009)

In 2009, the fibres network has two components—divided geographically. The importance of Fiji as a supplier of fibres to the region is well-illustrated in the map.





ANNEX C – IN AND OUT-DEGREES FOR FINAL PRODUCTS

TABLE 12 IN-DEGREE -FINAL PRODUCTS

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Major players										
EU-27	21	21	26	25	19	21	22	22	9	16
USA	18	19	21	21	19	19	16	18	7	14
Australia	17	16	16	17	16	18	17	19	5	15
Canada	14	14	18	16	18	15	16	18	9	15
Japan	15	14	15	14	15	15	16	14	6	13
New Zealand	12	15	14	17	14	16	18	17	6	15
India	14	12	12	14	14	12	14	13	5	11
Brazil	10	11	12	12	10	11	12	13	5	11
China	12	13	0	13	13	14	14	0	0	0
Bangladesh	8	8	10	8	9	10	11	8	5	9
Remote islands										
Fiji	9	11	14	14	12	13	12	12	5	9
French Polynesia	11	11	12	13	13	12	14	14	4	10
Sri Lanka	12	13	12	11	11	13	12	13	3	10
Mauritius	8	11	9	9	11	11	10	11	5	11
New Caledonia	9	9	8	11	11	13	15	12	4	12
Madagascar	8	10	10	10	8	9	11	9	4	8
Papua New Guinea	10	7	9	9	7	9	10	9	4	8
Tonga	9	8	9	8	8	9	10	10	2	7
Samoa	7	8	9	9	8	9	10	9	3	6
Vanuatu	8	7	8	9	8	8	9	8	2	7
Maldives	8	8	7	7	9	11	10	12	5	9
Seychelles	8	9	6	8	8	10	9	9	4	9
Marshall Isds	6	6	8	7	7	7	8	9	4	6
Solomon Isds	7	7	5	8	6	7	6	6	3	6
Cook Isds	4	7	6	6	8	8	8	10	3	7
Kiribati	7	6	5	6	7	6	8	9	2	8
Comoros	6	6	6	6	6	6	6	6	1	6
Wallis &Futuna Isds	6	5	6	6	5	6	6	7		5
FS Micronesia	6	5	5	6	5	6	6	6	2	4
Norfolk Isds	5	5	0	7	6	5	6	0	0	0
Nauru	6	6	0	4	5	4	4	0	0	0
Cape Verde	4	5	4	3	3	5	4	5	2	5
N. Mariana Isds	5	4	4	3	3	4	5	3	2	3
Palau	3	3	4	3	5	3	3	6	1	3
Niue	2	4	0	5	5	4	4	0	0	0
American Samoa	1	2	0	6	5	6	9	0	0	0
Sao Tome &Principe	1	1	4	4	4	4	5	4	2	3
Tuvalu	2	2	3	3	3	3	5	3	2	4
Christmas Isds	2	2	0	2	3	3	4	0	0	0
Falkland Isds	2	2	1	2	2	2	4	3	1	2
Tokelau	1	2	2	2	2	3	4	4	2	2
Mayotte	1	2	1	2	1	2	4	5	1	6

TABLE 13 OUT-DEGREE – FINAL PRODUCTS

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Major players										
EU-27	31	39	33	39	39	37	39	33	34	32
China	31	31	30	31	32	31	33	33	6	32
Australia	29	31	27	27	31	32	33	23	26	24
USA	27	27	22	26	27	25	25	25	0	26
India	25	25	23	29	25	30	28	29	0	26
New Zealand	29	29	21	25	22	27	29	25	0	26
Japan	24	23	21	21	21	21	22	19	0	18
Bangladesh	14	15	12	15	15	16	21	13	0	0
Brazil	12	11	13	14	16	18	21	19	16	15
Canada	11	11	10	14	14	14	16	17	17	14
Remote islands										
Fiji	22	0	20	22	22	24	26	20	0	19
Sri Lanka	0	16	14	19	19	18	20	18	19	0
Mauritius	13	15	12	15	13	14	18	17	0	16
Madagascar	16	14	9	14	13	15	17	14	0	13
French Polynesia	6	5	7	8	9	9	9	9	0	10
New Caledonia	6	4	5	8	6	9	7	7	0	0
Samoa	0	9	10	5	0	3	2	2	0	3
Maldives	6	6	5	3	4	5	0	0	0	0
Cook Isds	3	4	4	6	4	2	0	0	0	0
American Samoa	2	2	5	5	4	5	7	6	3	5
Mayotte	2	3	3	2	3	3	3	2	0	3
Seychelles	5	4	2	1	0	1	1	2	0	0
Christmas Isds	1	1	4	2	2	1	4	3	4	4
Niue	1	2	2	2	3	2	2	3	3	4
Papua New Guinea	2	1	2	2	3	0	0	0	0	0
Cape Verde	2	2	2	2	1	5	1	2	0	2
Nauru	2	1	1	3	1	2	4	6	4	2
Solomon Isds	0	0	1	4	2	2	4	0	0	0
Comoros	2	3	1	1	0	0	0	0	0	0
Tonga	0	3	0	0	0	0	0	0	0	0
Norfolk Isds	0	0	0	1	1	0	1	3	0	1
Vanuatu	1	0	0	0	0	0	4	6	0	0
Sao Tome &Principe	0	0	0	0	0	1	0	0	0	0
Falkland Isds	0	0	0	0	0	0	0	0	0	0
FS Micronesia	0	0	0	0	0	0	0	0	0	0
Kiribati	0	0	0	0	0	0	0	0	0	0
Marshall Isds	0	0	0	0	0	0	0	0	0	0
N. Mariana Isds	0	0	0	0	0	0	0	0	0	0
Palau	0	0	0	0	0	0	0	0	0	0
Tokelau	0	0	0	0	0	0	0	0	0	0
Tuvalu	0	0	0	0	0	0	0	0	0	0
Wallis & Futuna Isds	0	0	0	0	0	0	0	0	0	0

ANNEX D – IN AND OUT-DEGREES FOR FIBRES

TABLE 14 IN-DEGREE -FIBRES

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Major players										
EU-27	21	21	26	25	19	21	22	22	9	16
USA	18	19	21	21	19	19	16	18	7	14
Australia	17	16	16	17	16	18	17	19	5	15
Japan	15	14	15	14	15	15	16	14	6	13
Canada	14	14	18	16	18	15	16	18	9	15
India	14	12	12	14	14	12	14	13	5	11
New Zealand	12	15	14	17	14	16	18	17	6	15
China	12	13	0	13	13	14	14	0	0	0
Brazil	10	11	12	12	10	11	12	13	5	11
Bangladesh	8	8	10	8	9	10	11	8	5	9
Remote islands										
Sri Lanka	12	13	12	11	11	13	12	13	3	10
French Polynesia	11	11	12	13	13	12	14	14	4	10
Papua New Guinea	10	7	9	9	7	9	10	9	4	8
Fiji	9	11	14	14	12	13	12	12	5	9
New Caledonia	9	9	8	11	11	13	15	12	4	12
Tonga	9	8	9	8	8	9	10	10	2	7
Mauritius	8	11	9	9	11	11	10	11	5	11
Madagascar	8	10	10	10	8	9	11	9	4	8
Vanuatu	8	7	8	9	8	8	9	8	2	7
Maldives	8	8	7	7	9	11	10	12	5	9
Seychelles	8	9	6	8	8	10	9	9	4	9
Samoa	7	8	9	9	8	9	10	9	3	6
Solomon Isds	7	7	5	8	6	7	6	6	3	6
Kiribati	7	6	5	6	7	6	8	9	2	8
Marshall Isds	6	6	8	7	7	7	8	9	4	6
Comoros	6	6	6	6	6	6	6	6	1	6
Wallis &Futuna Isds	6	5	6	6	5	6	6	7		5
FS Micronesia	6	5	5	6	5	6	6	6	2	4
Nauru	6	6	0	4	5	4	4	0	0	0
Norfolk Isds	5	5	0	7	6	5	6	0	0	0
N. Mariana Isds	5	4	4	3	3	4	5	3	2	3
Cook Isds	4	7	6	6	8	8	8	10	3	7
Cape Verde	4	5	4	3	3	5	4	5	2	5
Palau	3	3	4	3	5	3	3	6	1	3
Niue	2	4	0	5	5	4	4	0	0	0
Tuvalu	2	2	3	3	3	3	5	3	2	4
Christmas Isds	2	2	0	2	3	3	4	0	0	0
Falkland Isds	2	2	1	2	2	2	4	3	1	2
American Samoa	1	2	0	6	5	6	9	0	0	0
Sao Tome &Principe	1	1	4	4	4	4	5	4	2	3
Tokelau	1	2	2	2	2	3	4	4	2	2
Mayotte	1	2	1	2	1	2	4	5	1	6

TABLE 15 OUT-DEGREE – FIBRES

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Major Players										
EU-27	34	39	36	39	39	36	37	36	36	37
China	29	28	29	29	29	30	30	31	23	31
Australia	28	28	30	30	32	32	27	27	28	28
New Zealand	28	30	25	26	25	28	28	29	0	30
USA	27	28	22	25	25	26	24	26	0	1
India	25	23	26	29	27	30	28	20	0	24
Bangladesh	13	12	12	13	14	16	14	13	0	0
Brazil	12	11	12	16	16	17	14	14	15	15
Canada	12	11	12	14	13	15	15	14	13	15
Japan	0	0	0	0	0	0	0	0	0	0
Remote Islands										
Fiji	20	0	20	19	18	18	20	19	0	20
Mauritius	12	12	14	14	15	14	15	15	0	14
Madagascar	10	9	7	6	10	9	11	9	0	9
French Polynesia	5	4	5	6	6	5	8	6	0	6
New Caledonia	4	6	6	2	5	3	4	6	0	0
Nauru	2	2	0	5	1	2	3	0	1	1
American Samoa	1	1	1	2	1	5	7	4	2	3
Cape Verde	1	0	1	0	0	1	1	1	0	0
Christmas Isds	1	2	2	1	1	0	0	2	1	1
Papua New Guinea	1	1	1	1	1	0	0	0	0	0
Seychelles	1	1	0	0	0	0	0	0	0	0
Vanuatu	1	0	0	0	0	0	0	1	0	0
Comoros	0	0	1	0	0	0	0	0	0	0
Cook Isds	0	0	0	0	0	0	0	0	0	0
Falkland Isds	0	0	0	0	0	0	0	0	0	0
FS Micronesia	0	0	0	0	0	0	0	0	0	0
Kiribati	0	0	0	0	0	0	0	0	0	0
Maldives	0	0	0	0	1	2	0	0	0	0
Marshall Isds	0	0	0	0	0	0	0	0	0	0
Mayotte	0	2	2	2	2	2	1	1	0	0
N. Mariana Isds	0	0	0	0	0	0	0	0	0	0
Niue	0	0	0	1	1	1	0	1	0	0
Norfolk Isds	0	0	0	0	1	2	1	0	1	0
Palau	0	0	0	0	0	0	0	0	0	0
Samoa	0	3	1	0	0	0	0	0	0	0
Sao Tome&Principe	0	0	0	0	0	0	0	0	0	0
Solomon Isds	0	0	0	0	0	1	0	0	0	0
Sri Lanka	0	13	13	14	13	15	16	17	15	0

ANNEX E

TABLE 16 LIST OF EXPORT PARTNERS PRE- AND POST-QUOTA (FINAL PRODUCTS)

Islands:	Export partners pre-quota (2000)	Export partners post-quota (2009)
American Samoa	EU, Tonga	Australia, Canada, EU, Fiji, New Zealand
Cape Verde	EU, US	Brazil, EU
Christmas Isds	US	EU, Canada, New Zealand, US
Comoros	EU, Madagascar	
Cook Isds	Fiji, Japan, New Zealand	
Fiji	Australia, Brazil, Canada, China, Cook Is., EU, F. Polynesia, India, Japan, Kiribati, Marshall Is., Nauru, N. Caledonia, New Zealand, P.N. Guinea, Samoa, Solomon Is., Tonga, Tuvalu, US, Vanuatu, Wallis & Futuna	Australia, Canada, Cook Is., EU, F. Polynesia, India, Japan, Kiribati, Marshall Is., N. Caledonia, New Zealand, P.N. Guinea, Samoa, Solomon Is., Tonga, Tuvalu, US, Vanuatu, Wallis & Futuna
French Polynesia	Australia, EU, N. Caledonia, Tokelau, US, Wallis & Futuna	Australia, EU, N. Caledonia, US, Wallis & Futuna, Cook Is., Japan, New Zealand, Fiji, Mauritius
Madagascar	Australia, Canada, Cape Verde, China, Comoros, EU, F. Polynesia, India, Japan, Maldives, Mauritius, N. Caledonia, Niue, Seychelles, Sri Lanka, US	Australia, Brazil, Canada, Comoros, EU, F. Polynesia, India, Japan, Mauritius, Mayotte, Seychelles, Sri Lanka, US
Maldives	Canada, EU, India, Japan, Sri Lanka, US	
Mauritius	Australia, Brazil, Canada, China, Comoros, EU, India, Japan, Madagascar, New Zealand, Seychelles, Sri Lanka, US	Australia, Bangladesh, Brazil, Canada, Comoros, EU, India, Japan, Maldives, Mayotte, Madagascar, N. Caledonia, New Zealand, Seychelles, Sri Lanka, US
Mayotte	Comoros, EU	Comoros, EU, Madagascar
Nauru	EU, Japan	Australia, Japan
New Caledonia	Australia, EU, F. Polynesia, P.N. Guinea, Vanuatu, Wallis & Futuna	
Niue	US	Canada, New Zealand, US, Kiribati
Norfolk Isds		Canada
Papua New Guinea	Australia, Solomon Is.	
Samoa		Australia, New Zealand, Tonga
Seychelles	Australia, Canada, EU, India, Japan, Maldives, Mauritius, N. Caledonia, Niue, Seychelles, Sri Lanka, US	
Vanuatu	Australia	

TABLE 17 LIST OF IMPORT PARTNERS PRE- AND POST-QUOTA (FINAL PRODUCTS)

Islands:	Import partners pre-quota (2000)	Import partners post-quota (2009)
American Samoa	India	
Cape Verde	Brazil, China, EU, Madagascar	Brazil, China, EU, India, Japan
Christmas Isds	Australia, US	
Comoros	China, EU, FS Micronesia, Madagascar, Mauritius, Mayotte	China, EU, India, Madagascar, Mauritius, Mayotte
Cook Isds	Australia, China, Fiji, New Zealand	Australia, China, Fiji, New Zealand, EU, F. Polynesia, USA
Falkland Isds	EU, New Zealand	EU, New Zealand
Fiji	Australia, Bangladesh, China,Cook Is., EU, India, Japan, New Zealand, US	American Samoa, Australia, Canada, China, EU, F. Polynesia, India, New Zealand, US
Fr. Polynesia	Australia, Brazil, China, EU, Fiji, India, Japan, Madagascar, N. Caledonia, New Zealand, US	Australia, Brazil, China, EU, Fiji, India, Japan, Madagascar, New Zealand, US
FS Micronesia	Australia, China, EU, Japan, New Zealand, Us	Australia, China, EU, Japan, New Zealand, US
Kiribati	Australia, China, EU, Fiji, India, Japan, New Zealand, US	Australia, China, EU, Fiji, India, Japan, New Zealand, Niue, US
Madagascar	Bangladesh, China, Comoros, EU, India, Japan, Mauritius, US	Australia Canada, China, EU, India, Mauritius, Mayotte, US
Maldives	Australia, China, EU, India, Japan, Madagascar, New Zealand, US	Australia, Brazil, China, EU, India, Japan, Mauritius, New Zealand, US
Marshall Isds	China, EU, Fiji, Japan, New Zealand, US	China, EU, Fiji, Japan, New Zealand, US
Mauritius	Australia, China, EU, India, Japan, Madagascar, New Zealand, US	Australia, Brazil, Canada, China, EU, F. Polynesia, India, Japan, Madagascar, New Zealand, US
Mayotte	EU	China, EU, Madagascar, Mauritius, New Zealand, US
N. Mariana Isds	Australia, Brazil, EU, Japan, New Zealand	EU, India, Japan
Nauru	Australia, China,EU, Fiji, New Zealand, US	
New Caledonia	Australia, China, EU, Fiji, F. Polynesia, India, Madagascar, New Zealand, US	Australia, Brazil, China, Canada, EU, Fiji, F. Polynesia, India, Japan, Mauritius, New Zealand, US
Niue	New Zealand, Madagascar	
Norfolk Isds	Australia, Bangladesh, China, India, New Zealand	
Palau	China, US, Japan	China, EU, Japan
P. N. Guinea	Australia, Bangladesh, China, EU, Fiji, India, Japan, N. Caledonia, New Zealand, US	Australia, Canada, China, EU, Fiji, India, New Zealand, US
Samoa	Australia, China, Fiji, India, Japan, New Zealand, US	Australia, China, Fiji, India, New Zealand, US
Sao Tome& Principe	EU	China, EU
Seychelles	Australia, Canada, China, EU, India, Madagascar, Mauritius, US	Australia, Brazil, China, EU, India, Madagascar, Mauritius, New Zealand US
Solomon Isds	Australia, China, Fiji, Japan, New Zealand, P.N. Guinea, US	Australia, China, Fiji, India, New Zealand
Sri Lanka	Australia, Bangladesh, China, Canada, EU, India, Madagascar, Maldives, Mauritius, New Zealand, US	Australia, Brazil, China, Canada, EU, India, Madagascar, Maldives, Mauritius, US
Tokelau	F. Polynesia	EU, US
Tonga	American Samoa, Australia, Canada, China, EU, Fiji, India, New Zealand, US	Australia, China, EU, Fiji, Samoa, New Zealand, US
Tuvalu	Fiji, New Zealand	Australia, China, Fiji, New Zealand
Vanuatu	Australia, China, EU, Fiji, India, Japan, New Caledonia, New Zealand	Australia, China, EU, Fiji, India, New Zealand, US
Wallis&Futuna Is.	Australia, EU, Fiji, F. Polynesia, India, New Caledonia	EU, Fiji, F. Polynesia, India, New Zealand

TABLE 18 LIST OF EXPORT PARTNERS PRE- AND POST-QUOTA (FIBRES)

Islands:	Export partners pre-quota (2000)	Export partners post-quota (2009)
American Samoa	EU	EU, Austalia, Samoa
Cape Verde	EU	
Christmas Isds	Bangladesh	India
Fiji	Australia, China, Cook Is., EU, F. Polynesia, India, Japan, Kiribati, Marshall Is., Nauru, N. Caledonia, New Zealand, Samoa, Solomon Is., Sri Lanka, Tonga, Tuvalu, US, Vanuatu, Wallis & Futuna	American Samoa, Australia, China, Cook Is., EU, F. Polynesia, Kiribati, Marshall Is., Nauru, N. Caledonia, New Zealand, Niue, P.N. Guinea, Samoa, Solomon Is., Sri Lanka, Tonga, Tuvalu, US, Vanuatu, Wallis & Futuna
French Polynesia	EU, Fiji, New Caledonia, Tokelau, Wallis & Futuna Is.	Australia, Cook Is., EU, Fiji, New Caledonia, Wallis & Futuna Is.
Madagascar	Australia, Canada, China, Comoros, EU, Japan, Mauritius, Seychelles, Sri Lanka, US	Australia, Bangladesh, China, Comoros, EU, India, Mauritius, Mayotte, US
Mauritius	Australia, Bangladesh, Brazil, China, Comoros, EU, India, Madagascar, New Zealand, Seychelles, Sri Lanka, US	Australia, Bangladesh, Brazil, Canada, China, Comoros, EU, India, Madagascar, Maldives, Mayotte, Seychelles, Sri Lanka, US
Nauru	Bangladesh, EU	New Zealand
New Caledonia	Australia, EU, Vanuatu, Wallis & Futuna	
Papua New Guinea	Australia	
Seychelles	EU	
Sri Lanka	Australia, Bangladesh, Brazil, China, Canada, EU, India, Japan, Madagascar, Maldives, Mauritius, New Zealand, US	Australia, Bangladesh, Brazil, China, Canada, EU, India, Japan, Madagascar, Maldives, Mauritius, New Zealand, P.N. Guinea, Seychelles, US

TABLE 19 LIST OF IMPORT PARTNERS PRE- AND POST-QUOTA (FIBRES)

Islands:	Export partners pre-quota (2000)	Export partners post-quota (2009)
American Samoa	EU, India	EU, India, Australia, Canada, Fiji, New Zealand
Cape Verde	Brazil, China, EU	Brazil, China, EU
Christmas Isds	Australia, India	Australia, India
Comoros	EU, India, Madagascar, Mauritius, US	China, EU, India, Madagascar, Mauritius
Cook Isds	Australia, China, Fiji, New Zealand	Australia, China, Fiji, New Zealand, EU, F. Polynesia
Falkland Isds	EU, New Zealand	EU
Fiji	Australia, China, EU, F. Polynesia, India, New Zealand, US	Australia, China, EU, F. Polynesia, India, New Zealand
French Polynesia	Australia, China, EU, Fiji, New Zealand, US	Australia, Brazil, China, Canada, EU, Fiji, New Zealand, India
FS Micronesia	Australia, China, EU, New Zealand, US	Australia, China, EU, New Zealand
Kiribati	Australia, China, Fiji, India, New Zealand, US	Australia, China, Fiji, New Zealand, EU
Madagascar	China EU, India, Mauritius, US	Brazil, China EU, India, Mauritius
Maldives	Australia, China, Canada, EU, India, New Zealand, US	Australia, China, EU, India, Mauritius, New Zealand
Marshall Isds	China, Fiji, New Zealand, EU, US	Australia, China, Fiji, New Zealand, EU
Mauritius	Australia, Bangladesh, Brazil, Canada, China, EU, India, Madagascar, New Zealand, US	Australia, Brazil, China, EU, India, Madagascar, New Zealand
Mayotte	EU	China, EU, Madagascar, Mauritius
N. Mariana Isds	Australia, EU	New Zealand
Nauru	Australia, China, EU, Fiji, New Zealand, US	Australia, EU, Fiji
New Caledonia		Australia, China, EU, Fiji, F. Polynesia, F.S. Micronesia, India, New Zealand
Niue	New Zealand	New Zealand, EU, Fiji
Norfolk Isds	Australia, New Zealand	Australia, New Zealand, India
Palau	China, EU, US	EU
Papua New Guinea	Australia, Bangladesh, China, EU, India, New Zealand, US	Australia, Canada, China, EU, India, New Zealand, Fiji
Samoa	Australia, China, Fiji, India, New Zealand	American Samoa, Australia, China, Fiji, New Zealand
Sao Tome& Principe	EU, India, US	EU, Brazil, Canada, China
Seychelles	Brazil, China, EU, India, Madagascar, Mauritius, US	Brazil, China, EU, Canada
Solomon Isds	Australia, Bangladesh, China, EU, Fiji, India, New Zealand, US	Australia, China, EU, Fiji, New Zealand
Sri Lanka	Australia, Bangladesh, Brazil, China, Canada, EU, Fiji, India, Madagascar, Maldives, Mauritius, New Zealand, US	Australia, Brazil, China, Canada, EU, Fiji, Mauritius, New Zealand
Tokelau	US, F.Polynesia	EU
Tonga	Australia, China, EU, Fiji, India, New Zealand, US	Australia, China, EU, Fiji, India, New Zealand
Tuvalu	Fiji, EU	Fiji, New Zealand
Vanuatu	Australia, China, EU, Fiji, New Zealand, New Caledonia	Australia, China, EU, Fiji, New Zealand
Wallis &Futuna Is.	Australia, EU, Fiji, New Zealand, New Caledonia	China, EU, Fiji, New Zealand, F.Polynesia

APPENDIX A

NETWORK ANALYSIS

The formal use of network analysis goes back to 1736 when Leonard Euler studied the Königsberg Bridge problem. As a mathematician, he made use of graph theory to determine whether there exists, what we now call, a Eulerian path that crosses the bridges connecting the four land masses divided by the Pregel River which runs through the city of Königsberg in Germany. Today, networks are used to study a wide range of phenomenon from marriage networks (Padgett & Ansell 1993) to protein networks and, more recently, trade networks.

The literature is particularly well developed in the social network research field. The study of ties between individuals led to the discovery of the small-world phenomena which means that it takes only a few intermediate individuals to connect any two people in the world. Pool and Kochen (1978) studied the patterns of contact among political scientist. Their work which date back to 1958 initiated the whole interest in the "small-world" nature of relations. The Travers and Milgram (1969) experiment showed that there are only about 6 persons that separate any two US citizens. The term "six degrees of separation" is often used to denote this concept. Watts and Strogatz (1998) developed a model that produced the small-world properties: short average path lengths and high clustering (see below for explanation of these terms). Since many dynamic social processes such as disease diffusion and wealth distribution, exhibit small-world properties, the Watts-Strogratz model became a reference. A number of subsequent papers on the subject followed.

The random nature of networks was studied by the likes of Solomonoff and Rapoport (1951) and Erdős and Rényi (1960). The latter showed that by adding links at random to an existing set of nodes, isolated nodes and small group of nodes connect to form a giant component. The link distribution of random networks follows a Poisson distribution, for examples, the power grid networks or the highway networks.

Since agents (nodes) are usually not random in making decisions or connections, real-world networks do not always fit the random network model but are scale-free, a term attributed to Barabási and Albert (1999). Scale-free network implies some level of interactive self-organisation that is happening at the system level. Examples of scale invariant networks are the networks of actors linked by movies (Redner 1998) and the world-wide-web (Barabasi 2009). Scale-free networks are not evenly connected; they have few very connected nodes which are called hubs and the ratio of the very connected nodes to the number of nodes in the

network remains stable as the network size changes. The cumulative distribution function of the number of links k connecting the nodes follow a power-law distribution, $P(k) \sim k^{-\gamma}$, where $2 < \gamma < 3$, which decays exponentially over time. The scale-free property arises because of growth and preferential attachment[33]. The latter refers to the observation that nodes connect preferentially to already highly-connected nodes. In networks of constant sizes, a scale-free structure can emerge through a process of dual-phase evolution where links are added between well-connected nodes and deleted between less connected ones (Paperin et al. 2008).

NETWORK TERMINOLOGIES

The semantics used by most network studies mentioned comes from graph theory. The latter became a practical tool to study the structural and dynamical properties of networks. Networks are made up of two essential components, nodes and links, which make up a graph $(N, \mathcal{L})$. The set $N = \{1, ..., n\}$ is the set of nodes (also known as vertices, points, players, or agents) involved in a network. The set $\mathcal{L} = \{l_1, l_2, ..., l_k\}$ are links that connect nodes i and j. N and $\mathcal{L}$ contain n and k elements respectively. The graph can be represented by an n x n matrix g, where the entry $g_{ij} = 1$ when there is a link l_{ij} and 0 when there is no link. When two nodes are connected they are called adjacent or neighbouring and g is usually called an *adjacency matrix.* The links can be directed (the flow to and from the nodes are specified) or undirected. In a directed graph, the order of the nodes matters; l_{ij} is a link from i to j. Note that in a directed network, $l_{ij} \neq l_{ji}$ for all nodes i and j.

Links can be binary or weighted. In the above, only the binary case was considered. That is, only the existence or not of a link l_{ij} was considered. To capture the intensity of a link, the matrix g is weighted. Weights are very useful from a real-world network perspective; it accounts for the heterogeneity in links and reflects the intensity of connections between nodes.

How a node is indirectly related to another is of core importance in network analysis. Thus, a path connects two nodes i and j through a sequence of links, $l_{12}, l_{23}, ..., l_{k-1,k}, l_{k,k+1}$, where $l_1 = i$ and $l_k = j$ and each of the intermediate nodes is distinct (not traversed more than once). In a walk, a node may be traversed more than once. A geodesic path is the shortest path between two nodes. A cycle is a walk that starts and ends with the same node.

A network is said to be connected if for every two nodes i and j in the network there is a path from i to j. A component is a nonempty sub-network $(N', \mathcal{L}')$ such that $N' \subset N$ and $\mathcal{L}' \subset \mathcal{L}$

[33] Derek J. de Solla Price use the term "cumulative advantage" to explain the same process. See Price (1976).

and $(N', \mathcal{L}')$ is connected and if $i \in N'$ and $i, j \in \mathcal{L}$, then $j \in N'$ and $i, j \in \mathcal{L}'$. It is a maximally connected subgraph.

A complete network is one in which all possible links are present so that k = $\binom{n}{2}$.

The degree of a node is the number of direct links, k, emanating from it and connecting it to other nodes, so that the degree of node *i* is,

$$\mathrm{k_i} = \sum_{j \in N} g_{ij} \tag{1}$$

In a directed graph, there are two types of degrees, an out-degree (a flow from) and an in-degree (a flow to). In the case of weighted networks, the equivalent of node degree is node strength, which measures the intensity of a tie. The density of a network is the average degree over the possible number of links.

The degree frequency distribution, *P(k)*, is useful in analysing the topology of a network. It refers to the probability that a node chosen at random has degree k. In the case of a directed network, both the in-degree and the out-degree distributions have to be considered.

Measures of centrality are useful in assessing the role of particular nodes in the network. There are four main measures (Jackson 2008, pp.37-39). First, degree centrality shows how connected a node is; it is defined as k/(n-1). It does not, however, point to the importance of the location of nodes. A node may have a low degree but be in a critical location. Second, closeness centrality measures how reachable a node is from any other nodes. It can be measured[34] as the inverse of the average geodesic path between nodes *i* and *j*. Third, betweenness centrality measures how central a node is in connecting other nodes. For instance, the following ratio, (sometimes known as node betweenness or load)

$$b(i) = \frac{\mathrm{n_{jk}(i)}}{\mathrm{n_{jk}}} \tag{2}$$

shows how important node *i* is in connecting *j* and *k*, where $\mathrm{n_{jk}(i)}$ is the number of geodesic paths between *j* and *k* that *i* lies on and $\mathrm{n_{jk}}$ is the total number of geodesic paths between *j* and *k*. Therefore, betweenness centrality is taking the average across all pairs of nodes,

[34] One can also consider the proximity of nodes weighted by a decay parameter. See Jackson 2008, p.39.

$$C(i) = \frac{b(i)}{(n-1)(n-2)/2} \tag{3}$$

Fourth, there are a few measures of centrality based on how important a node's neighbours are. The premise that a node is important if its neighbours are important has been investigated by Seeley, Katz and Bonacich. Katz centrality (or prestige) tells us how node *i* gains prestige by having an adjacent node *j* with high prestige. It is defined as

$$\kappa_i(g) = \sum_{j \neq i} g_{ij} \ \frac{\kappa_j(g)}{\mathrm{k}_j} \tag{4}$$

Note that *j's* degree, k_j, simply corrects for the number of links *j* might have to account for the relative time that *i* spends with *j.*

The centrality measures described above emphasise a node's importance as long as it connects other nodes based on the shortest geodesic paths. In practice, however, actors may decide to connect using other pathways rather than just geodesic paths. Flow betweenness centrality measures the proportion of the entire flow between two actors (that is, through all of the pathways connecting them) that occurs on paths of which a given actor is a part. For each actor, then, the measure adds up how involved that actor is in all of the flows between all other pairs of actors. This measure of centrality is preferred in this thesis.

Whether a network is cohesive or not is a question that always arises when analysing social networks. There are a number of measures that can be used. A clique is usually a completely connected subnetwork that contains at least three nodes. A simple measure of cliquishness is the *clustering coefficient* as introduced by Watts and Strogatz (1998). It captures the extent to which *i*'s neighbours *j* and *k* are themselves neighbours such that they form a triangle. Let us consider A, an n x n adjacency matrix of a binary undirected graph with n nodes, whose elements a_{ij} = 1 when there *j* is a neighbour of *i* (the existence of a link) and 0 otherwise. As before, k_i is the degree of node *i,* that is, the number of direct neighbours that *i* has. The clustering coefficient of node *i* is defined as follows (Fagiolo 2007):

$$C_i(A) = \frac{\sum_{j \neq i} \ \sum_{h \neq (i,j)} a_{ij} \, a_{hj} \, a_{jh}}{\frac{1}{2} k_i (k_i - 1)} \tag{5}$$

The actual number of triangles in the graph is given by $a_{ij}\,a_{hj}\,a_{jh}$ and all the possible triangles that i could have formed is defined by $\frac{1}{2}k_i(k_i-1)$. It is often called the local clustering coefficient. The global clustering coefficient measures the overall network coefficient and it calculated by averaging over all nodes,

$$C = \frac{1}{n}\sum_{1}^{n} C_i \tag{6}$$

The weighted undirected network uses an extension of equation (5). The adjacency matrix is weighted and is defined as $W^{1/k} = \{ w_{ij}^{1/k} \}$ where k^{th} root at each entry is taken[35]:

$$C_i^w(W) = \frac{\sum_{j\neq i}\ \sum_{h\neq(i,j)} w_{ij}^{1/3} w_{hj}^{1/3} w_{jh}^{1/3}}{\frac{1}{2}k_i(k_i-1)} \tag{7}$$

In fact, C_i^w reduces to C_i when binary weights are considered and C_i^w is between 0 and 1.

Economic networks often have directional links so that the above clustering coefficients may not capture the true extent of cohesiveness. For example export of country *i* to country *j* is often different from export of country *j* to *i*. The clustering coefficient of node i in a binary directional network can be measured by the following as in Fagiolo (2007):

$$\begin{aligned} C_i^{bdn}(A) &= \frac{\frac{1}{2}\sum_{j\neq i}\ \sum_{h\neq(i,j)}(a_{ij}+a_{ji})(a_{jh}+a_{hj})(a_{ih}+a_{hi})}{[k_i^{tot}\left(k_i^{tot}-1\right)-2k_i^{bil}]} \\ &= \frac{(A+A^T)_{ii}^3}{2[k_i^{tot}\left(k_i^{tot}-1\right)-2k_i^{bil}]} \end{aligned} \tag{8}$$

It is simply the ratio between all directed triangles formed by i over all the possible triangles that could be formed. k_i^{tot} is the total degree of node *i* and k_i^{bil} is the bilateral degree of *i*.

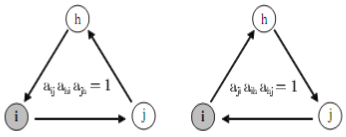
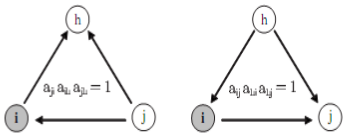
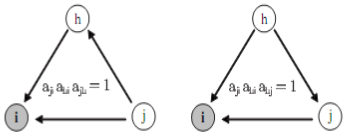
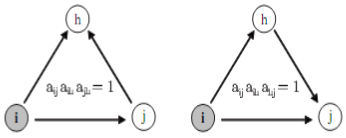
In the case of a weighted directed network, the number of weighted directed triangles is considered:

[35] See Fagiolo 2007 and Onnela et al. (2005) for more details.

$$\frac{(\mathrm{W}^{1/3} + W^{T(\frac{1}{3})})^3_{ii}}{2[k_i^{tot}\left(k_i^{tot} - 1\right) - 2k_i^{bil}]} \tag{9}$$

Direction of edges can be relevant when looking at the clustering coefficient. However, the above measures treat all triangles as if directions were not significant because the adjacent asymmetric matrix is symmetrised. There are four patterns of directed triangles when looking from node *i's* perspective. They are (i) cycle, (ii) middleman, where one of *i's* neighbour, for example, *j*, points to a third neighbour but can also pass through *i* to reach the third neighbour (iii) in, where two links point to *i* and (iv) out, where *i* has two outward links (Fagiolo 2007). A clustering coefficient is defined for each of these patterns. See the Table 16.

TABLE 20 PATTERNS OF DIRECTED TRIANGLES AND THEIR RESPECTIVE CLUSTERING COEFFICIENTS

Patterns	Graphs	t_i^*	T_i^*	CCs for BDNs	CCs for WDNs
Cycle		$(A)^3_{ii}$	$d_i^{in}d_i^{out} - d_i^{\leftrightarrow}$	$C_i^{cyc} = \frac{(A)^3_{ii}}{d_i^{in}d_i^{out} - d_i^{\leftrightarrow}}$	$\tilde{C}_i^{cyc} = \frac{(\hat{W})^3_{ii}}{d_i^{in}d_i^{out} - d_i^{\leftrightarrow}}$
Middleman		$(AA^TA)_{ii}$	$d_i^{in}d_i^{out} - d_i^{\leftrightarrow}$	$C_i^{mid} = \frac{(AA^TA)_{ii}}{d_i^{in}d_i^{out} - d_i^{\leftrightarrow}}$	$\tilde{C}_i^{mid} = \frac{(\hat{W}\hat{W}^T\hat{W})_{ii}}{d_i^{in}d_i^{out} - d_i^{\leftrightarrow}}$
In		$(A^TA^2)_{ii}$	$d_i^{in}(d_i^{in} - 1)$	$C_i^{in} = \frac{(A^TA^2)_{ii}}{d_i^{in}(d_i^{in} - 1)}$	$\tilde{C}_i^{in} = \frac{(\hat{W}^T\hat{W}^2)_{ii}}{d_i^{in}(d_i^{in} - 1)}$
Out		$(A^2A^T)_{ii}$	$d_i^{out}(d_i^{out} - 1)$	$C_i^{out} = \frac{(A^2A^T)_{ii}}{d_i^{out}(d_i^{out} - 1)}$	$\tilde{C}_i^{out} = \frac{(\hat{W}^2\hat{W}^T)_{ii}}{d_i^{out}(d_i^{out} - 1)}$
All (D)	All 8 graphs above	$\frac{(A+A^T)^3_{ii}}{2}$	$d_i^{tot}(d_i^{tot} - 1) - 2d_i^{\leftrightarrow}$	$C_i^D = \frac{(A+A^T)^3_{ii}}{2T_i^D}$	$\tilde{C}_i^D = \frac{(\hat{W}+\hat{W}^T)^3_{ii}}{2T_i^D}$

Source: Fagiolo (2007)

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VALUE-CHAIN, TRADE POLICIES, LOCATION AND TRADE SPECIALISATION

AN INVESTIGATION OF THE TEXTILES AND CLOTHING INDUSTRIES OF SRIES

VALUE-CHAIN, TRADE POLICIES, LOCATION AND TRADE SPECIALISATION: AN INVESTIGATION OF THE TEXTILES AND CLOTHING INDUSTRIES OF SRIES[36]

SUMMARY

Protectionist policies governed trade in textiles and clothing (T&C) for decades. They took the form of quotas and influenced the dynamics of the global value-chain. In particular, production dispersed over a wide geographical space instead of being concentrated in low-cost locations, such as, in the South East Asian economies. Many small and remote island economies (SRIEs), not necessarily close to their markets, established a T&C sector prompted by the benefits provided by these quotas. This paper investigates the effect of trade liberalisation on T&C value chains of SRIEs. Revealed symmetric comparative advantage as a measure of international trade specialisation shows that larger SRIEs performed better than smaller ones in the post-quota period. Unit value analysis is used to test and confirm the hypothesis that only those SRIEs which upgraded or moved up the value chain succeed in the post-quota period while those which could not, had to exit production. There is also evidence of increased specialisation.

Keywords: textiles and clothing, trade policies, value chain analysis, upgrading, small islands

JEL classification: F13; L67; R12

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1. INTRODUCTION

The commodity chain, more often called the value-chain nowadays, is a network of production processes whose end result is a finished product (Appelbaum 2004). The manufacturing of textiles and clothing (T&C) involves various processes or stages and the different stages are usually spread across different regions or countries and location decisions are generally based on cost advantages, factor productivities and policies. Factor costs vary widely across nations, thus, influencing the degree of value-addition that takes place at the end of each stage. Such dynamics of value-addition along the commodity-chain can reveal the importance of the different actors involved.

A useful disaggregation is the distinction between textiles manufacturing and clothing manufacturing. The former includes components or intermediate products and the latter finished or final products. There are substantial differences between the two sectors, particularly, in their production and retailing processes. However, the textiles and clothing industries are closely related: first, they are tied together by technology; second, by trade policies. The clothing industry requires inputs from the textile industry while both are regulated by the agreement on textiles and clothing (ATC) and other regional and bilateral agreements.

The clothing sector is labour-intensive and is generally a low-wage industry. However, in the high-end fashion segment where quality, reliability, innovation and hence, skills matter, remunerations are higher. Fashionable designs and cost effectiveness are crucial elements in maintaining competitiveness. While initially this market segment was supplied by firms located in developed and industrialised countries, today, supplies come from low-cost producers, sometimes geographically close to their market (Nordas 2004). Lower-quality standard products form the other major segment. Production is carried out mainly in the export processing zones (EPZs) of developing countries. Multinational retailers dominate this market segment. The textile industry is more capital-intensive than the clothing industry; nevertheless, the clothing industry of developed countries is heavily automated. The three processes involved in textiles manufacturing are spinning, weaving and finishing, all of which are usually carried out in integrated plants. Usually, the share of imported textile inputs is high except for major input producers such as China and India.

Trade policies, in particular, the multifibre agreement (MFA) quota-allocation system, which governed trade in the sector for more than three decades, influenced the dynamics of the global value-chain, often limiting the movement of production to locations in which it would have been more cost-effective. In fact, the production of textiles and clothing became dispersed

over a wider geographical space rather than being concentrated in low-cost locations, such as, in the South East Asian economies. Many islands, not necessarily close to their markets, established a T&C sector largely prompted by the benefits provided by quotas. The end of the quota system left the textiles and clothing platform more open and subject to price and quality competition.

The performance and evolution of the T&C value chain of small remote island economies (SRIEs) are analysed in this paper. As documented previously, smallness and remoteness pose challenges for island economies, notably, to their trade relations. Smallness hinders their ability to reap scale economies leading to higher unit costs of production than larger economies. Hence, their capacity to innovate, engage in R&D and use advanced technologies is limited. However, many SRIEs engaged in both textiles and clothing production and exports: the quota-allocation system gave them guaranteed access to lucrative markets and, thus, a relative advantage vis-à-vis other industries which had to compete for markets.

This study investigates how quotas and rules of trade impacted the T&C value-chain and led to transformation of strategies and relocation of production. Some small remote islands were expected to lose as a result of quota-elimination; unless they upgraded and developed niche markets for high-valued products they could not survive in the more competitive environment. The value-chain framework and the upgrading argument, as proposed by Gereffi (1999), are investigated in relation to SRIEs. The first hypothesis argues that trade expanded in SRIEs as a result of quota allocations; in particular, it expanded since their quotas were not binding initially. Trade eventually declined when quotas were eliminated. Second, it is argued that the quota system influenced location decisions and encouraged trade dispersion around the world as global investors re-located for cost advantages. The third hypothesis, derived from the value-chain framework, proposes that an environment free of quotas will accelerate upgrading in the T&C industries of the most performing SRIEs. Fourth, also derived from the value-chain literature, it is argued that SRIEs will move from bilateral or inter-regional trade and fragmentation of production to intra-regional trade in order to better cope with the competitive environment.

The following section reviews the literature on value-chains including in the T&C context. The impact of the quota system on the global T&C value-chain is documented. The paper proceeds to expose the evolution of the T&C industry of SRIEs and their international trade specialisation in the sector in the pre- and post-quota periods. The best and worst performing SRIEs are identified and investigated case by case. The case studies allow the reader to weave her way into the structure and composition of the T&C industry of SRIEs. The

hypotheses proposed can thus be examined. Unit value analyses are undertaken to test the hypotheses, particularly, those regarding upgrading or movement up the value-chain: is the good performance of Mauritius a result of the production of high-valued products? Did the Maldives exit production because with competition prices were lower? These are some of the questions addressed.

2. THE TEXTILES AND CLOTHING VALUE CHAIN

2.1 FROM COMMODITY TO VALUE CHAINS

With advances in technology, transportation and communication many economic activities tend to be spread across national boundaries. This process is referred to as internationalisation. Where the activities are functionally integrated, the process is called globalisation (Gereffi & Memedovic 2003). According to Sturgeon (2009), the global integration of production was facilitated by the increase in industrial capabilities in developing countries together with advances in real-time computer processing of activities. However, he argues that the globalisation process was an initial product of multinational firms that sought to tap opportunities in developing countries.

Subsequently, cross-border production became an integral part of international trade networks. Today, regionalisation is taking precedence over globalisation. Nevertheless, the level of competitiveness often depends on the extent of integration in the global commodity chain but more importantly on the extent of value-addition at each stage of production. Thus, researchers often look at global value chains (GVC) to analyse and locate value-addition in the international geographical distribution of trade activities.

Manufacturers constantly face make-or-buy decisions. Choice of competencies, both for lead and supplier firms, is conditional upon complementary competencies in the value-chain. In some cases, lead firms focus on competence areas such as product innovation and marketing where they have competitive advantages while they out-source part or even all of their production. Make-or-buy decisions also depend on the degree of asset specificity and the volatility of markets. When assets are specific to a firm's product, according to transaction cost theory, out-sourcing can result in high transaction costs between the firm and its specific supplier. However, some firms prefer to reduce investment in fixed costs to gain flexibility and be ready to face changing demands. Moreover, Sturgeon and Lee (2005) argued that beyond

transaction costs, potential value-creation through inter-firm linkages is a determining factor. Thus, the last decades witnessed strategic out-sourcing by large corporations who operate in rapidly changing markets. In parallel, networks of suppliers re-organised to serve lead firms.

Sturgeon and Lee (2005) emphasised that while such out-sourcing brought about a de-verticalized industrial landscape, supplier firms did not necessarily became small and highly specialised in one core area. Instead, increased out-sourcing often led to an increase in the scale of suppliers' operations. For instance, to cater for full-package demands from lead firms, suppliers sometimes add competencies to improve their performance. To facilitate de-verticalization, product design had to be modular—that is, the subsystems that make up a product have to be independently designed while capable of functioning together. For example, many auto assemblers in the US had to modularize their production to achieve de-verticalization (Kenney & Florida 2004).

Gereffi (1994) identified three dimensions along a commodity chain (i) the input-output structure where value is added at the end of each activity which includes design, inputs, production, wholesale, and retail (ii) the spatial scale where the geographical structures of raw materials, production, export and marketing networks are indentified (iii) and control over activities which portrays the role of actors along the chain. A distinction is often made between producer- and buyer-driven value chains. Producer-driven value chains tend to be found in capital-intensive and technologically-based industries, for example, in the automobile, semiconductors and heavy machinery industries. The production system is, thus, controlled by large industrial enterprises that coordinate production both in backward and forward links. These transnational companies are usually organised as global oligopolies. The core competencies required are technology and production expertise which have to be developed in-house to limit leak out of their know-how to competitors (Sturgeon 2009).

Buyer-driven value chains are characteristic of labour-intensive and consumer-goods industries such as garments, footwear, sport goods and toys. Retailers, branded marketers and branded manufacturers occupy central positions in this production system. These actors exert control over the value chain and they often set up decentralised production networks in developing countries, usually, in export processing zones (EPZs) where in addition to cheap labour they often enjoy tax concessions. Design and marketing play a crucial role in maintaining control over the network. Adapting to changing demand provides the key to competitive advantage. In the higher-valued products, reduction of labour costs is not the sole determinant of success but customisation and product differentiation are also important.

2.2 T&C VALUE CHAINS

The T&C industry is global in nature. Its internationalisation is not a recent phenomenon: Abernathy et al. (2004) documented that Indian cotton products were moved to Britain and Lancashire goods to Asia as early as the first half of the 19th century. The globalisation of textiles and clothing production was accelerated by a number of factors: first, supply-side factors such as labour shortages and high wages encouraged firms to relocate certain productive activities to locations where factors were cheaper; second, trade restrictions, such as quotas and tariffs, pushed firms towards locations where these restrictions do not apply (Naumann 2005); third, knowledge acquisition, industrial upgrading and the potential for higher competitiveness encouraged firms to enter the global commodity chains (Gereffi 1994). Figure 1 shows the global T&C commodity chain from the raw material to marketing networks.

BOX 1 THE T-SHIRT COMMODITY CHAIN

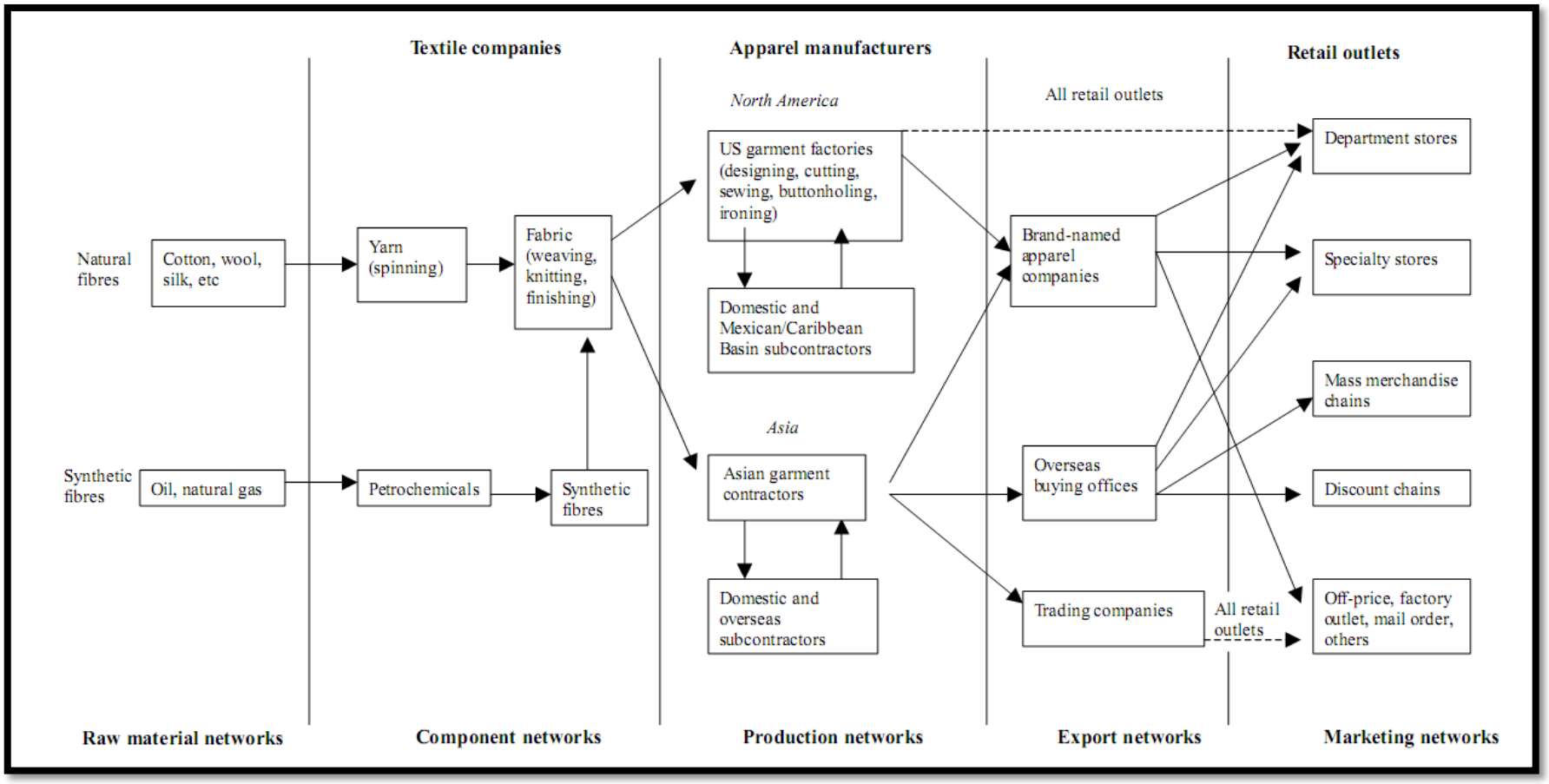
In her book *The Travels of a T-shirt in the Global Economy* Pietra Rivoli has an interesting account of the life of a T-Shirt which starts from the cotton fields until its last days in a recycling factory or a prolonged life in a used clothing market. The T-Shirt travels around the globe and is thus an excellent way of portraying the T&C value-chain.

Rivoli traced the origin of the T-Shirt she bought in Fort Lauderdale, Florida to cotton fields in West Texas. However, the T-Shirt is far from being entirely manufactured in the US. It is made in China. As the author reports, to become a T-Shirt, cotton has to go through a number of processes, namely, cutting, spinning, knitting and stitching. These processes require people. So cotton is shipped to China "to where the people are" (p.62). Those people, working for a low pay in textile factories in Shanghai, are "China's comparative advantage" (p.86). Thus, the manufacturing of the T-Shirt takes place in China.

The Made in China blank T-Shirt is shipped back to Miami to be screen-printed or embroidered at Sherry Manufacturing Company. The company's artists design motifs ranging from scenes of beaches to glaciers to cater for different tourist segments. The T-Shirt finally ends up in some local tourist shop.

Source: *The Travels of a T-shirt in the Global Economy,* Pietra Rivoli (2006)

FIGURE 1. GLOBAL T&C COMMODITY CHAIN



Source: Gereffi et al. 2003, p.9

The T&C value chain is buyer-driven: production is relatively labour-intensive, especially in the clothing segment, where design and marketing provide the competitive edge. Design and marketing are activities that require skilled labour while sewing and assembling require relatively lower-skilled labour. The clothing sector, although characterised by low barriers to entry (the next paragraph provides details on barriers to entry), is driven by the demand from large retailers usually situated in the more industrialised countries. Producers are pressurised to be efficient, therefore, they often relocate to minimise costs. Production of T&C is increasingly segmented into specialised activities insomuch as each activity can be located to best advantage. Location decision is geared by variables such as speed of delivery, factor costs, quality, transportation costs, reliability of inputs, and contracting amongst others.

According to Tirole (1988, p.305), barriers to entry are "anything that allows incumbent firms to earn supra-normal profits without threat of entry" as defined by Bain (1956). In simpler terms, barriers to entry are factors that make it difficult for firms to enter an industry. One such factor is economies of scale where incumbents may adopt limit pricing that might deter entry. A second factor is large capital requirements; where the minimum efficient scale is large relative to the market, it is not viable to have many firms in the industry, and thus, new firms are discouraged to enter. Another factor is related to cost advantages which can be obtained by accumulating capital and experience, having loyal customers and developing franchises. A fourth factor is product differentiation which also procures cost advantages.

Profits in buyer-driven chains are less a result of barriers to entry such as scale economies and technology advances as would be the case with producer-driven chains. Instead, rents are generated by focusing on relational rents, policy rents, product and marketing rents. These terms are borrowed from Kaplinsky (1998) who identified nine different types of rents[37]. Relational rents, here, refer to the advantages gained through inter-firm linkages and linkages between firms and other institutions in the value-chain. Policy rents refer to the benefits that can be gained by existing national or international policies. Trade policy, in particular, the MFA quota allocation system, is a classic example of an opportunity to appropriate rents. Product and marketing rents, in the apparel case, can be obtained through up-to-date design, branding of the product and extensive advertising.

[37] Kaplinsky identified the following types of rent: resource, technology, human resource, policy, organizational, relational, product and marketing, infrastructural and finance rents.

BOX 2 GIORGIO ARMANI GROUP: AN EXAMPLE OF ORIGINAL BRAND NAME MANUFACTURING (OBM)

The Giorgio Armani Group is one of the success stories in the Italian fashion retail scene. It was established in 1972 and has distribution channels in over 120 countries. In 2002, its profit was over €120m. While most international retailers are de-verticalizing and delegating production tasks to third parties around the world, the Giorgio Armani group adopted the opposite strategy: it maintained a vertically integrated business controlling all processes along the value-chain. As reported by Armani himself, this strategy is motivated by a desire to maintain the integrity of the Armani brand and to secure financial benefits from producing exclusive products while protecting exquisite design. Thus, the group controlled design, manufacturing, retail and distribution, especially for its apparel line. Where the group does not possess the required expertise, it grants licences to third parties.

In 2002, the group integrated backwards by acquiring a high quality knitwear manufacturer, Deanna Spa to add to its other manufacturing capabilities. Downstream, the group ensures wholesaling through its subsidiary Giorgio Armani Distribuzione Srl. The group also directly manage its stores in key markets and key brands; out of 311 stores it directly controlled 115. Direct control of stores makes foreign coverage

Six lifestyles brands make up the Armani brand portfolio. The array of brands covers large customer segments while maintaining exclusivity between different groups of customers. The launch of Armani Casa home furnishing brand was a response to market opportunities.

- The Giorgio Armani brand is the main line of products which is equivalent to the couture collection.
- Armani Collezioni comprises of fine-tailoring, sportswear, outerwear, and accessories for professionals.
- Emporio Armani is designed for younger customers.
- Armani Jeans is another youth line with a focus on technology and ecology.
- Armani Exchange focuses on denim and urban wear.

The Armani group is an example of an OBM export strategy. It produces under its own brand names and distributes its products world-wide.

Source: The Anatomy of an International Fashion Retailer – The Giorgio Armani Group, (Moore & Wigley 2004)

BOX 3 COMMODITY CHAIN OF GIORGIO ARMANI GROUP

Manufacturers	Distribution	Retail
Antinea Srl (clothing manufacturer		
Guardi Soa (footwear manufactuer)		
Intai Spa (tie, underwear, beachwear, etc)		Directly owned stores
Simint Spa (clothing manufacturer)	Giorgio Armani Distribuzione Srl	
Deanna Spa (knitwear manufacturer)		Indirectly managed stores
Confezioni Matelica Spa (clothing manufacturer)		
Borgo 21 Spa (couture line manufacturer)		

Owndiagram; Source: The Anatomy of an International Fashion Retailer – The Giorgio Armani Group, (Moore & Wigley 2004)

Buyer-driven chains involve broadly two types of export strategy: original equipment manufacturing (OEM), also known as full-package supply production, and original brand name manufacturing (OBM). Boxes 2 and 3 provide an example of OBM. OEM is a production system where the product is sold under the buyer's brand name, thus supplier and buyer are separate entities. Production design is often dictated by the buyer. Full-package supply provides higher value-addition than simply assembling imported inputs as most of the manufacturing processes are locally integrated, thus, organisational learning is favoured. To achieve full-package supply capacity, it is necessary to establish linkages with lead firms—these firms are the main sources of, and control access to "material inputs, technology transfer, and knowledge in these organizational networks" (Gereffi 1999, p.38). Lead firms can be located downstream or upstream like any other firms but the resources they control are critical, yielding the highest returns (Gereffi & Memedovic 2003).

OBM refers to a production system where, besides production, the firm undertakes its own design and subsequently, sale and marketing of its product. It is an upgrading from OEM. Instead of selling to branded international buyers, the firm produces under its brand-name and sells its products locally and internationally. For instance, many Japanese firms upgraded to OBM which gave them better control downstream. Japanese T&C production networks tend to be regional rather than global as is usually the case with OEM that deals mainly in the assembly of apparel from imported inputs. Examples of such regionalisation of OBM are the Caribbean

and Mexican firms which supply the US branded manufacturers, and Northern African and Eastern European firms which supply the European Union.

2.3 T&C TECHNOLOGY

The clothing industry is characterised by a number of specialised and sequential activities. According to Nordas (2004), the technology used in the sector, especially in the developing countries, has changed little over the years though innovations have made each operation more efficient. Without investment in automated technology, most machines have to be manually fed and operated. However, as the latter author reports, modern technology can be adopted at relatively low investment costs. Pre-assembly operations involve cutting the fabric, grouping similar parts and tying the parts into bundles. The parts are then sewn together. Specialised sewing machines are used for individual parts. Each worker is specialised in a single task – the worker receives a bundle of unfinished garments to work with and the completed items are placed in a buffer when the task is done (Naumann 2005).

Automation is common in developed countries. The level of automation in the industry is proportional to the cost of labour. Thus, where cheap labour is available, such as, in developing countries, manufacturers tend to invest less in automated technologies. In addition, the industrialisation strategy for developing nations has been to maximise their human resource advantage as low cost manufacturers (Dicken 2003). Therefore, to some extent, labour costs variations in this sector is still an important factor in shaping the global production network.

In contrast, the textile industry is highly automated. Spinning, weaving, and finishing are the main activities usually carried out in integrated plants so as to benefit from scale economies. Due to its capital intensity, the industry is less flexible than its clothing counterpart; the technology used cannot be easily adapted to changing consumer tastes. In addition, the industry is relatively less mobile across locations due to its high fixed costs. It is often seen as the main hurdle in the supply chain (Nordas 2004).

2.4 THE MULTIFIBRE ARRANGEMENT (MFA)

In 1974, the MFA was introduced to regulate trade in T&C. Its main aim was to protect the local industries of the major importing countries by restricting cheap imports from developing countries. Import restrictions took the form of quotas whose amounts had to be bilaterally

negotiated. T&C was one major manufacturing industry that was not subject to the rules of the General Agreement on Trade and Tariffs (GATT) which specifically forbid quantitative restrictions. At the end of the Uruguay Round, the Agreement on Textiles and Clothing (ATC) succeeded the MFA. The ATC required quotas to be phased-out before the 1st January 2005.

Apart from protecting the local industries of quota-allocators, the quota-system had two, almost opposite, effects. On the one hand, quotas were limiting; this is particularly true for the large producers for whom quotas were binding, thus, they could not export to their full-capacity. On the other hand, quotas were beneficial for smaller producers; they were granted access to large markets without having to compete with the larger producers. It follows that the removal of quotas was expected to be advantageous for the large producers, such as, China, Pakistan and south Asian countries—the "winners". Other relatively smaller producers were expected to be "slight losers" depending upon the extent of their integration with the winners or their ability to cater for niche markets. Small and less developing countries were expected to lose out completely (Ernst et al. 2005). The focus of this thesis is on SRIEs which are small developing and less developed countries with a very small T&C industries.

Although there are numerous studies that investigated the effects of the removal of the quota system, there has been little research devoted to the very small exporters. In addition, there are no systematic studies that have addressed the global trade in T&C of small and remote islands or investigated their integration in the post-quota period. The value-chain framework is useful in investigating the effects of trade liberalisation on small players. In the following section, four hypotheses that relates to SRIEs are proposed.

2.5 HYPOTHESES

I. One should expect the quota-allocation system to lead to an expansion of T&C trade in SRIEs.

   According to economic theory, trade policies determine trade. Protectionist policy measures tend to curb trade. In particular, where protection takes the form of quotas and where these are binding, prices will increase. Thus, "in the absence of a binding quota, prices of the products imported under the quota would be lower" (Harrigan & Barrows 2009, p.4). For the subset of countries in this study, SRIEs, whose quotas were not initially binding, prices were thus low. The hypothesis under investigation argues that the quota-allocation system induced trade between SRIEs and quota-allocators. It follows that the abolition of quotas should have led to a reduction in trade for SRIEs.

II. One also expects quotas to generate a dispersion of trade and to accelerate cross-border production to SRIEs.

The global-value chain framework argues that buyer-driven chains will decentralise to exporting developing or less developed countries to take advantage of relatively lower wages (Gereffi 1999). In particular, the more labour-intensive activities, such as assembly of parts, will be decentralised to SRIEs.

III. One would expect the elimination of quotas to encourage SRIEs, those which have a more developed T&C sector, to upgrade from simple to more complicated and differentiated, thus, higher-valued products.

One of the main arguments behind the protectionist measures adopted by the developed world was to limit the surge of *cheap* imports from developing countries into their economies. Thus, according to the global value chain framework proposed by Gereffi (1999), trade restrictions should encourage industrial upgrading[38] in the T&C export countries. Industrial upgrading refers to "a process of improving the ability of a firm or an economy to move to more profitable and/ or technologically sophisticated capital and skill-intensive economic niches" (Gereffi 1999, pp.51-52). These firms have to embark on the value-chain to facilitate learning and, thereby, produce high-value products which can yield higher returns. However, quotas were not binding for SRIEs, thus they were initially not constrained to upgrade. The hypothesis under consideration is that with the phasing-out of quotas, firms in more established T&C industries should be expected to upgrade to face the competitive environment.

IV. A quota-free environment is expected to encourage regional integration of production and consumption.

According to the global commodity chain framework, the shift from inter-regional trade to intra-regional trade constitutes industrial upgrading in the T&C chain. Thus, the end of the quota system, which reduced the market access of SRIEs, is expected to encourage them to shift from bilateral, asymmetrical trade flows to a regionally-integrated form of division of labour whereby most or all of the phases of the value chain are included.

[38] According to Gereffi (1999), upgrading occurs at different level of analysis: moving from simple low-value items to complex and higher-valued ones, producing differentiated rather than standardized products and more importantly, moving from mere assembly of imported inputs to a more integrated form of production such as OEM and OBM are considered as upgrading. Lastly, moving from bilateral, inter-regional trade flows to intra-regional form of fragmentation of production and consumption is an ultimate form of upgrading.

3. DATA AND METHODOLOGY

The choice of SRIEs that are included in this study is limited by the availability of reliable and consistent data. Hence, the analyses in the following sections (up to section 6) include Cape Verde, Fiji, French Polynesia, Madagascar, Maldives, Mauritius, Samoa and Sri Lanka. Due to reasons just mentioned, section 7 does not include Cape Verde and Samoa but include the Northern Mariana Islands. As far as possible, the islands have been selected in such a way that there is no regional bias, hence islands from both the African-Indian Ocean and Pacific-Oceania regions are considered; all SRIEs are geographically located in these two regions.

The cases of Madagascar and Sri Lanka are included although they have questionable SRIE status. I argued previously in this thesis that the definition of SRIEs cannot be a rigid one but it has to be coherent with the purpose of the study. Madagascar and Sri Lanka are remote economies. Madagascar is 8828 km away and Sri Lanka is 6861 km away from their nearest trading centres. However, they are definitely not small by size, either by population or by area; according to this logic, they cannot be considered as SRIEs. Yet, they are small by GDP and their GDP is smaller than the average GDP of SRIEs of $ 7872. The GDP of Madagascar and Sri Lanka were about $1000 and $4700 in 2009 according to World Development Indicators database. More, importantly the size of their apparel and clothing trade is very small when compared with other similar sized countries. Both countries were beneficiary of the MFA quotas and have an important T&C industry as do other SRIEs. In this particular situation, the two countries are comparable to SRIEs and for this reason they are treated as such in this essay.

Data are sourced from two datasets. In sections 5 and 6, the analysis is based on the United Nations Commodity Trade Statistics Database (Uncomtrade). Commodity values are reported in US dollars. The Harmonised System (HS) classification is used. The Eurostat (Comext) database is used to perform the analysis in section 7 (further details can be found in section 7). Data from 2000 to 2009 are used throughout the essay. Wherever indicated, they are aggregated into three time periods: 2000-2002, 2003-2005 and 2006-2009 referred to as period 1, 2 and 3 respectively. In 2005, the quota-system was abolished: period 3 is called the post-quota period while period 1 the pre-quota period.

A disaggregation of T&C into intermediates and finished products portrays the positioning of SRIEs in the value chain and where their comparative advantages lies. Wherever intermediates or textile products are mentioned they include product categories with Harmonised Commodity Description and Coding System (HS codes) ranging from 50 to 59. They include yarns, threads, woven fabrics and related products. Wherever final products/apparel and clothing products are stated they include HS codes ranging from 60 to 62; various articles of

apparel and clothing and accessories. A list of these products and codes can be found in Annex II.

The next section is descriptive and documents the motives of T&C producers and exporters to relocate production and to change their sourcing decisions. It provides a background on how production dispersed to remote places such as SRIEs, some of which were initially not producers or exporters of T&C. Section 5 describes the importance of T&C for SRIEs and illustrates the trend over the pre-quota and post-quota periods. The aim is to assess whether the elimination of quotas affected the international trade specialisation patterns of SRIEs. A symmetric measure of revealed comparative advantage (RCA) as suggested by Laursen (1998) is used to assess the degree of specialisation in the sector. Although there are many measures of international trade specialisation, such as the Michaely Index and the chi-square measure among others, these measures correlate rather strongly. Laursen's measure is a symmetric version of the RCA as proposed by Balassa (1965). First, the symmetric measure is calculated for T&C and for both final and intermediate products in order to understand if SRIEs are more inclined towards the production of one or the other. Second, the evolution of both intermediates and final products are analysed in the pre-and post-quota period to investigate the effects of the quota-elimination of the different SRIEs. Third, the share of imports and exports in T&C trade are graphically illustrated using stacked columns for 13 product categories at the 2-digits level. This allows the identification of product categories in which SRIEs were specialised and in which they were not (products they were mostly importing). This is done for both the pre-quota and the post-quota periods.

Section 6 investigates the cases of the some of the best and worst performing SRIEs—Madagascar, Mauritius, Fiji, Sri Lanka and the Maldives. This section aims to illustrate not only the composition of exports and imports for each country but also the export and import partners for each SRIE. First, for each country, imports and exports are retrieved separately for final products and intermediates. Second the share of imports (exports) for each sourcing partner (export partner) is calculated. Third, the main products traded are identified. This analysis aims to find out from which countries SRIEs were importing their raw materials and to which countries they were exporting. The analysis is undertaken for the year 2000 and the year 2008. This allows the researcher to identify the evolution in the export and import partners as well as composition of product categories following quota removal.

Since the number of data points makes regression problematic, section 7 uses correlation analysis. Given that the causation relation between quantity and values is bidirectional, correlation analysis was judged best as it does not suppose a cause and effect

relation. In addition, the paucity of data for some countries limits the possibility of more powerful methodologies[39]. Data at the 6 digits level are used for product categories with HS codes beginning with 61 and 62. It is assumed that unit values reflect quality as in often assumed in the literature (Levchenko et al. 2011). First, changes in quantities and changes in unit values are correlated as in periods 1-2, 2-3 and 1-3. This is also done for the two product categories separately. Second, because there may be a lag between changes in unit values and production decisions, the correlation between changes in quantities in period *t* and changes in unit values in period *t-1* are calculated.

Initial period unit-values are used to distinguish between up-market (high-valued) and down-market (low-valued) products. The average percentage changes in quantities and unit-values of the high and low valued products are calculated for period 1 to 3 and 2 to 3. The rest of the world (ROW) is included in addition to selected SRIEs as a benchmark. The correlation between unit-values and quantities for the two types of products are compared. Three procedures are used to identify products as high or low-valued. Starting from the simplest to the more complex, in the first procedure, the 5 highest and 5 lowest valued products for each country are classified as high and low valued respectively. The second procedure is based on ROW exports to the EU. The 20 highest and lowest valued items exported by the ROW to Europe are classified as high and low valued respectively. Hence, if an SRIE exports any of these 40 items, it is classified accordingly regardless of the value that it actually fetches for the SRIE. Thus, an item can be low-valued based on the first procedure but high-valued based on the second procedure.

The third procedure uses the method proposed by Fontagné and Freudenberg (1997) where all types of trade flows can be classified as high, medium or low valued. The unit value of each product is compared to the same average unit-value, in this essay, the unit-value of ROW. Product *i* of country *c* is classified as high-valued if

$$UV_{i,c} > 1.15 * UV_{i,row} \quad (1)$$

Product *i* of country *c* is classified as low valued if

$$UV_{i,c} < 0.85 * UV_{i,row} \quad (2)$$

[39] The present author tried previously to model output price (unit value of finals) based on input prices (European data). The results were very erratic since input prices more than often exceeded output prices. The author was advised by her supervisor to abandon this line of work.

All items in-between are classified as medium valued. The pros and cons of each procedure are set at section 7.

In addition, the number of product varieties is calculated to understand whether there was a change in specialisation (fewer or more product categories) in the post-quota period. Based on the third procedure, the evolution of the number of product varieties by type, that is, high, low or medium value products are also calculated and represented graphically for each SRIE. This allows the identification of the direction of specialisation, that is, whether a country was specialised in up-market or in down-market products.

4. QUOTA ALLOCATION AND TRADE DISPERSION/ CONCENTRATION

It is generally agreed that relocation of production and changing sourcing decisions were encouraged by the establishment of the quota-allocation system—the multifibre arrangement (MFA) (Naumann 2005; Kowalski & Molnar 2009). Production remained concentrated in quota-imposing countries, such as USA and EU, and some quota-unconstrained countries. Quotas provided an absolute[40] protection measure for the imposing countries so that downward price pressure in foreign countries did not impact their local production. Quotas impose a quantitative limit on imports from quota-constrained countries. Thus, the T&C sector in the quota-imposing developed countries expanded free from external competition allowing design, fashion and techniques to improve at the margin. On the contrary, the T&C sector in quota-constrained countries, such as the South East Asian countries, slowed down. This is especially true for those countries where quotas were binding.

Relocation of production took place in a strategic manner. While quotas were restrictive for the major exporters, they were advantageous for the small exporters who came to supply the US and EU markets. China and Taiwan, which belong to the former group, relocated production to quota-unconstrained countries but also invested in quota-constrained developing countries where the quotas were not-binding and incentives were attractive. Production, thus, became dispersed throughout the world even in the least known places such as the Mariana Islands[41], a US territory. Such relocations brought benefits for hosting countries but the

[40] In contrast, tariffs provide a relative measure of protection by increasing the price of imports and making local production more competitive; however, the protection provided by tariffs is eroded when costs are very low in the foreign countries.
[41] The Marianas Islands are located in the north-western Pacific Ocean, east of the Philippine Sea and south of Japan.

sustainability of these benefits was doubtful as cheap labour and quotas conferred only lower order competitive advantage. In other words, such advantages are only temporary as they can easily disappear with quota removal or with allocation of quotas to competitors. T&C is a mobile sector (especially clothing) as it is low-skilled labour-intensive and requires relatively low capital investment. Thus, production can easily be moved from one location to another chasing low factor costs.

Labour shortages, high wages and land prices together with external pressures such as currency revaluation, tariffs and quotas urged the East Asian companies to internationalise their T&C industry. Hence, they searched for countries where quotas were not binding and/or costs were relatively low to establish their plants. While labour-intensive activities were relocated, most skill-intensive activities remained in East Asia. Skill-intensive activities imply higher margins; they include product design, sample making, quality control and even quota transactions (Gereffi 1999).

In the 1950s, Hong Kong was the dominant Asian centre for T&C activities. Import restrictions on the part of the UK in the 1960s caused Hong Kong firms to delocalise its activities to various locations: they set up plants in Singapore to benefit from preferences given to Commonwealth states, in Taiwan and the Macao Special Administrative Region of China for cultural affinities and, in the case of Macao, for proximity also. In the 1970s, a second round of delocalisation was prompted by quota restrictions to countries such as Malaysia, the Philippines and Mauritius. While quota-allocations triggered East Asian countries to delocalise, their choice of re-localisation destination was motivated by policies and incentives in the quota-constrained country. For example, Hong Kong investors moved some of their activities to Mauritius as they were attracted by incentives provided by the creation of EPZs.

While some firms moved to quota-constrained countries for market accessibility, others such as Korean firms, where quotas were binding, moved to quota-free locations. They moved to the Mariana Islands as mentioned previously. They also decentralised to Latin America to benefit from easy quota access and proximity to the US market and to South Asia for cheap labour. In sum, the destination to which a firm chose to relocate depended on various factors, namely, where it was on the value chain, accessibility to its main markets, comparative, competitive and cultural advantages. Thus, quotas led to an expansion of trade but the extent of trade creation was motivated by cost advantages.

5. QUOTAS AND SRIES

5.1 DEGREE OF SPECIALISATION IN T&C (REVEALED SYMMETRIC COMPARATIVE ADVANTAGE)

SRIEs were major beneficiaries of the quota allocation system. They are small producers and cannot benefit from scale economies as would the large developing economies. They faced fierce competition with the latter countries in their search for export markets. Quotas allocated to them by the developed countries guaranteed them access to these markets but also mitigated competition from the lower-cost large developing countries. The MFA quotas were behind the establishment of a T&C industry in many remote islands and facilitated the industrialisation process of many of these small economies. This is an example of trade-led industrialisation which is common in labour-intensive products. However, on a global stance, MFA quotas led to trade diversion not trade creation since production shifted to locations where there were no quotas or where quotas were not binding (OECD 1995).

While SRIEs are not leading world exporters of T&C, many of them came to rely on the sector for export earnings. Textiles and, especially, clothing manufacturing require low capital investment and are labour intensive, making it relatively easy to set up manufacturing plants in these small economies. In many instances, it was the only way to diversify from an agricultural-based economy. T&C production led to the industrialisation and advancement of these economies, creating employment and contributing to the emancipation of women (Joomun 2006). Revealed comparative advantage measures have often been used in the trade literature as measures of trade specialisation (De Benedictis & Tamberi 2004) and trade performance. Balassa (1965) proposed that comparative advantage can be revealed without having to include all the factors that determine comparative advantage and he suggested a corresponding index. Comparative advantage is inferred from observed data and is called revealed comparative advantage (RCA). RCA measures a country's export of a commodity relative to a set of exports and relative to a set of countries. The index is as follows:

$$RCA = \frac{X_{ij}}{X_{it}} \Big/ \frac{X_{nj}}{X_{nt}} \tag{3}$$

X represents exports, i is a country, j is a commodity, t is a set of commodities (industry), and n is a set of countries. The numerator represents the percentage share of a given sector in national exports while the denominator acts as a benchmark, say n represents OECD countries. Country i

is said to have a comparative advantage in commodity j when RCA > 1 otherwise it has a comparative disadvantage.

One of the obvious limitations of the RCA methodology is that it does not consider the effects of interventions in the trade patterns such as export subsidies, and other protectionist measures. However, this limitation can be mitigated by considering the dynamics of the RCA before and after any interventions. The comparative advantage method has also been criticised for not accurately measuring comparative advantage across sectors but according to Laursen (1998), this problem has been overestimated as the rank correlation across sectors and across countries are highly significant. A more serious problem regards the risk of lack of normality of the RCA measure: the measure is not symmetric, hence, when countries do not specialise in a sector, the range of values for the RCA is smaller (ranging from 0 to 1) than when countries specialise in a sector (the measure ranges from 1 upwards). Laursen (1998) proposed a symmetric measure of RCA which produces values that are comparable on both sides of unity as they ranges from -1 to +1. The revealed symmetric comparative advantage referred to as the specialisation index (SI) is obtained by

$$\mathrm{SI} = (\mathrm{RCA} - 1)/(\mathrm{RCA} + 1) \qquad (4)$$

There are many other measures of international trade specialisation. A traditional measure is one developed by Michaely (1962). The Michaely index takes the percentage share of a given sector in national exports and subtracts the percentage share of a given sector in national imports. In sum, it is a measure of relative net exports in a given sector. The advantage of this measure is that it accounts for intra-industry trade but the disadvantage is its inability to account for intra-industry trade which is due to the demand of other sectors in the economy. The simplest measure of trade specialisation is derived from standard theory of international trade; the share of a sector in a country's GDP (Estevadeordal & Volpe 2008). While the various measures of international trade specialisation correlate rather strongly, the measure adopted here is the symmetric version of the RCA. Its focus on exports suits the purpose of this essay as this essay investigates the impacts of the removal MFA export quotas.

Both the symmetric measure (SI) and the non-symmetric measure (RCA) of selected SRIEs are reported in table 1 for periods 1, 2 and 3. RCA has been calculated as equation 3 and SI as equation 4. In the RCA, the numerator represents the percentage share of T&C exports in total national merchandise exports and the denominator represents the share of T&C exports in European merchandise exports. Hence, each SRIE export structure is being compared with the European export structure in T&C.

TABLE 1 SPECIALISATION INDEX AND RCA IN T&C

	Specialisation index			RCA		
SRIEs/Period	1	2	3	1	2	3
Cape Verde	0.70	0.72	0.43	5.60	6.07	2.48
Fiji	0.77	0.74	0.50	7.78	6.63	3.01
French Polynesia	-0.90	-0.77	-0.69	0.05	0.13	0.19
Madagascar	0.81	0.84	0.89	9.38	11.35	16.84
Maldives	0.84	0.67	-1.00	11.90	4.98	0.00
Mauritius	0.89	0.88	0.88	17.84	15.17	15.03
Sri Lanka	0.87	0.88	0.89	14.76	15.76	16.48
Samoa	-0.34	-0.03	-0.98	0.49	0.94	0.01

Own compilation, Data from Uncomtrade

TABLE 2 SPECIALISATION INDEX FOR INTERMEDIATES AND FINAL PRODUCTS

	Final products			Intermediates		
SRIEs/Period	1	2	3	1	2	3
Cape Verde	0.84	0.85	0.64	-0.90	-0.83	-0.81
Fiji	0.88	0.86	0.69	-0.37	-0.44	-0.53
French Polynesia	-0.84	-0.61	-0.51	-0.96	-0.94	-0.95
Madagascar	0.89	0.91	0.93	0.45	0.09	0.42
Maldives	0.92	0.82	-1.00	-1.00	-0.92	-1.00
Mauritius	0.94	0.93	0.93	0.38	0.35	0.42
Sri Lanka	0.93	0.94	0.93	0.23	0.18	0.26
Samoa	-0.02	0.31	-0.98	-0.90	-0.89	-0.98

Own compilation, Data from Uncomtrade

For this sample of relatively small countries as compared to Europe, both measures tell the same story. In the pre-quota period, all SRIEs were highly specialised in T&C except for French Polynesia and Samoa. After the removal of quotas, in general SRIEs experienced a decrease in specialisation; Fiji's SI dropped by 35 per cent while Maldives went from being specialised to not specialised at all. The T&C sector of the Maldives is largely a result of quota allocation under the MFA. FDI came from Hong Kong and Sri Lanka to take advantage of the preferential trade agreement with the USA and Britain. On the contrary, Madagascar and Sri Lanka became even more specialised in the sector while the specialisation index of Mauritius remained quite stable.

Table 2 shows the index for intermediates and final products separately. The SI has been calculated according to the RCA formula and made symmetric. The numerator represents the percentage share of an SRIE final products exports in total national merchandise exports and the denominator represents the share of European final products exports in European merchandise exports. The trend in the SI for final products resembles that of T&C put together. On the contrary, the data revealed that many SRIEs were under-specialised in intermediates products. Mauritius, Madagascar and Sri Lanka were slightly specialised in intermediates and the SI for Mauritius and Madagascar increased in the post-quota period.

This is compatible with the view that smaller SRIEs faced difficulties in adjusting to quota-removal. As larger developing countries, such as India and Pakistan, were eventually restrained by their quotas, they set up firms in the Maldives, a neighbouring small island. In 2003, anticipating the ending of the MFA in 2005, they all started to move out to relocate back to their home country. Since 2005, Maldives has not reported any exports of T&C (Adhikari & Weeratunge 2007). Quotas led to trade expansion in SRIEs while the removal of quotas led to trade reduction as hypothesised. However, the second argument does not apply to larger SRIEs which, over the years, learned by doing and gained a competitive advantage. For instance, Madagascar appeared to have taken advantage of regional connection with Mauritius to strengthen its industry. Despite the fact that SRIEs are small countries by definition, there is a distinction between small and smaller countries. The larger SRIEs managed to maintain their competitiveness in the sector. Later sections investigate the strategies adopted by the strongest and the weakest SRIEs.

5.2 TRENDS IN T&C EXPORTS PRE- AND POST-QUOTA REMOVAL

There is considerable diversity in the T&C export trends of SRIEs. One commonality is that the share of finished products in T&C exports is high. Table 3 reports the share of intermediate products in the T&C exports of selected SRIEs and Table 4 reports the share of intermediate products in the T&C imports. Except for French Polynesia and Samoa even the leading SRIE exporters like Sri Lanka, Mauritius and Madagascar are not major producers of intermediates on an absolute scale; Sri Lanka and Mauritius share of intermediates exports were on average 7 and 5 per cent respectively as reported in Table 3. It has to be noted that the share of intermediates for Madagascar declined sharply from the 1990s; in absolute terms its production of intermediates increased but was surpassed by its production of finished goods which soared as a result of Mauritian investment in this sub-sector. The production of finished or clothing products is highly labour-intensive and requires less investment in capital. As mentioned above,

clothing production plants were fairly easy to set up in these small countries. This is partly in favour of the second hypothesis that predominantly labour-intensive activities have been relocated to SRIEs. The share of intermediates also declined for French Polynesia and Madagascar while it increased considerably for Samoa.

As is evident from table 4, SRIEs imported mainly intermediate products. Mauritius and Madagascar share of intermediates imports in total imports were very high amounting on average to 87 and 81 per cent respectively but relatively stable over the periods. French Polynesia had the lowest share of intermediates imports which continued to decline. This share also declined for the Maldives and Samoa. In general, the share of intermediates imports declined for those countries whose specialisation in the sector also declined as in tables 1 and 2.

TABLE 3 SHARE OF INTERMEDIATES IN T&C EXPORTS

Countries/periods	2000-2002	2003-2005	2006-2009	Average
Cape Verde	1%	1%	2%	1%
Fiji	3%	3%	5%	4%
French Polynesia	22%	12%	7%	14%
Madagascar	15%	5%	7%	9%
Maldives	0%	0%	0%	0%
Mauritius	6%	7%	8%	7%
Sri Lanka	6%	5%	5%	5%
Samoa	6%	3%	44%	18%

Own compilation, Data from Uncomtrade

TABLE 4 SHARE OF INTERMEDIATES IN T&C IMPORTS

Countries/periods	2000-2002	2003-2005	2006-2009	Average
Cape Verde	38%	37%	35%	37%
Fiji	57%	54%	68%	60%
French Polynesia	31%	28%	26%	28%
Madagascar	82%	80%	82%	81%
Maldives	68%	69%	46%	61%
Mauritius	88%	86%	86%	87%
Sri Lanka	73%	73%	69%	71%
Samoa	70%	56%	52%	59%

Own compilation, Data from Uncomtrade

Table 5 reports the percentage changes in export of intermediates (left) and final products (right) to the world for periods 1 to 2, 2 to 3 and 1 to 3. Table 6 reports the imports figures. The trends in both exports and imports of intermediates products and clothing differ between countries. On average, SRIEs experienced a decrease in the exports of both intermediates and final products in the post-quota period suggesting that with the quota removal their comparative advantages declined. However, they reported an increase over the entire period. The increase in the exports of intermediates is higher than that of finals. Cape Verde had the highest increase[42] followed by Sri Lanka while Samoa reported the highest decline in the export of intermediates. After the removal of quotas, Madagascar experienced an increase of 118 per cent in its exports of intermediates. This is possibly explained by its duty free and quota free access to the US and EU markets under the *Africa Growth and Opportunity Act* (AGOA) and *Everything but Arms* (EBA) respectively. Exports of final products increased for French Polynesia, Madagascar and Sri Lanka while it decreased for the rest of SRIEs. From the data, the Maldives and Samoa appeared to have exited production.

TABLE 5 PERCENTAGE CHANGE IN EXPORTS OF INTERMEDIATES AND CLOTHING

Exports of:	**Intermediate products**			**Final products**		
Countries/periods	1 to 2	2 to 3	**1 to 3**	1 to 2	2 to 3	**1 to 3**
Cape Verde	152%	49%	**275%**	63%	-43%	**-7%**
Fiji	33%	-20%	**6%**	35%	-52%	**-35%**
French Polynesia	18%	-35%	**-24%**	135%	21%	**184%**
Madagascar	-55%	118%	**-2%**	36%	71%	**132%**
Maldives	n.a.	-100%	**n.a.**	-33%	-100%	**-100%**
Mauritius	7%	-1%	**5%**	-4%	-9%	**-13%**
Sri Lanka	43%	23%	**75%**	70%	20%	**104%**
Samoa	95%	-91%	**-83%**	241%	-100%	**-99%**
Average	***42%***	***-7%***	***36%***	***68%***	***-24%***	***21%***

Own compilation, Data from Uncomtrade

+*1 to 3* refers to period 2000-2002 to 2006-2009
1 to 2 refers to period 2000-2002 to 2003-2005
2 to 3 refers to period 2003-2005 to 2006-2009

As reported in table 6, Madagascar and Fiji had the highest increase in intermediates imports over the period while Mauritius reported a decline. This suggests that Mauritius may have been sourcing its inputs locally while Fiji relied heavily on external sources. Madagascar

[42] The data for Cape Verde were highly variable throughout the period and obviously not reliable.

also experienced the highest increase in final products imports from period 1 to 3. For SRIEs in general, the removal of quotas led to a decline in imports of textiles but a small increase in the imports of clothing in the post-quota period.

TABLE 6 PERCENTAGE CHANGE IN IMPORTS OF INTERMEDIATES AND CLOTHING

Imports of :	**Intermediate products**			**Final products**		
Countries/periods	1 to 2	2 to 3	**1 to 3**	1 to 2	2 to 3	**1 to 3**
Cape Verde	27%	32%	**67%**	37%	41%	**93%**
Fiji	259%	-12%	**216%**	308%	-53%	**94%**
French Polynesia	12%	-5%	**6%**	30%	8%	**40%**
Madagascar	147%	49%	**267%**	195%	27%	**273%**
Maldives	-11%	-75%	**-77%**	-17%	-32%	**-44%**
Mauritius	-14%	-7%	**-20%**	3%	-3%	**0%**
Sri Lanka	63%	0%	**63%**	65%	20%	**98%**
Samoa	12%	-7%	**4%**	104%	8%	**121%**
Average	***62%***	***-3%***	***66%***	***91%***	***2%***	***84%***

Own compilation, Data from Uncomtrade

Again, there seems to be a distinction between small and smaller economies; the smaller economies such as the Maldives had to exit production while the larger and stronger ones managed to survive and increase their production. Another important factor affecting T&C exports relates to other preferential trading schemes that mitigated or accentuated the impact of the elimination of the MFA. Thus, the analysis becomes complicated and the exact causes of the post-MFA performances of SRIEs remain difficult to disentangle. Later sections investigate the recovery and/or decline of selected SRIEs by looking into their individual value chains.

5.3 SHARE OF IMPORTS AND EXPORTS FOR ALL PRODUCT-TYPES

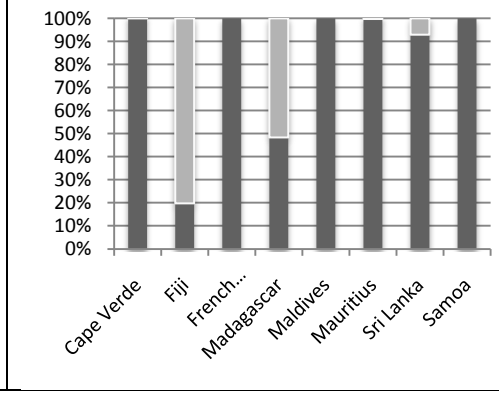
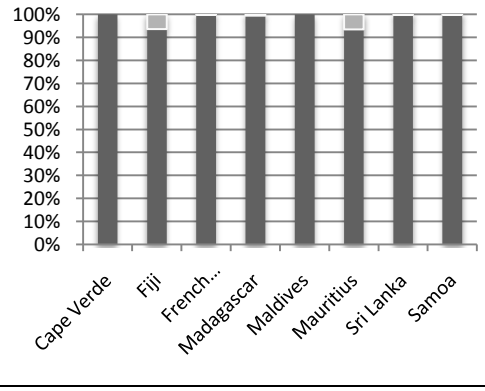
The findings of the previous section show that SRIEs imported mostly intermediate products while they exported mainly final products. However, table 7 illustrates that some countries engaged in the production and import of some specific product categories. While in the pre-quota period, Fiji and Madagascar's shares of silk export in total silk trade was above 50 per cent, in the post-quota period these shares dropped drastically to almost no exports of silk for Madagascar. Most SRIEs imported wool products except for Mauritius whose exports increased

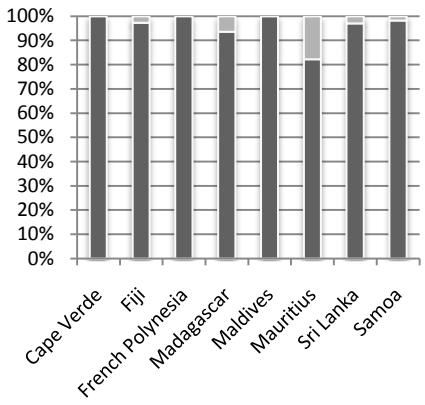
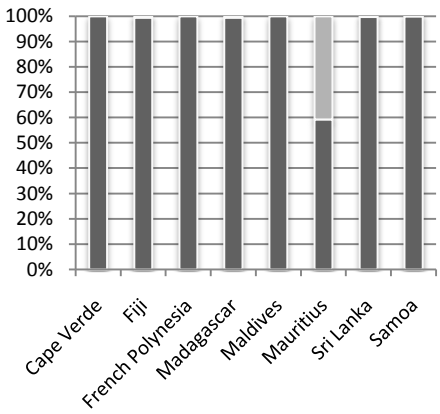
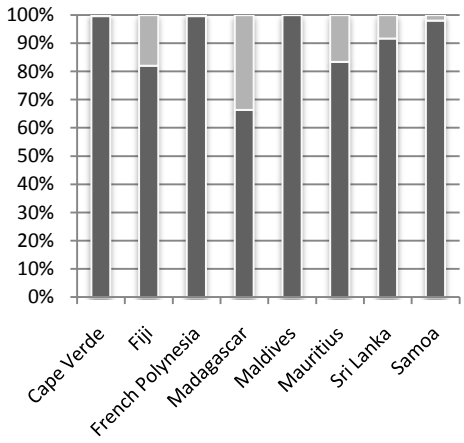
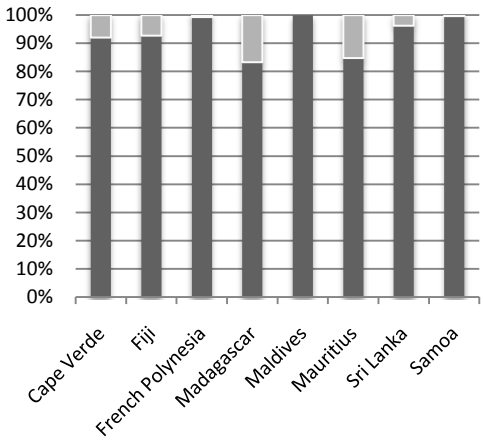
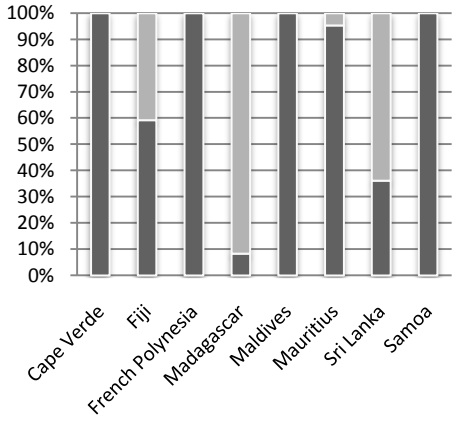
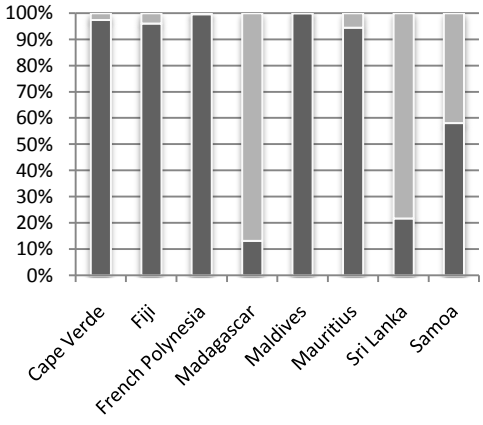
to more than 40 per cent in period 3. Similarly, imports of cotton and man-made staple fibres formed the largest share of cotton trade for these islands.

Interestingly, some SRIEs engaged in the export of particular fibres. The export share of vegetable textile fibres was quite important for Fiji, Madagascar and Sri Lanka but declined considerably for Fiji in the period 3. The share of man-made filaments export increased for most SRIEs in the post-quota except for French Polynesia and the Maldives. Both Madagascar and Sri Lanka share of exports of wadding, felt, nonwovens, yarns, twine, cordage, etc were about 45 percent. Sri Lanka also specialised in carpets and other textile floor coverings and the share of exports of Mauritius increased in period 3. In the post-quota period, SRIEs export share of both special woven or tufted fabric and impregnated, coated or laminated textile fabric declined. Only Mauritius had a large export share of knitted or crocheted fabric in period 3.

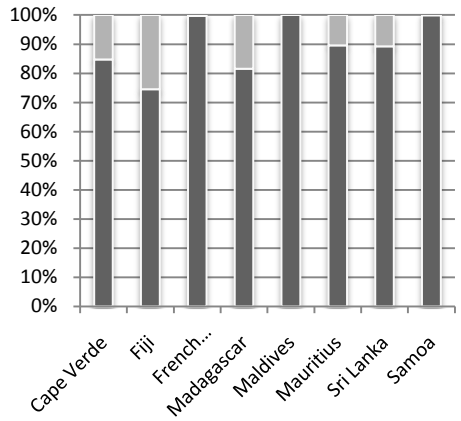
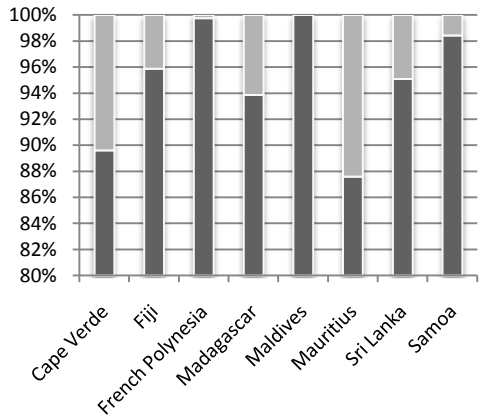
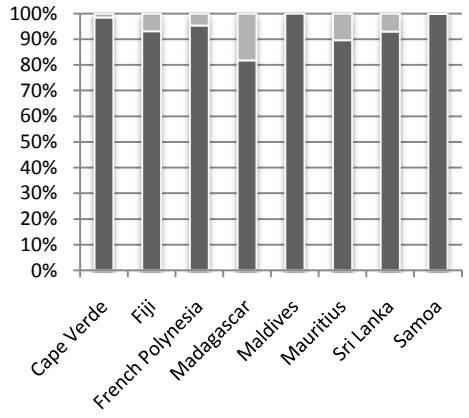
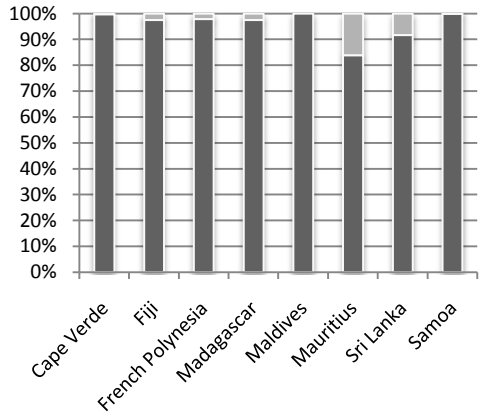
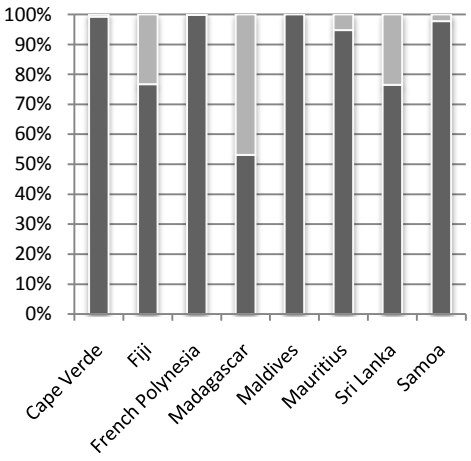
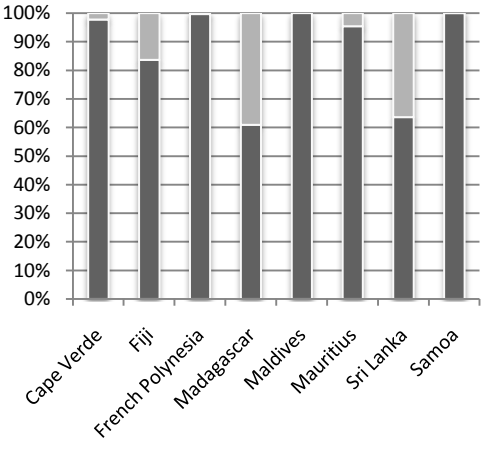
With the exception of French Polynesia, the share of exports of articles of apparel, accessories, not knit or crochet was more than 50 per cent for all SRIEs in the pre-quota period. Mauritius, Madagascar and Sri Lanka were almost exclusively exporting these products both before and after the removal of quotas. Fiji's export share declined from 90 to 70 per cent while the Maldives and Samoa reported no exports. The same trend holds for articles of apparel, accessories that are knitted or crocheted. The recurring fact is that SRIEs are mainly exporters of final products.

TABLE 7 SHARE OF IMPORTS AND EXPORTS IN FOR THE DIFFERENT PRODUCT CATEGORIES PRE- AND POST-QUOTA

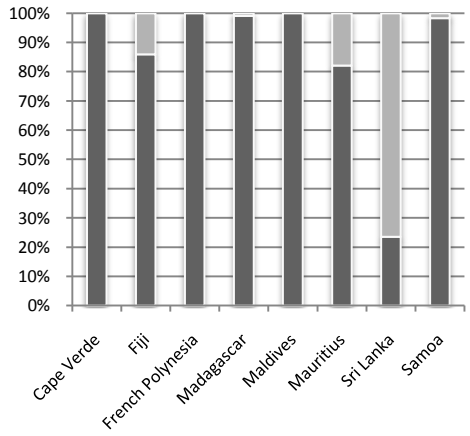
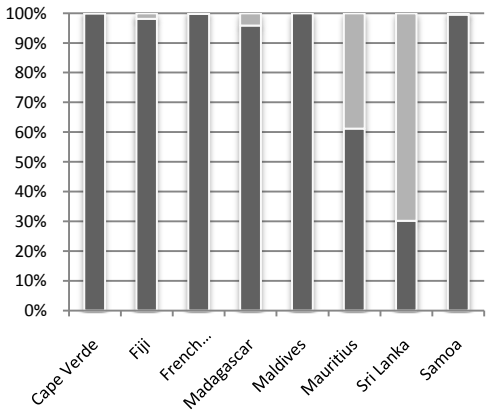
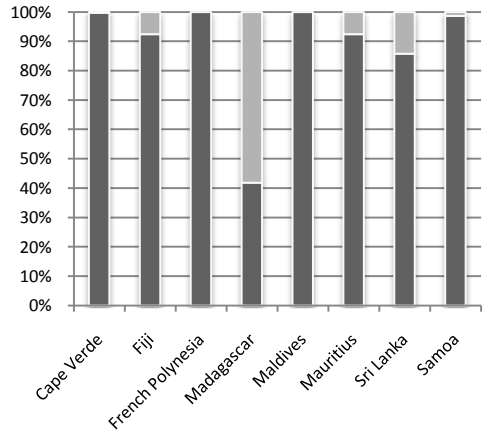
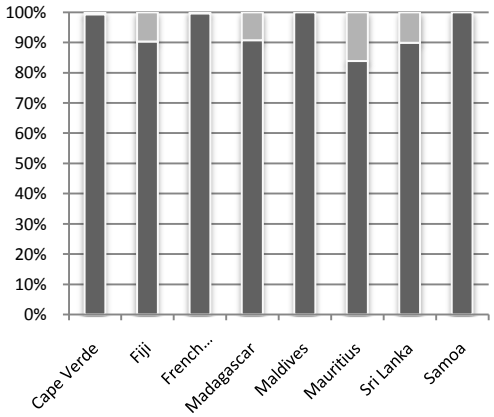
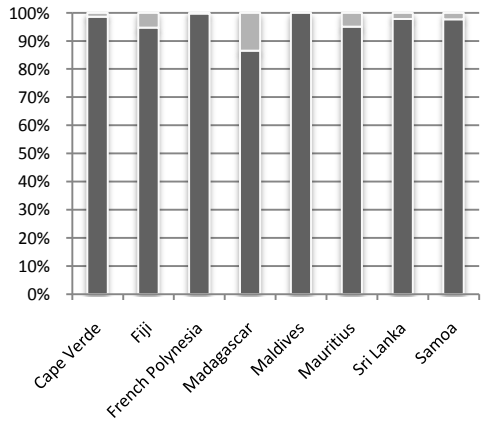
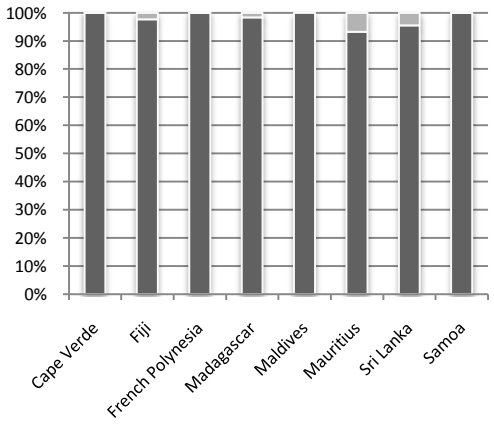
Product categories	Pre-quota (Period 1)	Post-quota (Period 3)
50 Silk		

Product categories	Pre-quota (Period 1)	Post-quota (Period 3)
51 Wool, animal hair, horsehair yarn and fabric thereof		
52 Cotton		
53 Vegetable textile fibres nes, paper yarn, woven fabric etc		

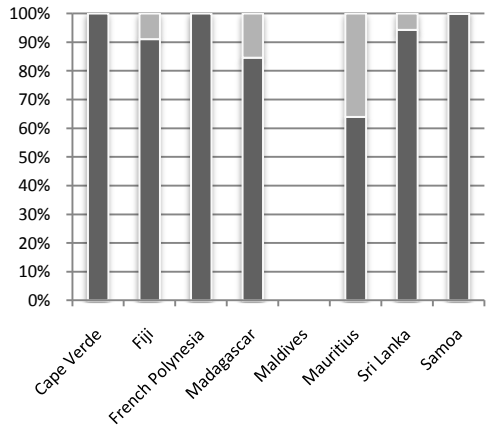
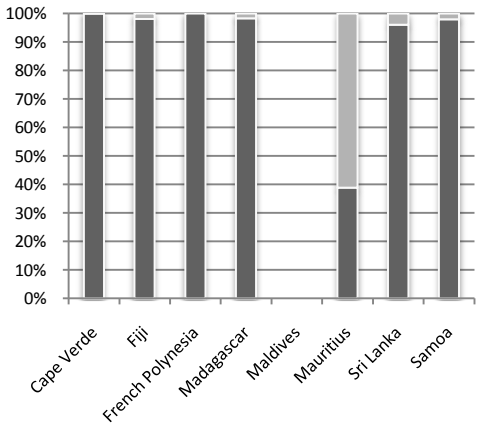
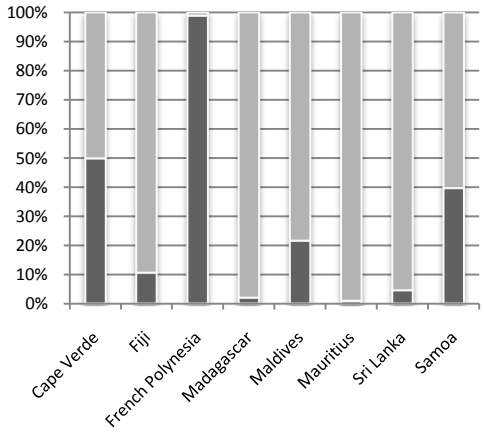
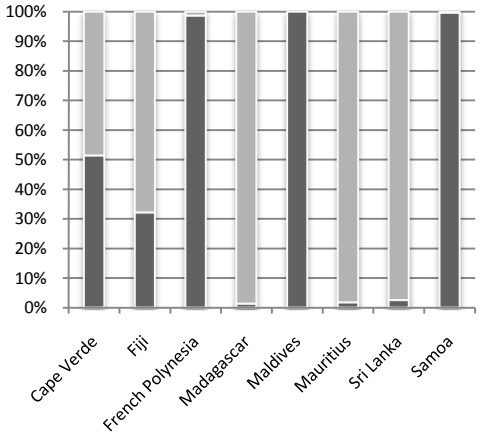
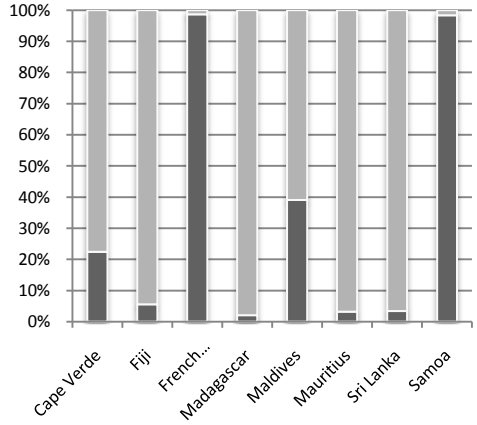
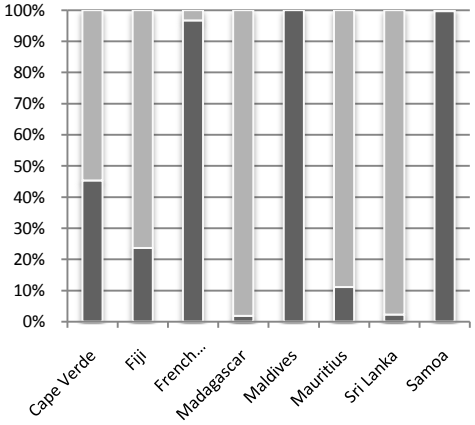
Exports Imports

Product categories	Pre-quota (Period 1)	Post-quota (Period 3)
54 Man-made filaments		
55 Man-made staple fibres		
56 Wadding, felt, nonwovens, yarns, twine, cordage, etc		

Exports Imports

Product categories	Pre-quota (Period 1)	Post-quota (Period 3)
57 Carpets and other textile floor coverings		
58 Special woven or tufted fabric, lace, tapestry etc		
59 Impregnated, coated or laminated textile fabric		

Exports Imports

Product categories	Pre-quota (Period 1)	Post-quota (Period 3)
60 Knitted or crocheted fabric		
61 Articles of apparel, accessories, knit or crochet		
62 Articles of apparel, accessories, not knit or crochet		

Data sourced from Uncomtrade

Exports Imports

6. STRUCTURE AND COMPOSITION OF SRIES T&C INDUSTRY

6.1 THE CASES OF MADAGASCAR AND MAURITIUS

The launch of the T&C industry in Mauritius was largely the result of investment by Hong Kong firms that were attracted by the MFA (Joomun 2006). Eventually, local investors gained control over capital and management and, gradually, exports and employment increased. The whole country is an EPZ area. Mauritian T&C firms manufacture both finished and intermediate products. Most of the knitting companies are now vertically integrated producing their own fabrics. The only companies that require sourcing of fabrics are those producing woven products where value-addition is usually high. The domestic supply of woven fabrics is limited both in terms of quantity and variety. Imports of woven fabrics come mainly from the EU but also from Madagascar where Mauritian firms have partners. Sourcing from within the region offers the rule of origin advantage both for exports on the EU and US markets. Though sourcing from within the region is not favoured because of unstable socioeconomic conditions, it still is cheaper and quicker than sourcing from outside the region.

In 2004-2005, exports declined as the Asian-based companies moved out of the country anticipating the elimination of the MFA. Mauritius, being relatively developed for an African economy, was not yet eligible for third-country fabric clause. After sustained lobbying, it was granted derogation in October 2009. The restructuring of the industry, delocalisation and the search for new markets contributed to the rise in exports in the few years following the removal of quotas. Being aware that buyers prefer suppliers who cover the whole value-chain, firms developed full-package supply capacity while maintaining the production of high-quality end products. New lines of products were developed such as beachwear, swimwear and lingerie with a high emphasis on design (Abernathy et al. 2006). This relates to our third hypothesis which argues that when faced with external challenges, such as liberalised markets, a country will need to upgrade and/or develop higher valued products to remain competitive.

Although the traditional export markets were the US and EU, the regional market expanded. For instance, 6.7 per cent of exports of finished products and 5.1 per cent of intermediates go to South Africa. Table 8 reports the share of exports to and imports from the trading partners of Mauritius and their main export and import components in 2008. An obvious consequence of quota removal is the decline in the export share of final products to the US from 29 per cent in 2000 to 12 per cent in 2008. On the contrary, both the export share of final and intermediate products to the EU increased. The EU is relatively less remote than the US not only in terms of distance but also in terms of historical and political ties. However, increased

exports to the EU may be due to the shift towards higher-value added products. See table 25 in Annex I for the 2000 figures. In addition, there appear to be a shift towards new markets, namely, the Russian Federation, Ukraine and Turkey.

Mauritius is a member of the Southern African Development Community (SADC) which promotes tariff reduction and the Common Market for Eastern and Southern Africa (COMESA) which is a free trade area. Bilateral trade agreements with India also secure preferential access to the country. The linkage between Madagascar is mainly in the exports of cotton and wool products for use by the sister companies there. More than 51 per cent of the export share of intermediates went to Madagascar, both in 2000 and in 2008. Inputs, namely, cotton, manmade staple fibres and wool, were sourced mainly from China, India and the EU. There were a number of new sources from the sub-Saharan African region, such as, Zambia, Mozambique and Benin.

The Madagascan textiles industry developed in the 1970s following an import-substitution policy meant to encourage the local production of consumer goods. The initial companies were state-owned. The existing cotton processing units fuelled the textiles industry with the raw materials needed. After a sharp decline of the textile sub-sector, caused by mismanagement and lack of competitiveness in face of liberalisation, the industry revived with the creation of EPZs (Maminirinarivo 2006). The industry was given a further push as it became eligible for the US market access under AGOA. This effect was short-lived because of two reasons: firstly, political instability in 2001-2002 and secondly, the abolition of the MFA in 2005.

Madagascar has a least developed country (LDC) status making it eligible to source raw materials from a third country. In other words, it is not required to use inputs exclusively from the sub-Saharan region or from the US, but can source outside the region, for example, India. The controversial transfer of political power in March 2009 has cost Madagascar its AGOA benefits for at least one year from January 2010.

Labour-intensive clothing firms flourished rapidly in the EPZs with foreign direct investment mainly coming from France and neighbouring Mauritius (Maminirinarivo 2006). French investment was due to colonial ties and the various agreements signed at the time of independence but also due to language affinities. Investment from Mauritius was the result of various regional agreements, proximity and language-sharing but primarily, the result of an abundant cheap labour that was attractive as wages rose locally.

TABLE 8 MAURITIUS T&C IMPORT/EXPORT PARTNERS & COMPOSITION (2008)

Mauritian imports (%) from:					
Finished products	***%***	***Main component/s***	***Intermediate products***	***%***	***Main component/s***
China	32.3	Articles of apparel*	**China**	28	Cotton/ Manmade staple fibres
EU	25.7	Articles of apparel*/ Knitted or crocheted fabric	**India**	27.4	Cotton
India	22.5	Articles of apparel, not knit or crochet	**EU**	14.2	Wool, animal hair, etc/ Special woven or tufted fabrics/ Cotton
Thailand	3.9	Articles of apparel*	**Australia**	3.2	Wool, animal hair etc
Madagascar	3.2	Articles of apparel*	**Thailand**	2.6	Cotton/ manmade staple fibres/ manmade filaments
Indonesia	2.3	Articles of apparel*	**Pakistan**	2.6	Cotton/ manmade staple fibres
South Africa	1.6	Articles of apparel*	**Zambia**	2.5	Cotton
China, HK	1.4	Articles of apparel*/ Knitted or crocheted fabric	**South Africa**	2.3	Wool, animal hair, horsehair yarn and fabric thereof/ Cotton
Bangladesh	1.2	Articles of apparel*	**Indonesia**	1.5	Cotton/ manmade staple fibres/ manmade filaments
Morocco	0.6	Articles of apparel*	**Mozambique**	1.2	Cotton
Malaysia	0.6	Articles of apparel*/ Knitted or crocheted fabric	**United Rep. of Tanzania**	1.1	Cotton
Turkey	0.6	Articles of apparel*	**Benin**	1.1	Cotton
Tunisia	0.4	Articles of apparel*	**Other Asia**	1.0	Manmade staple fibres/ Cotton/ Special woven fabrics
Australia	0.4	Articles of apparel*	**Madagascar**	0.6	Cotton/ Wool, animal hair etc
Sri Lanka	0.3	Articles of apparel*	**Sri Lanka**	0.1	Cotton
Mauritian exports (%) to:					
Finished products	***%***	***Main component/s***	***Intermediate products***	***%***	***Main component/s***
EU	76.6	Articles of apparel*	**Madagascar**	51.7	Cotton/ Wool, animal hair, etc
USA	12.1	Articles of apparel, accessories, not knit or crochet	**EU**	27.3	Cotton/ Wool, animal hair, etc
South Africa	6.7	Articles of apparel*	**South Africa**	5.1	Cotton/ Wool, animal hair, etc
Madagascar	1.5	Knitted or crocheted fabric	**Turkey**	3.4	Cotton
Australia	0.5	Articles of apparel, not knit or crochet	**Sri Lanka**	2.0	Wool, animal hair etc
Canada	0.5	Articles of apparel, accessories, not knit or crochet	**Bangladesh**	1.8	Wool, animal hair etc
Mayotte	0.1	Articles of apparel*	**Mayotte**	1.1	Manmade staple fibres
Seychelles	0.1	Articles of apparel*	**Russian Fed**	1.0	Carpets
			Comoros	0.4	Cotton/ manmade staple fibres
			Seychelles	0.3	Cotton/ manmade staple fibres/ filaments
			China, HK	0.9	Cotton/ Wool, animal hair, etc
			Ukraine	0.6	Carpets etc
			China	0.6	Cotton/ Wool, animal hair, etc
			India	0.5	Cotton
			Morocco	0.5	Cotton
			Canada	0.3	Wool, animal hair etc
			USA	0.1	Cotton/ Carpets
Articles of apparel* denotes both knitted and crocheted and not knitted and crocheted					

Own compilation, Data from UNcomtrade

TABLE 9 MADAGASCAN T&C IMPORT/EXPORT PARTNERS & COMPOSITION (2008)

Madagascan imports (%) from:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
China	62.9	Knitted or crocheted fabric	**EU**	38.6	Cotton/ Special woven or tufted fabrics
Mauritius	12.3	Knitted or crocheted fabric/Articles of apparel*	**China**	28.2	Wool, animal hair, horsehair yarn and fabric thereof/ Cotton
Other Asian countries	12.0	Knitted or crocheted fabric	**Other Europe**	8.3	Silk/ Cotton
EU	6.3	Articles of apparel*/ Knitted or crocheted fab.	**Mauritius**	6.9	Cotton/ Wool, fine or coarse animal hair
China, HK	0.9	Knitted or crocheted fabric	**Other Asia**	1.9	Cotton
Rep. Of Korea	0.7	Knitted or crocheted fabric	**Lesotho**	1.5	Cotton
Thailand	0.6	Articles of apparel*	**India**	1.3	Cotton/ Wool, fine or coarse animal hair
South Africa	0.5	Articles of apparel*	**India**	1.3	Cotton/ Manmade staple fibres
India	0.2	Articles of apparel*/ Knitted or crocheted fab.	**Viet Nam**	0.8	Manmade staple fibres/ Cotton
Indonesia	0.2	Articles of apparel*	**China HK**	0.8	Cotton/ Wool, fine or coarse animal hair
Viet Nam	0.1	Knitted or crocheted fabric	**USA**	0.7	Manmade filaments/ Cotton
Japan	0.1	Articles of apparel*	**Thailand**	0.7	Manmade staple fibres
USA	0.1	Articles of apparel*	**UAE**	0.5	Cotton/ Manmade filaments
			Rep. Of Korea	0.4	Manmade staple fibres/ Manmade filaments
			South Africa	0.4	Manmade filaments/ Wadding etc
			Bahrain	0.2	Cotton
			Indonesia	0.1	Cotton/ Manmade filaments
Madagascan exports (%) to:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
EU	65.4	Articles of apparel*	**Other**	46.0	Cotton
USA	31.8	Articles of apparel*	**EU**	23.9	Wadding, felt and nonwovens, etc/ Special woven or tufted fabric etc
Canada	0.8	Articles of apparel*	**China**	19.2	Other vegetable textile fibres
South Africa	0.5	Articles of apparel*	**Mauritius**	4.1	Cotton
Mauritius	0.3	Articles of apparel*	**South Africa**	1.6	Cotton
China, HK	0.2	Articles of apparel*	**Morocco**	1.4	Other vegetable textile fibres
Japan	0.1	Articles of apparel*	**USA**	0.6	Cotton
United Arab Emirates	0.1	Articles of apparel, not knit or crochet	**India**	0.6	Cotton
Japan	0.1	Articles of apparel*/ Hats, etc	**Singapore**	0.3	Wadding etc
Mexico	0.1	Articles of apparel*	**China HK**	0.3	Cotton
			Sri Lanka	0.2	Cotton
			Japan	0.1	Cotton
			Bangladesh	0.1	Other vegetable fibres
			Indonesia	0.1	Other vegetable fibres
Articles of apparel* denotes both knitted and crocheted and not knitted and crocheted					

Own compilation, Data from UNcomtrade

The main export components of the Madagascan T&C industry are articles of apparel and clothing accessories, cotton fabrics, silk and vegetable fibres. Own compilation*, Data from UNcomtrade*

Table 9 reports the 2008 share of exports to and imports from Madagascar's trading partners and their main export and import components. Its main export markets are the US and the EU where it sells mostly finished products. However, 46 per cent of its cotton exports go to other parts of the world (specific data was not available). China became a major importer of its vegetable textile fibres in 2008. Madagascar's export links increased as compared to the early 2000s: it exported articles of apparel to Mexico, United Arab Emirates and with regional actors, such as, South Africa. See Table 26 in the annex for details of Madagascan trade in the year 2000. Exports of cotton to the US fell by 97 per cent compared to its 2000 figures. The country appears to have diversified its market for intermediates.

Madagascar sources its inputs (mainly cotton fabric and wool) and other finished products from China, EU and Mauritius. In 2008, imports of knitted and crocheted fabric from China increased considerably by 142 per cent while those of Mauritius declined by 70 per cent when compared to the 2000 figures. China's competitiveness resulting from the end of the quota system might explain this increase. The decline of imports from Mauritius might also be due to the re-localisation of Mauritian plants in Madagascar.

6.1.1 RULES OF ORIGIN

The rules of origin or yarn forward rule under AGOA requires sub-Saharan African countries to use fabric and yarn manufactured within the region or in the US. These rules have made African countries re-consider regional integration as an opportunity for market expansion. Mauritius, in particular, is aiming to be a supplier of intermediates in the region in anticipation of the erosion of the third country fabric clause. As a consequence, various spinning plants have been set up. This argument partly favours the fourth hypothesis which claims that countries will ultimately engage in intra-regional trade to cope with increased competition resulting from the removal of quotas. However, it is difficult to disentangle the effects of AGOA and the effects of quota-removal. Nonetheless, the increase in utilisation of the AGOA benefits was itself a response to the elimination of the MFA.

Thus, trade of T&C is still being shaped by institutional factors. The 'rules of origin' clause in AGOA favours regional integration and encourages trade agreements between SRIEs and their suppliers. Regional cross-border supply chains also favour regional agreements.

However, to some extent, rules of origin may be encouraging the creation of inefficient chains of production network; for instance, they encourage the high-cost production of intermediates in the African region instead of sourcing from the low-cost South East Asian region. Proponents of free-market argue that though intervention in the global fragmentation of production enables countries to take advantages of different costs across locations, intervention remains "a dangerous form of protectionism" (Flatters & Kirk 2004, p.24).

6.2 THE CASE OF SRI LANKA

In their attempt to expand their production-base, the East Asian companies also relocated in Sri Lanka in the 1970s. They were mainly attracted by low costs of production and a highly skilled labour force in the host country. Both this relocation and a more liberal economic policy approach marked the beginning of Sri Lanka's flourishing T&C industry. Local entrepreneurs also ventured in this sector to benefit from guaranteed access to lucrative markets. In the 1990s, the number of factories operating considerably increased and this increase was largely due to the *200 Garment Factory Program* put in place by the government of the time (Wijayasiri & Dissanayake 2008).

T&C is a major contributor to the country's GDP, employment and export earnings. In 2007, the sector accounted for 21 percent of total manufacturing production (Department of census and statistics 2010) and 41 percent of total exports (Department of Commerce - Sri Lanka 2007). Sri Lanka is mainly an apparel or clothing producer. It is known for the quality and reliability of its production and thus caters for international brands such as Liz Claiborne, Marks & Spencer, Nike, and Ralph Lauren among others.

Table 10 reports the share of exports to and imports from Sri Lanka's trading partners and their main export and import components in 2008. Its main export markets are the EU and the US which together accounted for more than 92 per cent of its exports of final products in 2008. However, the share of exports to the US declined while those of the EU increased when compared to the 1999 figures. This trend is similar to the case of Mauritius. See table 27 in the Annex for the 1999 figures. Sri Lanka has a diversified export markets; it exports to countries such as Turkey and the Russian Federation.

Its intermediate exports are largely in vegetable fibres which are sold mainly in Europe, India, China and the USA. However, the share that goes to the US market declined by 70 per cent but the share that goes to neighbouring India increased by 300 per cent when compared to the year 1999. In general, exports of cotton products appeared to have declined. Its exports of

intermediates to the Maldives declined sharply as the T&C industry of the latter collapsed with the end of the quota system.

TABLE 10 SRI LANKA T&C IMPORT/EXPORT PARTNERS & COMPOSITION (2008)

Sri Lankan imports (%) from:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
China, HK SAR	34.8	Knitted or crocheted fabrics	**China**	19.5	Cotton/ Manmade staple fibres
EU	18.6	Knitted or crocheted fabric	**China, HK SAR**	18.2	Cotton/ Manmade staple fibres
China	13.8	Knitted or crocheted fabric/ Articles of apparel*	**India**	15.8	Cotton/ Manmade staple fibres
India	9.6	Knitted or crocheted fabric/ Articles of apparel*	**EU**	9.1	Special woven fabrics/ Manmade filaments/ Manmade staple fibres
Other Asia	8.4	Knitted or crocheted fabrics	**Pakistan**	7.2	Cotton
Rep. of Korea	3.5	Knitted or crocheted fabrics	**Other Asia**	6.8	Cotton/ Manmade staple fibres
Pakistan	3.1	Knitted or crocheted fabrics	**USA**	4.6	Manmade staple fibres/ filaments/ Cotton
Thailand	1.6	Knitted or crocheted fabrics/ Articles of apparel*	**Thailand**	4.1	Manmade staple fibres/ Special woven fabrics
Singapore	1.4	Knitted or crocheted fabrics	**Indonesia**	3.7	Cotton/ Manmade staple fibres
USA	1.1	Knitted or crocheted fabrics	**Rep. of Korea**	3.4	Manmade staple fibres/ filaments/ Cotton
Malaysia	0.9	Knitted or crocheted fabrics/ Articles of apparel*	**Singapore**	1.7	Manmade filaments/ staple fibres/ Cotton
Indonesia	0.7	Knitted or crocheted fabrics/ Articles of apparel*	**Japan**	1.4	Manmade staple fibres/ Impregnated fabrics/ Cotton
Japan	0.6	Knitted or crocheted fabrics	**UAE**	0.9	Cotton/ Manmade staple fibres
Turkey	0.3	Knitted or crocheted fabrics	**Australia**	0.6	impregnated fabrics
UAE	0.3	Articles of apparel*/ Knitted or crocheted fabrics	**Mauritius**	0.1	Wool
Bangladesh	0.1	Articles of apparel*			
Australia	0.1	Knitted or crocheted fabrics			
Mauritius	0.1	Articles of apparel*			
Sri Lankan exports (%) to:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
EU	48.4	Articles of apparel*	**EU**	28.1	Other vegetable fibres/ Wadding
USA	44.7	Articles of apparel*	**India**	7.6	Special woven fabrics/ Cotton
Canada	1.4	Articles of apparel*	**China**	6.9	Other vegetable fibres
Turkey	0.8	Articles of apparel*	**USA**	6.8	Impregnated fabrics/ Other veg. fibres
China, HK SAR	0.8	Articles of apparel*	**Turkey**	5.1	Manmade staple fibres
Japan	0.4	Articles of apparel*	**Japan**	4.8	Other veg. fibres/ Impregnated fabrics
Mexico	0.3	Articles of apparel*	**Rep. of Korea**	4.7	Other vegetable fibres
Australia	0.3	Articles of apparel*	**UAE**	4.5	Manmade staple fibres/ Cotton
India	0.3	Knitted or crocheted fabrics/ Articles of apparel*	**Bangladesh**	3.9	Cotton/ Special woven fabrics
Singapore	0.3	Knitted or crocheted fabrics/ Articles of apparel*	**Brazil**	3.5	Manmade staple fibres
UAE	0.3	Articles of apparel*	**China, HK SAR**	3.3	Special woven fabrics
Russian Fed.	0.2	Articles of apparel*	**Australia**	3.3	Manmade staple fibres/ Other veg. fibres
China	0.2	Articles of apparel*	**Canada**	2.0	Other vegetable fibres
Rep. of Korea	0.1	Articles of apparel*	**Indonesia**	1.5	Special woven fabrics/ Cotton
Brazil	0.1	Articles of apparel*	**Singapore**	1.3	Wadding, etc/ Impregnated fabrics
Thailand	0.1	Knitted or crocheted fabrics	**Egypt**	1.3	Special woven fabrics/ Cotton
South Africa	0.1	Articles of apparel*	**Other S.America**	1.6	Cotton
Malaysia	0.1	Articles of apparel*	**Maldives**	0.2	Cotton/ Manmade staple fibres/ Wadding
			Mauritius	0.2	Cotton/ Other vegetable fibres
			Various others	9.4	
Articles of apparel* denotes both knitted and crocheted and not knitted and crocheted					

Own compilation, Data from UNcomtrade

One of the main challenges of the Sri Lankan T&C sector is its high import content. The local production of textile inputs is not sufficient and often not of the desired quality to enter into production of high-valued apparel exports. It sources most of its cotton fabrics and man-made fibres from East Asia; in 2008, most of its inputs, namely cotton and manmade staple fibres, came from China, China (Hong Kong) and India. Special woven fabrics came from the EU. It imported finished products mainly from the East Asian countries. In 2008, Europe became a major source of knitted or crocheted fabrics which are also used as inputs for other products.

6.3 THE CASE OF FIJI

The creation of EPZs, notably the Tax Free Factory (TFF) and Tax Free Zones (TFZ) are behind the rise of the Fijian T&C industry. The industry developed subsequently to the 1987 coup; the regime in power installed neoliberal policies, in essence, development based on export-led industrialisation. Investors received incentives and import duty concessions on raw materials and capital goods if their exports reached a certain level of their output. The garment industry is mainly foreign-owned, in particular, by Australians, New Zealanders and Singaporeans plus a number of joint venture ownership. Preferential trading arrangements, notably the MFA as well as the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) and the Import Credit Scheme (ICS) have played a major role in sustaining the sector (Narayan 2001). The industry contributed to economic growth, employment creation, foreign investment and skill development in the country. It even outstripped sugar as the country's leading export sector (Storey 2006).

Today, Fiji's main export market for T&C is Australia. In 2008, as reported in table 11, Fiji exported 80.5 per cent of its finished products, namely, articles of apparel, to Australia. This figure represents an increase of more than 50 per cent from the year 2002. Table 28 in the annex reports the 2002 figures. New Zealand remained an important market accounting for 11.2 per cent of exports. Fiji also exported to most of the SRIEs in the Pacific, though with relatively lower export shares. Only 3.6 per cent of the export of finished products went to the US compared to 37.9 per cent in 2002. The latter observation suggests that the removal of quotas led to a substantial extent of trade reduction with the more remote quota-allocator.

TABLE 11 FIJIAN T&C IMPORT/EXPORT PARTNERS AND COMPOSITION (2008)

Fijian imports (%) from:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
Australia	31.8	Knitted or crocheted fabrics/ Articles of apparel*	**Australia**	48.7	Cotton/ Manmade staple fibres
India	20.7	Articles of apparel*	**China**	12.2	Cotton/ Manmade staple fibres
China	17.4	Articles of apparel*	**New Zealand**	7.2	Cotton/ Manmade staple fibres
Thailand	8.7	Articles of apparel*	**Thailand**	6.3	Cotton/ Manmade staple fibres
China, HK	7.7	Articles of apparel*	**Singapore**	4.0	Cotton/ Manmade staple fibres
New Zealand	5.1	Articles of apparel*/ Knitted and crocheted fabrics	**Indonesia**	3.5	Manmade staple fibres/ Cotton
Indonesia	3.6	Articles of apparel*	**Other Asia**	3.3	Manmade staple fibres/ Cotton
US	1.5	Articles of apparel*	**China, HK**	3.2	Manmade staple fibres/ Cotton/ Manmade filaments
Singapore	1.0	Articles of apparel*	**India**	3.0	Cotton/ Manmade filaments/ Manmade staple fibres
Japan	0.7	Knitted or crocheted fabrics	**EU**	2.8	Cotton/ Manmade staple fibres
EU	0.6	Articles of apparel*	**Malaysia**	1.3	Cotton/ Manmade staple fibres
Malaysia	0.2	Articles of apparel, not knit or crochet	**Pakistan**	1.1	Cotton
			USA	0.7	Manmade staple fibres/ Manmade filaments
			Japan	0.6	Manmade staple fibres/ Cotton
			Viet Nam	0.2	Wadding, etc
			Canada	0.1	Manmade staple fibres/ Manmade filaments
Fijian exports (%) to:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
Australia	80.5	Articles of apparel*	**Kiribati**	18.8	Cotton/ Wadding, felt, etc
New Zealand	11.2	Articles of apparel*	**Australia**	16.7	Special woven fabrics/ Cotton/ Manmade filaments
USA	3.6	Articles of apparel*	**French Polynesia**	12.7	Cotton
Samoa	1.0	Articles of apparel*	**Samoa**	11.7	Cotton/ Manmade filaments
EU	0.6	Articles of apparel*	**New Zealand**	6.2	Special woven fabrics/ Wadding, etc
Fr. Polynesia	0.5	Articles of apparel*	**Vanuatu**	5.3	Cotton/ Wadding, felt, etc
Kiribati	0.4	Articles of apparel*	**Am. Samoa**	5.1	Cotton
American Samoa	0.4	Articles of apparel*	**Tuvalu**	3.8	Cotton
Vanuatu	0.4	Articles of apparel*	**Cook Isds**	2.5	Cotton/ Manmade filaments
Tonga	0.2	Articles of apparel*	**China**	2.2	Impregnated fabrics/ cotton
Tuvalu	0.2	Articles of apparel*	**USA**	2.2	Cotton
P. New Guinea	0.2	Articles of apparel*	**New Caledonia**	2.0	Cotton/ Manmade filaments
Cook Isds	0.2	Articles of apparel*	**Solomon Is.**	1.6	Cotton
Solomon Is	0.2	Articles of apparel*	**Tonga**	1.6	Cotton/ Wadding, felt, etc
New Caledonia	0.1	Articles of apparel*	**China, HK**	1.3	Manmade staple fibres
Canada	0.1	Articles of apparel*	**Cambodia**	1.2	Special woven fab./ Cotton/ Wadding etc
			Singapore	0.9	Manmade staple fibres
			Nauru	0.8	Cotton
			Niue, Marshall Is.	0.4	Cotton
			EU	0.2	Cotton/ Special woven fabric, etc
			Wallis & Fu. Is	0.1	Manmade filaments/ Special woven fab.
Articles of apparel* denotes both knitted and crocheted and not knitted and crocheted					

Own compilation, Data from UNcomtrade

Export of intermediates was more diversified: 18.8 per cent of exports went to Kiribati, namely, cotton products and wadding plus related products; 16.6 per cent to Australia, mainly special woven and cotton products; 13 per cent to American Samoa and 12.7 per cent to French Polynesia, mainly cotton products; and 11.2 per cent to Samoa, cotton and manmade filaments. Exports of intermediates to the US and China, Hong Kong SAR declined by 51 and 90 per cents respectively while exports to closer partners—SRIEs—increased. Thus, the elimination of quotas encourages regional trade; in the case of Fiji, it created a trade diversion from distant partners to proximal ones.

Fiji sourced most of its intermediate products regionally and from the Asian market. The bulk of intermediates, specifically cotton and manmade staple fibres, came from Australia (48 per cent). The share of imports from countries such as New Zealand, Thailand, China and India increased. The increased in imports from China and India were most probably a consequence of their increased competitiveness. Hence, their competitive price might well outweigh distance cost. Nevertheless, sourcing regionally may confer cost and proximity advantages.

There is a strong or embedded[43] relationship between Fiji's export of garments to Australia and New Zealand, and her imports of textile yarn from them. Fiji's dependence on Australia increased in parallel with the growth of the Fijian garment industry. Fiji is a key supplier of major Australian brands such as Rip Curl, Just Jeans and Wet Wet Wet. Despite the dismantlement of the MFA and political unrest in the country the Fijian T&C industry survived although at a smaller size. One explanation for its observed resilience is due to the *embeddedness* of firms with the T&C industry of Australia and New Zealand. Policies in these main markets largely supported the T&C industry in the SRIE. Australian tariffs on clothing will only be eliminated by 2020, thus, protecting Australian and hence Fijian firms. Firms, in particular, global firms such as Ghim Li, which were serving the US market under the quota-system, shut down all their operations shortly after the end of the MFA (Storey 2006).

6.3.1 DO PREFERENTIAL TRADING ARRANGEMENTS MASK INEFFICIENCIES IN THE FIJIAN T&C INDUSTRY?

[43] Weller discussed the concept of *embeddedness* in the context of the Fiji-Australian T&C networks. He defined embedded relations as the "multiple social, cultural, political, historical, and personal relationships that situate actors in networks, regions, and social groups." (Weller 2006, p.1251). Embedded relations (which are not merely linear relations) are usually dynamic, uneven and spatial and include the relationships of network actors with each other, the relationships of each actor to the network as a whole, and the relationships of the network to the spatial context.

Fiji's clothing industry is considered as a low-wage low-skill sector where activities are reduced to cut-make-trim. Regional and preferential trading agreements contributed to labelling the sector as such; investors choose to rely on the availability of cheap labour instead of introducing new technologies. Although preferential trading agreements encouraged exports, they were blamed for perpetuating an industry that cannot "add value to products and develop key markets outside the region" (Storey 2006, pp.217-218). This kind of "dependent development" might not be sustainable in the longer run. In fact, trade liberalisation led to various factory closures, in particular, those serving the US markets. Imports of garments flocked into the island, in particular from Australia but also from China (17.4 per cent) and recently India (20.7 per cent).

The ICS had provided Australian exporters with import credits and gave them incentives to add value in Australia then exporting to Fiji for processing (the ICS is now terminated). Under SPARTECA[44], the finished product could re-enter Australia. As a result, the clothing sector in Fiji remained restricted to cut-make-trim operations whereby they could export the finished product duty- and quota-free to Australia. Such a scheme did not provide incentives to capture new markets through product and technology development. Another limitation was its perverse effects on productivity. Manufacturers deliberately operated below optimum productivity level for fear of not meeting the minimum local area content (LAC) requirement (Grynberg 2005). SPARTECA (Textile, clothing and footwear) complements SPARTECA. While it still has a 50 per cent LAC clause, excess LAC (ELAC) can be transferred to non-eligible goods. ELAC is only derived where a product's LAC exceeds 70%. Similarly, ELAC can only be used where a product's LAC is greater than 35%, and where there is a last process of manufacture performed in one of the Forum Island Countries (FIC).

Fiji's clothing industry has been shaped by global and regional forces over time. Like many other SRIEs, its share of T&C on world market is quite small. The lobbying capacity of small islands is often limited as the rules of trade are dictated by the big players. Regionalism is itself a response to globalisation. In 2003, Pacific island states formed the Pacific Island Countries Trade Agreement (PICTA) where they agreed to gradually remove barriers to trade so as to strengthen, expand and diversify trade between member countries and, ultimately, laying

[44] SPARTECA allows garment manufacturers in Forum Island Countries (FICs) preferential but non-reciprocal access to the markets of Australia and New Zealand in the form of duty-free and unrestricted access or concessional access. Members of the FICs are Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Republic of the Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. New Caledonia and French Polynesia were granted Associate membership in 2006.

the foundations for a free trade area. Today, there are 16 members[45] with Tuvalu joining in 2008. Storey (2006) reports that firms started to build markets in non-traditional locations such as Cook Island and New Caledonia. Again, this tendency toward regional integration supports the fourth hypothesis.

6.3.2 LABOUR ISSUES

The new face of the T&C global industry, that is, an industry free of quotas, poses challenges for SRIEs. Ernst et al. (2005) suggested that small economies aiming to overcome the loss of preferential agreements and face the low-costs competition should change their production strategy: they should focus on higher value-added activities and move up the value chain or integrate with larger players. A few companies in Fiji have successfully re-positioned themselves but their sustainability is doubtful.

While trade agreements have transformed the nature of comparative advantages, labour costs remain important in the manufacture of T&C. Minimum wages, working conditions and other labour issues are factors that shape trade patterns and determine the positioning on the global value chain. Wages in the Fijian garment sector were considerably lower than the average manufacturing wage. There appears to be resistance to move to a higher-wage industry despite the call by some, in particular labour rights activists, to base the comparative advantages of the sector on skilled-labour, quality and efficiency instead of baulking the industry on a low-wage premise. In fact, firms are unwilling to invest in the more productive processes because they want to ensure having preferential access to the Australian market (Storey 2006). Hence, Australia is in part maintaining the Fijian industry in a low productivity segment.

6.3.3 CONCLUDING REMARKS FOR STRUCTURE AND COMPOSITION OF SRIES T&C SECTOR

In the above, the cases of four SRIEs were examined. Although they are all small and remote, and were affected by the MFA, they formed three distinct groups. Mauritius and Madagascar, both African countries, are examined together as their industries are closely interlinked; they are also both affected by the AGOA. Fiji, located in Oceania, is embedded in that region T&C industry and is, therefore, ruled by its regional trade policies. Sri Lanka, an Asian SRIE, demarcates itself from the other two groups. All of them were subject to the MFA regulations and had the USA and, except Fiji, the EU as main markets.

[45] Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

In light of the hypotheses laid out, the cases suggest useful answers. The first hypothesis, which claims that where quotas are not binding trade will expand, can be confirmed in all the cases. Trade was created and then expanded between SRIEs and the quota allocators. The argument that the abolition of quotas should lead to a reduction in trade, is only partly supported; while, trade was reduced with the most remote quota allocator (US), trade eventually increased with the less remote one (EU). Distance costs appear to remain important for SRIEs in line with the gravity model (Disdier & Head 2008).

An investigation into the cases revealed that the quota system led to trade dispersion. This is in favour of the second hypothesis. Investors decentralised their production in SRIEs to benefit not only from quotas but also from the then low wages that prevailed in those developing or less developed countries. It is evident in the cases that SRIEs are, primarily, apparel exporters: apparel production is relatively more labour-intensive, hence, the global manufacturers chose to decentralise this activity.

The third hypothesis claims that the quota system held back upgrading in the T&C industries of SRIEs. The Fijian case illustrates how productivity was held back. The hypothesis also claims that the elimination of quotas would encourage them to upgrade so as to survive in the more competitive environment. The literature analysed supports the claim that the quota elimination triggered the better performing SRIEs to upgrade. This is particularly true in the case of Mauritius. As documented before, upgrading takes different form: apart from upgrading to complex or differentiated products, one can upgrade by moving towards an integrated form of production, such as, OEM/OBM. Mauritius achieved both. An empirical analysis of unit value would be particularly useful to test this hypothesis. The next section addresses this issue.

In addition, an ultimate form of upgrading involves moving from bilateral to intra-regional form of fragmentation of production. Mauritian firms relocated in Madagascar to maximise efficiency. In addition, regional trade increased. Thus, the fourth hypothesis is also supported by the cases of Mauritius and Madagascar.

7. UNIT VALUE ANALYSIS

Trade policies affect trade and production patterns. Hence, as documented in the previous section, the elimination of the MFA changed the T&C map. In this empirical section, unit-value analyses are used to investigate the effects of trade policies on apparel production decisions of SRIEs. The elimination of quotas changed world prices of T&C products and, thus, the

competitiveness of producing and exporting countries. In an open-trade environment, smaller exporters are at a greater disadvantage as they cannot benefit from scale economies and face high trade costs. Low-costs producers, such as, the South East Asian and Asian countries, were putting (and continue to do so) downward pressures on prices and have threatened to take over the formerly guaranteed markets of SRIEs. It is possible that SRIEs which are small exporters relative to world exports may have moved their production towards higher value-added products in order to maintain their competiveness and survive alongside the fierce competitors. However, moving up the value-chain requires changes in areas of technology, innovation and labour policies. This change of strategy might not have been easy for all SRIEs.

This section aims at examining the third hypothesis. Has the elimination of the MFA triggered industrial upgrading in the T&C industry of SRIEs? Which SRIEs achieved upgrading? It is possible that, in the post-quota period, SRIEs undertook industrial upgrading as proposed by the global value chain framework. In particular, those SRIEs which have acquired a comparative advantage during the quota period and/or those which have a more established T&C sector should have embarked in industrial upgrading. This is because they had no choice but to face the competition or exit. Upgrading will have taken the form of moving from simple to complicated products and moving from standardised to differentiated products.

7.1 DATASET

The *Eurostat* database (Comext[46]) is used to source export[47] data. Values are reported in Euros and quantities in 100 kg. This dataset is favoured over the *UNcomtrade* dataset because data on quantities are available in a relatively more consistent manner than the UN data. Reliable data on quantities are essential for reaching convincing conclusions from the unit-value analysis. The use of the *Eurostat* data implies that the only market under study is the EU. This is undoubtedly a limitation of using this dataset because the EU is not the main market for all countries, in particular, for Fiji[48]. However, the EU remains the main market for all the other SRIEs.

Disaggregated data at the 6-digits[49] level are used so as to understand which product groups are more sensitive to price changes and whether higher-valued items are favoured over lower-valued ones. The literature on the MFA elimination more often uses data at 2-digits level but data at 6-digits have also been used (Nordas 2004; Kowalski & Molnar 2009). Using data at fewer digits involved the danger of obscuring quality changes. The study focuses on items of

[46] http://epp.eurostat.ec.europa.eu/newxtweb/
[47] The Eurostat comext database reports the exports and imports of the EU with the rest of the world. In order to measure the exports of SRIEs, EU imports from each SRIE were used.
[48] Fiji's main market for apparel exports is Australia.
[49] Annex II provides a list of the products. For space sake they are reported only at 4-digits level.

apparel and clothing with HS codes beginning with the numbers 61 and 62. These two product categories constitute the largest export group for SRIEs. Since prices are not available, unit values are used as proxies; it follows that whenever the term prices are used, it is actually unit-values.

Three time periods are considered: 2000-2002, 2003-2005 and 2006-2009 referred to as period 1, 2 and 3 respectively. In 2005, the quota-system was abolished: period 3 is called the post-quota period while period 1 the pre-quota one. The dataset was cleaned for observations where initial unit values were not available to maintain consistency with subsequent analysis. Observations for which there were extreme unit-value changes from one period to another were dropped. The cases of Fiji, Madagascar, Maldives, Mauritius, Northern Mariana Islands, Sri Lanka and French Polynesia are investigated. The choice of cases is primarily motivated by the significance of T&C for these economies and secondly for comparative purposes. However, the final choice of islands included is limited by the availability of reliable data.

The following section documents the findings. The methodology has already been documented in section 3.

7.2 FINDINGS OF THE UNIT VALUE ANALYSIS

If SRIEs have adjusted their production towards products whose values have increased during the period, there should be a positive relationship between changes in quantity produced and changes in unit-value, that is, a positive correlation of price-quantity for period 2 to 3 and period 1 to 3. The results are reported in Table 12. The table also reports the correlations for the product groups 61 and 62 which separates articles of apparel and clothing that are knitted or crocheted (HS code 61) and those that are not knitted or crocheted (62) (note that the analysis was done at 6 digits level but only the two broad categories are reported here). There is a negative relation between unit-value and quantity changes over the period (1 to 3) except for Madagascar and Northern Mariana Islands. This result generalises to the rest of the world and is more pronounced in articles of apparel that are not knitted or crocheted.

The findings suggest that an increase (decrease) in prices during any of the periods did not encourage SRIEs to increase (reduce) production in that same period. Several explanations may lie behind this result. First, SRIEs may have adjusted their production before the end of the quota system since the latter was "phased-out" gradually over a 15 year span. Second, the products whose prices have increased over the period may not necessarily be the high-valued items; the prices of low-valued products may also have increased. Third but unlikely, the quota-

abolition may not have affected SRIEs production decisions. It is true that, for example, Mauritius had embarked quite early in a restructuring of its industry to better cope with the policy changes. Thus, this may not be reflected in the recent figures.

TABLE 12 CORRELATIONS BETWEEN PERCENTAGE CHANGES IN UNIT VALUE AND QUANTITY

	Period				*Period*				*Period*			
	Prod. group	**1 to 3**	**1 to 2**	**2 to 3**	***Prod. group***	**1 to 3**	**1 to 2**	**2 to 3**	***Prod. group***	**1 to 3**	**1 to 2**	**2 to 3**
Fiji	*61-62*	-0.14	-0.18	-0.10	*61*	-0.91	0.45	-0.03	*62*	-0.03	-0.46	-0.24
Sri Lanka	*61-62*	-0.18	-0.27	-0.32	*61*	-0.22	-0.20	-0.37	*62*	-0.30	-0.28	-0.28
Madagascar	*61-62*	0.11	-0.17	-0.11	*61*	0.29	-0.11	-0.13	*62*	0.06	-0.21	-0.10
Mauritius	*61-62*	-0.15	-0.19	-0.17	*61*	-0.22	-0.26	-0.24	*62*	-0.12	-0.22	-0.17
Maldives	*61-62*	-0.80	-0.01	-0.65	*61*	-1.00	-0.27	-1.00	*62*	n.a.	-0.05	n.a.
N. Mariana Isds	*61-62*	0.04	0.22	0.10	*61*	-0.01	0.38	0.04	*62*	0.84	-0.33	0.96
Fr. Polynesia	*61-62*	-0.20	0.52	0.32	*61*	1.00	0.50	-0.81	*62*	-0.24	0.50	-0.81
R.O.W	*61-62*	-0.23	-0.02	-0.32	*61*	-0.24	-0.02	-0.33	*62*	-0.31	-0.29	-0.39

Data sourced from Eurostat (Comext) database

TABLE 13 CORRELATIONS BETWEEN PERCENTAGE CHANGES IN UNIT VALUE (1-2) AND QUANTITY (2-3)

	Product group	**corr.**	**Product group**	**corr.**	**Product group**	
Fiji	61-62	-0.20	61	-0.60	62	-0.20
Sri Lanka	61-62	0.10	61	0.20	62	0.20
Madagascar	61-62	0.20	61	0.10	62	0.40
Mauritius	61-62	0.01	61	0.11	62	-0.02
Maldives	61-62	-0.66	61	1.00	62	n.a.
N. Mariana Isds	61-62	-0.30	61	-0.21	62	-0.99
Fr. Polynesia	61-62	-0.27	61	0.93	62	n.a.
R.O.W	61-62	0.28	61	0.31	62	0.18

Data sourced from Eurostat (Comext) database

To correct for the lag between production decisions and changes in export prices, changes in quantities in period *t* were correlated with changes in unit-values in *t -1,* that is, the previous period. Table 13 reports the results of the correlations between changes in unit-values in period 1 to 2 with changes in quantities in the post-quota period (2 to 3). There is a positive relation between changes in unit-values and quantities of apparel and clothing for Sri Lanka, Madagascar, Mauritius and the rest of the world exports. This suggests that these countries have adjusted their production based on earlier prices. The disaggregated data which distinguished between articles that are knitted or crocheted and those that are not, suggests that the positive correlation is more generalised for articles that are knitted or crocheted. However, the rest of the world experienced an increase (decrease) in exports for both categories of products whose prices have increased (decreased) in the previous period. The highest positive correlation for the rest of the world is in articles that are knitted or crocheted.

7.2.1 HIGH–VALUED OR LOW-VALUED PRODUCTS

To understand whether higher-valued products were prioritised over lower-valued ones and which SRIEs produced quality/high-valued products, the evolution of the highest- and lowest-valued items are investigated. Three procedures are used to identify high- and low-valued items.

7.2.1.1 PROCEDURE 1

In the first instance, the 5 highest and lowest valued items for each country are considered as high-valued and low-valued respectively. Initial period values are used. The advantage of this procedure allows the identification of items for which each country obtains the highest unit-value according to their standards. Moreover, not all countries produce each and every item. It follows that high and low valued items differ between countries and differ in their values. The findings from the three procedures are reported in the three subsections below.

Tables 14 and 15 list the highest- and lowest-valued items for each country and for the rest of the world as per the first procedure. The variation in high-valued items is impressive ranging from €2176[50] (men's or boys' trousers, etc made of synthetic fibres) to €52143 (shawls, scarves, etc of wool or fine animal hair). Low-valued items ranges from €329 (women's or girls' ensembles of synthetic fibres) to €2853 (women's or girls' dresses of cotton).

[50] All values reported in € are per 100 kg of the product.

TABLE 14 LIST OF 5 HIGHEST VALUED PRODUCTS

	HS Codes	High-valued products	Unit-value per 100 kg
	610990	T-SHIRTS, SINGLETS ETC KNITTED OR CROCHETED	7920
	611030	JERSEYS, PULLOVERS, CARDIGANS, ETC	7617
Fiji	620293	WOMEN'S SKI-JACKETS, WIND-CHEATERS, ETC	7423
	620640	WOMEN'S BLOUSES, SHIRTS	6802
	610463	WOMEN'S TROUSERS, BIB AND BRACE OVERALLS	6245
	620729	MEN'S NIGHTSHIRTS, PYJAMAS OF TEXTILE MATERIALS	17647
	610719	MEN'S UNDERPANTS, BRIEFS OF OTHER TEXTILE MATERIALS	15822
Sri Lanka	620610	WOMEN'S BLOUSES, SHIRTS OF SILK	11779
	621230	CORSELETTES OF ALL TYPES OF TEXTILE MATERIALS	7198
	621010	GARMENTS MADE UP OF FELT OR NONWOVENS	7028
	621420	SHAWLS, SCARVES, MUFFLERS, OF WOOL OR FINE ANIMAL HAIR	52195
	621410	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF SILK OR SILK WASTE	35711
Madagascar	611410	SPECIAL GARMENTS FOR PROFESSIONAL, SPORTING	18411
	621440	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF ARTIFICIAL FIBRES	16396
	621510	TIES, BOW TIES AND CRAVATS OF SILK OR SILK WASTE	16364
	621410	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF SILK OR SILK WASTE	37807
	621310	HANDKERCHIEFS OF SILK OR SILK WASTE	21933
Mauritius	611012	JERSEYS, PULLOVERS, CARDIGANS OF HAIR OF KASHMIR GOATS	21262
	621440	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF ARTIFICIAL FIBRES	14577
	610822	WOMEN BRIEFS AND PANTIES	10549
	620630	WOMEN'S BLOUSES, SHIRTS OF COTTON	5230
	610822	WOMEN BRIEFS AND PANTIES	2903
Maldives	620520	MEN'S SHIRTS OF COTTON	2524
	610432	WOMEN JACKETS AND BLAZERS OF COTTON	2458
	620343	MEN'S TROUSERS, BIB AND BRACE OF SYNTHETIC FIBRES	2173
	620451	WOMEN'S SKIRTS OF WOOL OR FINE ANIMAL HAIR	14000
	620459	WOMEN'S SKIRTS OF TEXTILE MATERIALS	12074
Northern Mariana Islands	620461	WOMEN''S TROUSERS OF WOOL OR FINE ANIMAL HAIR	11285
	620432	WOMEN JACKETS AND BLAZERS OF COTTON	8135
	620463	WOMEN'S TROUSERS,OF SYNTHETIC FIBRES	8119
	620520	MEN'S SHIRTS OF COTTON	9909
French Polynesia	621143	WOMEN'S TRACKSUITS AND OTHER GARMENTS	3419
	610910	T-SHIRTS, SINGLETS OF COTTON, K/C	3115
	621142	WOMEN'S TRACKSUITS ETC, N.E.S. OF COTTON	2666
	611012	JERSEYS, PULLOVERS, OF HAIR OF KASHMIR GOATS, K/C	10770
	621410	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF SILK OR SILK WASTE	10623
R. O. W.	621310	HANDKERCHIEFS OF SILK OR SILK WASTE	10399
	621510	TIES, BOW TIES AND CRAVATS OF SILK OR SILK WASTE	7650
	610311	MEN'S SUITS OF WOOL OR FINE ANIMAL HAIR, K/C	7265

Data sourced from Eurostat (comext) database

TABLE 15 LIST OF 5 LOWEST VALUED PRODUCTS

	HS Codes	Low-valued products	Unit-value per 100 kg
	621030	GARMENTS RUBBERISED ETC WITH PLASTICS OR OTHER SUBSTANCES	2572
	620112	MEN'S OVERCOATS, RAINCOATS OF COTTON	2438
Fiji	620111	MEN'S OVERCOATS, RAINCOATS OF WOOL OR FINE ANIMAL HAIR	2364
	621020	GARMENTS RUBBERISED OR IMPREGNATED, ETC WITH PLASTICS	2130
	611211	TRACK-SUITS OF COTTON, K/C	1162
	610290	WOMEN'S OVERCOATS OF TEXTILE MATERIALS, K/C	966
	621133	MEN'S TRACKSUITS ETC, N.E.S. OF MAN-MADE FIBRES	948
Sri Lanka	611610	GLOVES, MITTENS IMPREGNATEDWITH PLASTICS ETC	840
	611692	GLOVES, MITTENS OF COTTON, K/C	725
	621132	MEN'S TRACKSUITS ETC, N.E.S. OF COTTON	622
	610322	MEN'S OR BOYS' ENSEMBLES OF COTTON	1120
	620342	MEN'S TROUSERS, BIB , OF COTTON	1120
Madagascar	620530	MEN'S SHIRTS OF MAN-MADE FIBRES	1088
	611490	SPECIAL GARMENTS FOR PROFESSIONAL, SPORTING OF TEXTILE MATERIALS, K/C	919
	610120	OVERCOATS, CAR COATS, CAPES, OF COTTON	687
	610429	WOMEN'S ENSEMBLES OF TEXTILE MATERIALS	1048
	621050	WOMEN'S GARMENTS OF TEXTILE FABRICS, RUBBERISED OR IMPREGNATED	989
Mauritius	620620	WOMEN'S OR GIRLS' BLOUSES, SHIRTS OF WOOL OR FINE ANIMAL HAIR	801
	611519	PANTY HOSE AND TIGHTS OF TEXTILE MATERIALS, K/C	597
	620191	MEN'S SKI-JACKETS, WIND-CHEATERS, OF WOOL OR FINE ANIMAL HAIR	532
	620192	MEN'S SKI-JACKETS, WIND-CHEATERS, COTTON	969
	610829	WOMEN'S OR GIRLS' BRIEFS AND PANTIES OF TEXTILE MATERIALS	935
Maldives	620332	MEN'S OR BOYS' JACKETS AND BLAZERS OF COTTON	884
	610990	T-SHIRTS, SINGLETS AND OTHER VESTS OF TEXTILE MATERIALS	818
	610130	OVERCOATS, CAR COATS, CAPES	798
	610442	WOMEN'S OR GIRLS' DRESSES OF COTTON	2853
	610462	WOMEN'S OR GIRLS' TROUSERS, BIB OF COTTON	2553
N. Mariana Islands	610990	T-SHIRTS, SINGLETS AND OTHER VESTS OF TEXTILE MATERIALS	2289
	611120	BABIES' GARMENTS AND CLOTHING ACCESSORIES OF COTTON	2160
	620342	MEN'S TROUSERS, BIB OF COTTON	1824
	621440	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF ARTIFICIAL FIBRES	2346
French Polynesia	611020	JERSEYS, PULLOVERS, CARDIGANS OF COTTON	1653
	620630	WOMEN'S BLOUSES, SHIRTS OF COTTON	1109
	620442	WOMEN'S OR GIRLS' DRESSES OF COTTON	791
	610819	WOMEN'S OR GIRLS' SLIPS AND PETTICOATS OF TEXTILE MATERIALS	579
	620792	MEN'S OR BOYS' SINGLETS ETC OF MAN-MADE FIBRES	568
R. O. W.	610719	MEN'S OR BOYS' UNDERPANTS OTHER TEXTILE MATERIALS	531
	610323	MEN'S OR BOYS' ENSEMBLES OF SYNTHETIC FIBRES	520
	610423	WOMEN'S OR GIRLS' ENSEMBLES OF SYNTHETIC FIBRES	329

Data sourced from Eurostat (comext) database

While the highest valued item for Mauritius consists of shawls, scarves and similar items made of silk that of Maldives consists of women's or girls' blouses and similar items made of cotton. The unit-values of similar items tend to differ, for instance, men's or boy's shirts of cotton are valued at €2524 for Maldives, they are valued at €9909 for French Polynesia. The difference seems of lesser importance for Mauritius and Madagascar for items such as shawls and scarves made of silk. The T&C industries of the two countries are closely tied.

TABLE 16 AVERAGE PERCENTAGE CHANGES FOR HIGH- AND LOW-VALUED PRODUCTS (1ST PROCEDURE)

	Average % change in high-valued items				**Average % change in low-valued items**			
	Unit Value		**Quantity**		**Unit Value**		**Quantity**	
SRIEs/Period	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*
Fiji	-57%	37%	117%	385%	-14%	10%	1118%	117%
Sri Lanka	-63%	-39%	462%	439%	13%	8%	-22%	-23%
Madagascar	-8%	-12%	33%	22%	214%	96%	1103%	84%
Mauritius	-43%	-19%	72%	-19%	141%	43%	-21%	8%
Maldives	-85%	-69%	-50%	-50%	n.a.	n.a.	n.a.	n.a.
N. Mariana Isds	-52%	-38%	-43%	-20%	29%	23%	55%	-77%
Fr. Polynesia	-15%	-7%	99%	55%	18%	n.a.	1700%	n.a.
average	**-46%**	**-21%**	**99%**	**116%**	**67%**	**36%**	**656%**	**22%**
R. O. W.	**-42%**	**-16%**	**194%**	**40%**	**60%**	**49%**	**-33%**	**-43%**
Period	*1 to 3*	*2 to 3*			*1 to 3*	*2 to 3*		
Corr. UV-Qty[51]	-0.08	0.44			-0.04	0.32		

Data sourced from Eurostat (comext) database

The average percentage changes in high and low valued items identified according to the first procedure are reported in Table 16. Most of the SRIEs experienced an increase in the quantities of high-valued items over period 1 to 3 except for Maldives and the Northern Mariana Islands. Indeed, data for the last two were sparsely available. Sri Lanka experienced the greatest increase amounting to 462 per cent. On average quantities of high-valued items increased for SRIEs both over the period 1 to 3 and in the post-quota period. This arises despite a decrease in the values of high-valued items. The same trend is observed for the rest of the world, that is, an increase in quantities but a decrease in unit-value of high-valued items. There is a positive correlation between percentage changes in unit value-quantity in the post-quota period; this result reinforces the hypothesis that high-valued items were given a priority irrespective of

[51] These correlations exclude the R.O.W.

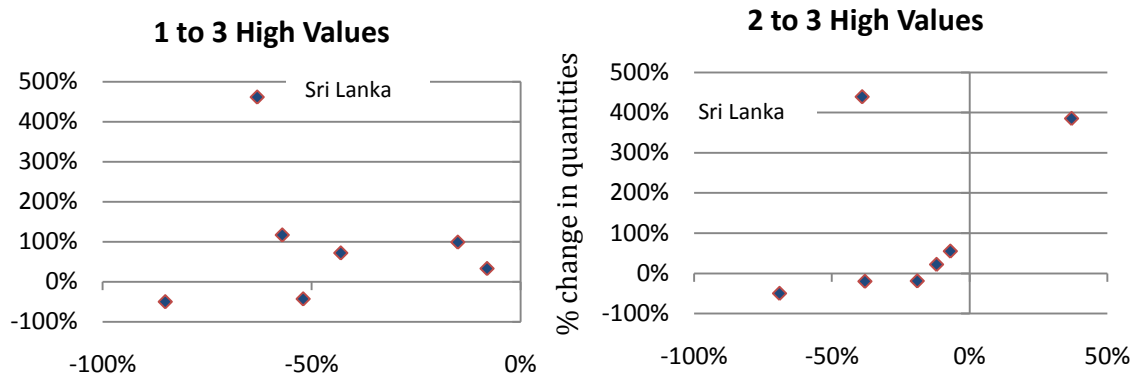
their recent price movements. However, there is a negative correlation over period 1 to 3. This is due to the high leverage played by Sri Lanka. To detect outliers, changes in unit values and quantities for each of the different periods were plotted against each other. Figure 2 illustrates the scatter plots for the high-valued and low-valued items. When Sri Lanka is omitted, the correlation for period 1 to 3 becomes positive while that of period 2 to 3 becomes strongly positive.

Sri Lanka and Mauritius experienced a decrease in the quantities of low-valued items in period 1 to 3. The Maldives production ceased altogether, hence, no data was available. All the other SRIEs were producing more low-valued items; French Polynesia, Fiji and Madagascar all recorded an increase in production of more than 1000 per cent. As documented previously, Mauritian firms moved their production of basic lower-valued items to Madagascar which may have contributed to this increase. French Polynesia may have taken the opportunity of the quota-free environment to increase its share of clothing exports. The increase in the average quantity of low-valued items is greater than the increase in high-valued items. However, the unit values of low-valued items have also been increasing. Thus, increase in unit-values led to increase in production. This is confirmed by the positive correlation between unit-values and quantities for both high and low valued items in the post-quota period.

Figure 3 illustrates the scatter plots of changes in unit values and quantities for the low-valued items. No conclusion can be drawn from the scatter plots of period 1 to 3 low-valued items as there are 3 large changes and 3 small changes. For period 2 to 3, it is clear from figure 3 that Fiji is influencing the correlation; the correlation becomes strongly positive when Fiji is omitted. Figure 4 reports the results after pooling the deviations from the means over high and low valued products. In period 1 to 3, the large changes in low-valued items destroy the positive correlation from the high-valued items which result in a negative correlation. In period 2 to 3, omitting Sri Lanka renders the correlation more strongly positive.

The findings from this analysis suggest positive correlations between unit value and quantity changes with the exception of Sri Lanka (high-valued products) and Fiji (low-valued products). Pooling over high- and low-valued products underlines that this correlation is problematic for low-valued products. In general, the findings points towards the conclusion that there has been upgrading following the elimination of the MFA.

FIGURE 2. SCATTER PLOTS OF CHANGES IN QUANTITIES VS. UNIT VALUES FOR HIGH VALUED ITEMS (1ST PROCEDURE)

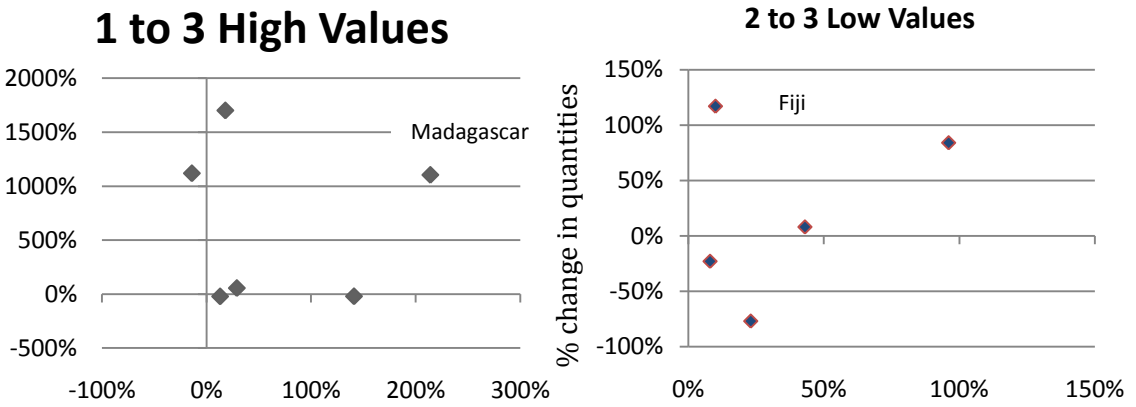


Correlation	*-0.08*
Correlation w/o[52] Sri Lanka	*0.48*

Correlation	*0.44*
Correlation w/o Fiji	*0.87*

Data sourced from Eurostat (comext) database

FIGURE 3. SCATTER PLOTS OF CHANGES IN QUANTITIES VS. UNIT VALUES FOR LOW VALUED ITEMS (1ST PROCEDURE)



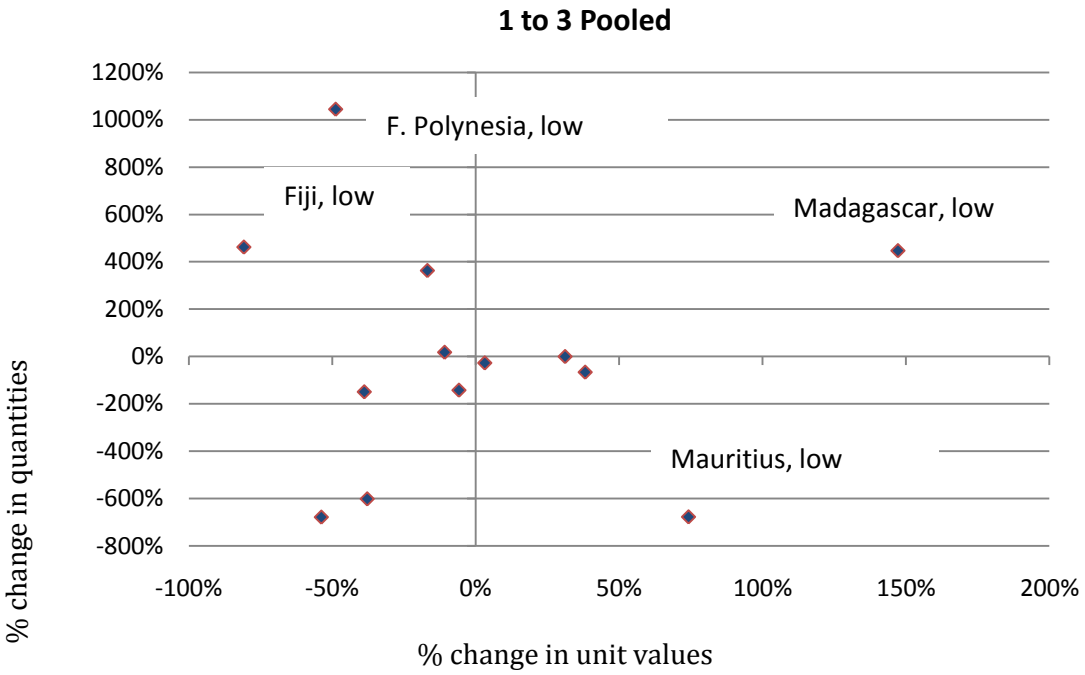
Correlation	*-0.04*

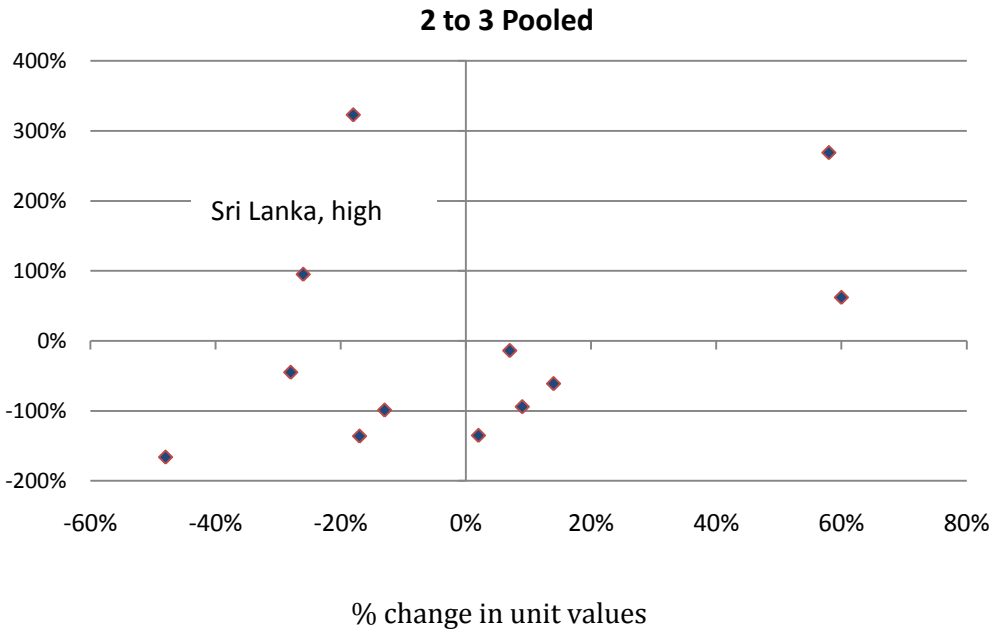
Correlation	*0.32*
Correlation w/o Fiji	*0.88*

Data sourced from Eurostat (comext) database

[52] w/o means without wherever it is used.

FIGURE 4. SCATTER PLOTS OF POOLED DEVIATIONS FOR CHANGES IN QUANTITIES VS. UNIT VALUES (1ST PROCEDURE)





Data sourced from Eurostat (comext) database

7.2.1.2 PROCEDURE 2

TABLE 17 LIST OF 5 HIGHEST VALUED PRODUCTS (2ND PROCEDURE)

	HS Codes	High-valued products	Unit value per 100 kg
	620610	WOMEN'S BLOUSES, SHIRTS AND SHIRT-BLOUSES OF SILK OR SILK WASTE (EXCL. K/C AND VESTS)	11779
	621230	CORSELETTES OF ALL TYPES OF TEXTILE MATERIALS, WHETHER OR NOT ELASTICATED, INCL. K/C	7198
Sri Lanka	621420	SHAWLS, SCARVES, MUFFLERS, MANTILLAS, VEILS AND SIMILAR ARTICLES OF WOOL OR FINE ANIMAL HAIR (EXCL. KNITTED OR CROCHETED)	6473
	620331	MEN'S OR BOYS' JACKETS AND BLAZERS OF WOOL OR FINE ANIMAL HAIR (EXCL. KNITTED OR CROCHETED, AND WIND-JACKETS AND SIMILAR ARTICLES)	6431
	621290	CORSETS, BRACES, GARTERS, SUSPENDERS AND SIMILAR ARTICLES AND PARTS THEREOF, INCL. PARTS OF BRASSIERES, ETC , OF ALL TYPES OF TEXTILE MATERIALS, WHETHER OR NOT ELASTICATED, INCL. K/C	6393
	611012	JERSEYS, PULLOVERS, CARDIGANS, WAISTCOATS AND SIMILAR ARTICLES, OF HAIR OF KASHMIR "CASHMERE" GOATS, K/C (EXCL. QUILTED ARTICLES)	12950
	621310	HANDKERCHIEFS OF SILK OR SILK WASTE, OF WHICH NO SIDE EXCEEDS 60 CM (EXCL. KNITTED OR CROCHETED)	12914
Madagascar	621410	SHAWLS, SCARVES, MUFFLERS, MANTILLAS, VEILS AND SIMILAR ARTICLES OF SILK OR SILK WASTE (EXCL. KNITTED OR CROCHETED)	35711
	621420	SHAWLS, SCARVES, MUFFLERS, MANTILLAS, VEILS AND SIMILAR ARTICLES OF WOOL OR FINE ANIMAL HAIR (EXCL. KNITTED OR CROCHETED)	52195
	621510	TIES, BOW TIES AND CRAVATS OF SILK OR SILK WASTE (EXCL. K/C)	16364
	611012	JERSEYS, PULLOVERS, CARDIGANS, WAISTCOATS AND SIMILAR ARTICLES, OF HAIR OF KASHMIR "CASHMERE" GOATS, KNITTED OR CROCHETED (EXCL. QUILTED ARTICLES)	21262
	611241	WOMEN''S OR GIRLS'' SWIMWEAR OF SYNTHETIC FIBRES, KNITTED OR CROCHETED	6879
Mauritius	620331	MEN'S OR BOYS' JACKETS AND BLAZERS OF WOOL OR FINE ANIMAL HAIR (EXCL. KNITTED OR CROCHETED, AND WIND-JACKETS AND SIMILAR ARTICLES)	5716
	620421	WOMEN'S ENSEMBLES OF WOOL OR FINE ANIMAL HAIR (EXCL. K/C, SKI OVERALLS AND SWIMWEAR)	6934
	620441	WOMEN'S DRESSES OF WOOL OR FINE ANIMAL HAIR (EXCL. K/C AND PETTICOATS)	7286

The second procedure used to identify low- and high-valued items is based on the unit-values of European imports (in other words, the rest of the world exports). Initial period values are used. Unit-values of EU imports range from €329 to €10770. There are 235 product categories at the 6-digits level after cleaning the data. The 20 highest valued product categories are considered as high-valued while the 20 lowest valued products are considered as low-valued. High-valued product categories fall above €3500 while low-valued ones are below €860. If a country produces at most 5 items which belong to the 20 highest valued items (special products are not included) according to EU imports from the rest of the world, these items are classified as high-valued. Similarly, if a country produces at most 5 items which belong to the 20 lowest-valued EU

products, these items are classified as low-valued products. This procedure has the advantage that the products categorised as high- or low-valued will fall within a specific range of values equal for all countries. The disadvantage may be that not all countries produced the products identified as low- and high-valued. The top 5 highest and lowest items are listed in tables 17 above and table 18 respectively.

TABLE 18 LIST OF 5 LOWEST VALUED PRODUCTS (2ND PROCEDURE)

	HS Codes	Low-valued products	Unit value per 100 kg
	610792	MEN'S BATHROBES, DRESSING GOWNS AND SIMILAR ARTICLES OF MAN-MADE FIBRES, KNITTED OR CROCHETED	1462
	610323	MEN'S ENSEMBLES OF SYNTHETIC FIBRES, KNITTED OR CROCHETED (EXCL. SKI ENSEMBLES AND SWIMWEAR)	1227
Sri Lanka	611593	FULL-LENGTH OR KNEE-LENGTH STOCKINGS, SOCKS AND OTHER HOSIERY, INCL. STOCKINGS FOR VARICOSE VEINS AND FOOTWEAR WITHOUT APPLIED SOLES, OF SYNTHETIC FIBRES, K/C (EXCL. PANTYHOSE AND TIGHTS, ETC)	1058
	611610	GLOVES, MITTENS AND MITTS, IMPREGNATED, COATED OR COVERED WITH PLASTICS OR RUBBER, KNITTED OR CROCHETED	840
	611692	GLOVES, MITTENS AND MITTS, OF COTTON, KNITTED OR CROCHETED (EXCL. IMPREGNATED, COATED OR COVERED WITH PLASTICS OR RUBBER, AND FOR BABIES)	725
	611593	FULL-LENGTH OR KNEE-LENGTH STOCKINGS, SOCKS AND OTHER HOSIERY, INCL. STOCKINGS FOR VARICOSE VEINS AND FOOTWEAR WITHOUT APPLIED SOLES, OF SYNTHETIC FIBRES, K/C (EXCL. PANTYHOSE AND TIGHTS, ETC)	2397
	610323	MEN'S ENSEMBLES OF SYNTHETIC FIBRES, KNITTED OR CROCHETED (EXCL. SKI ENSEMBLES AND SWIMWEAR)	9071
Madagascar	610819	WOMEN'S OR GIRLS' SLIPS AND PETTICOATS OF TEXTILE MATERIALS, KNITTED OR CROCHETED (EXCL. MAN-MADE FIBRES, T-SHIRTS AND VESTS)	1572
	620791	MEN'S SINGLETS AND OTHER VESTS, BATHROBES, DRESSING GOWNS ETC OF COTTON (EXCL. K/C, UNDERPANTS, NIGHTSHIRTS AND PYJAMAS)	4188
	611219	TRACK-SUITS OF TEXTILE MATERIALS, KNITTED OR CROCHETED (EXCL. COTTON OR SYNTHETIC FIBRES)	1997
	611593	FULL-LENGTH OR KNEE-LENGTH STOCKINGS, SOCKS AND OTHER HOSIERY, INCL. STOCKINGS FOR VARICOSE VEINS AND FOOTWEAR WITHOUT APPLIED SOLES, OF SYNTHETIC FIBRES, K/C (EXCL. PANTYHOSE AND TIGHTS, ETC)	1970
Mauritius	611692	GLOVES, MITTENS AND MITTS, OF COTTON, KNITTED OR CROCHETED (EXCL. IMPREGNATED, COATED OR COVERED WITH PLASTICS OR RUBBER, AND FOR BABIES)	5165
	620791	MEN'S SINGLETS AND OTHER VESTS, BATHROBES, DRESSING GOWNS AND SIMILAR ARTICLES OF COTTON (EXCL. KNITTED OR CROCHETED, UNDERPANTS, NIGHTSHIRTS AND PYJAMAS)	3780
	621010	GARMENTS MADE UP OF FELT OR NONWOVENS, WHETHER OR NOT IMPREGNATED, COATED, COVERED OR LAMINATED (EXCL. BABIES' GARMENTS AND CLOTHING ACCESSORIES)	6543

Table 19 reports the average percentage changes in high- and low-valued items according to the second procedure. Data are available only for the three largest SRIEs. The average quantity of high-valued items increased by more than 6 times over period 1 to 3 despite stability in unit-values. Madagascar was the only SRIE that experienced a fall in quantities of high-valued items in the post-quota period. The average quantity of low-valued items also increased over period 1 to 3 but was less than the increase in the average quantity of high-valued items. Madagascar reported the highest increase in low-valued items in period 1 to 3.

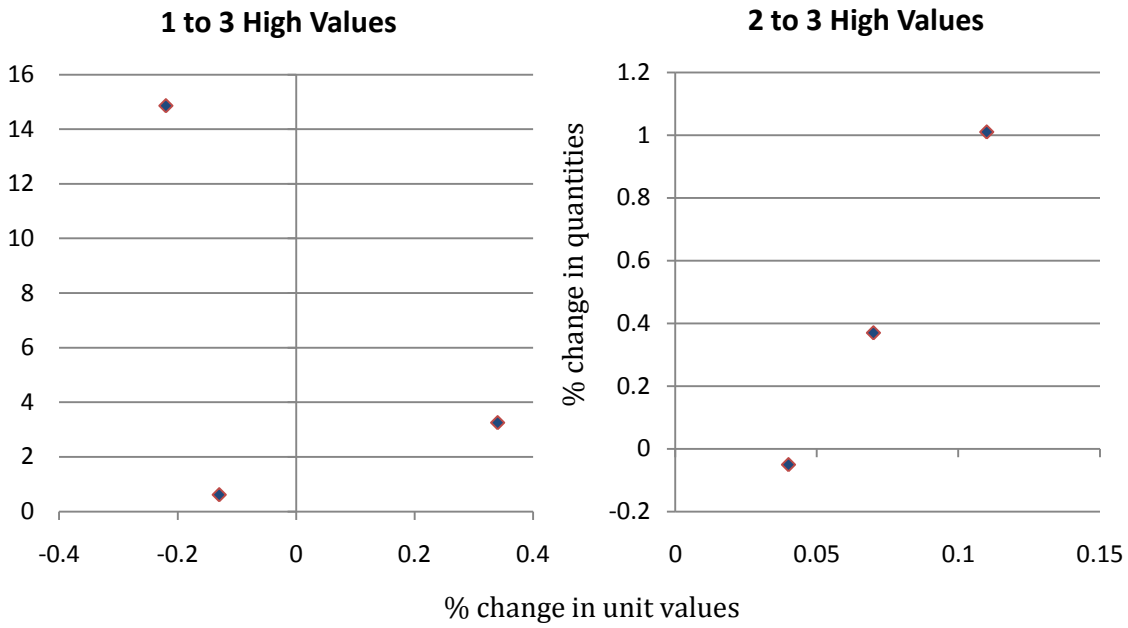
TABLE 19 AVERAGE PERCENTAGE CHANGES FOR HIGH- AND LOW-VALUED PRODUCTS (2ND PROCEDURE- BASED ON R.O.W UNIT VALUES)

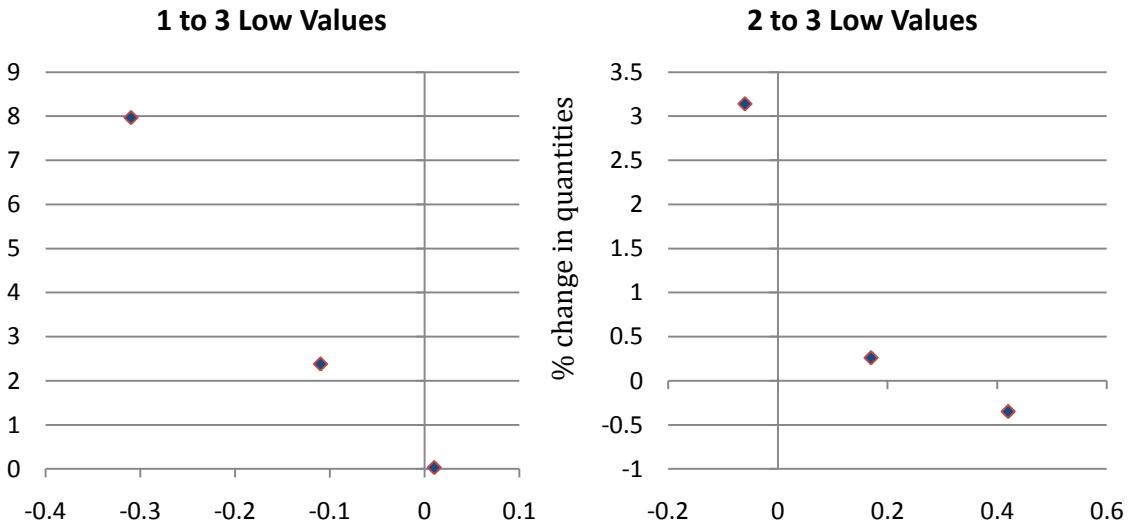
	Average % change in high-valued items				**Average % change in low-valued items**			
	Unit Value		**Quantity**		**Unit Value**		**Quantity**	
Period	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*
Fiji	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sri Lanka	-22%	11%	1486%	101%	1%	-6%	3%	314%
Madagascar	34%	4%	325%	-5%	-31%	42%	797%	-35%
Mauritius	-13%	7%	61%	37%	-11%	17%	238%	26%
Maldives	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
N. Mariana Isds	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Fr. Polynesia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
average	**0%**	**7%**	**624%**	**44%**	**-14%**	**18%**	**346%**	**102%**
R. O. W.	-25%	-4%	151%	71%	29%	31%	100%	42%
Period	*1 to 3*	*2 to 3*			*1 to 3*	*2 to 3*		
Corr. UV-Qty	-0.48	1.00			-1.00	-0.93		

Data sourced from Eurostat (comext) database

The rest of the world was producing more high-valued items despite a fall in unit-values. They also reported an increase in low-valued items but the unit-value of low-valued items also increased. The correlations in unit-value and quantity of both high-valued and low-valued items were negative in the post-quota period but it is difficult to be confident as the findings are based on only three observations. From the scatter plots in figure 5, the paucity of information is evident and no conclusion can be drawn. Pooling suggests a negative relationship in period 2 to 3 but this is based entirely on changes in low-valued items from Madagascar and Sri Lanka.

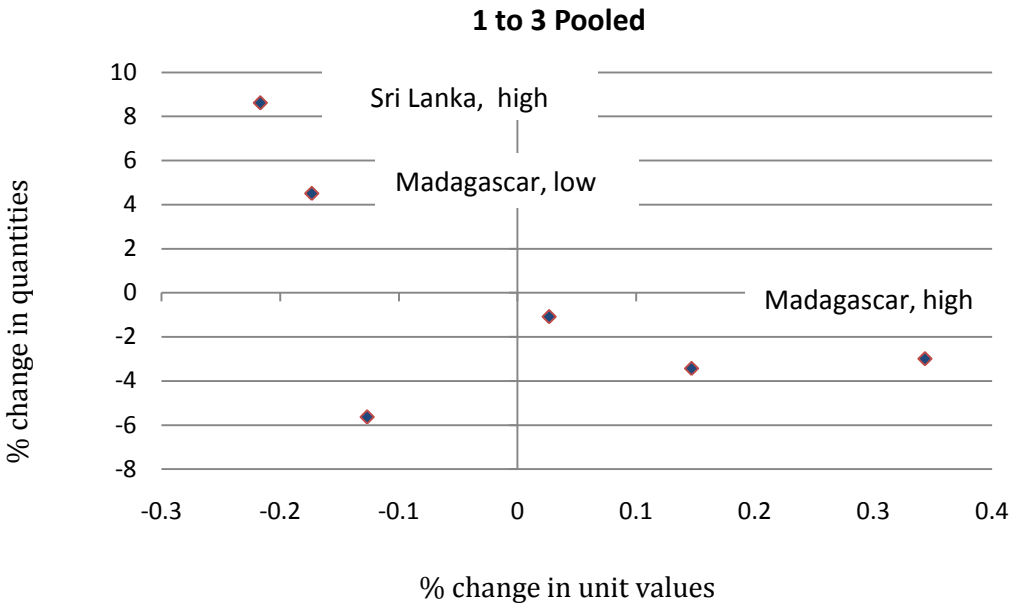
FIGURE 5. SCATTER PLOTS OF CHANGES IN QUANTITIES VS. UNIT VALUES FOR HIGH AND LOW VALUED ITEMS (2ND PROCEDURE)



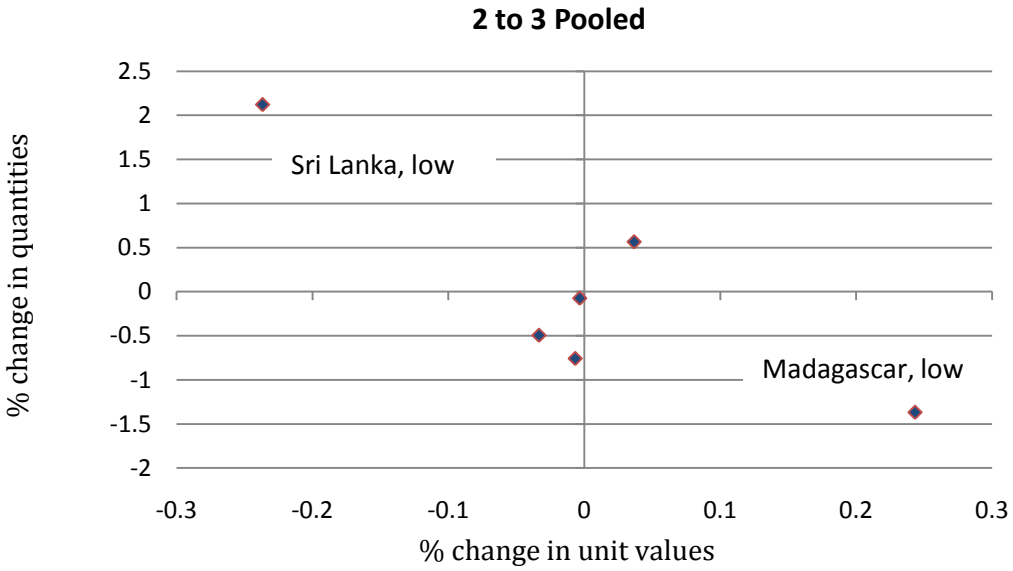


Data sourced from Eurostat (comext) database

FIGURE 6. SCATTER PLOTS OF POOLED DEVIATIONS FOR CHANGES IN QUANTITIES VS. UNIT VALUES (2ND PROCEDURE)



Correlation	-0.59
Correlation w/o Sri Lanka (high) and Madagascar (low)	0.39



Correlation	-0.84
Correlation w/o Sri Lanka (low) and Madagascar (low)	0.83

Data sourced from Eurostat (comext) database

7.2.1.3 PROCEDURE 3

The two above procedures produce different results as far as SRIEs trade in high and low valued products are concerned but more or less similar results for the rest of the world. In the third procedure, I adopt the methodology used by Fontagné and Freudenberg (1997). According to this method, all trade flows can be classified as high, medium or low valued. Other methods tend to make use of both import and export unit-values; for instance, if the unit value of a country's export in a product is greater by 1.15 of its import in that product, Greenaway et al. (1994) would qualify such trade as high-valued vertical intra-industry trade. This procedure implies different criteria for different countries. In addition, it is only providing information on whether export of a certain product is of a higher quality than its import. The method proposed by Fontagné and Freudenberg allows all trade types to be classified into high, medium and low quality. It solves the problem of having differing criteria by comparing unit values of each product to the same average unit-value[53], for instance, the region average.

TABLE 20 AVERAGE PERCENTAGE CHANGES FOR HIGH- AND LOW-VALUED PRODUCTS (3RD PROCEDURE- 15% > OR < THAN R.O.W NORM)

	Average % change in high-valued items				**Average % change in low-valued items**			
	Unit Value		**Quantity**		**Unit Value**		**Quantity**	
Period	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*	*1 to 3*	*2 to 3*
Fiji	-19%	0%	190%	131%				
Sri Lanka	-22%	7%	196%	157%	2%	3%	413%	171%
Madagascar	32%	18%	193%	134%	229%	74%	784%	201%
Mauritius	3%	10%	305%	179%	115%	25%	1%	249%
Maldives	-85%	-69%	-50%	-50%	n.a.	n.a.	n.a.	n.a.
N. **Mariana Isds**	-16%	3%	455%	-15%				
Fr. **Polynesia**	-14%	-7%	83%	55%	160%	n.a.	0%	n.a.
average	-17%	-5%	196%	84%	127%	34%	300%	207%
Period	1 to 3	2 to 3			1 to 3	2 to 3		
Corr. UV-Qty	0.55	0.74			0.27	0.17		

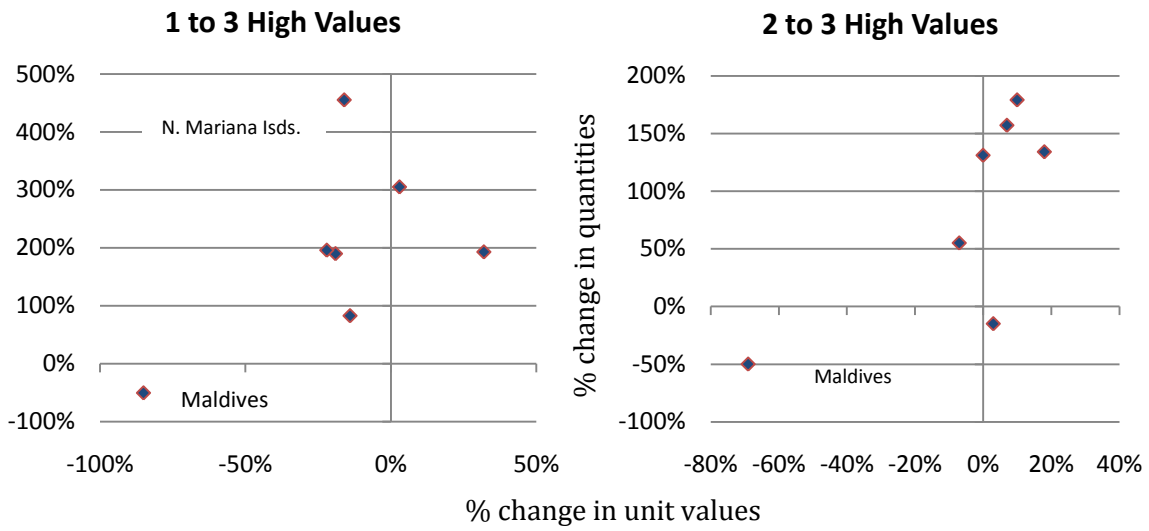
Data sourced from Eurostat (comext) database

In the procedure used in this essay, apparel and clothing exports of SRIEs are classified into three unit-value ranges, high, low and medium valued, based on the rest of the world average unit-value for each item. An item is classified as high-valued (or upmarket product as per Fontagné and Freudenberg) if its unit-value exceeds that of the rest of the world average for

[53] Fontagné and Freudenberg (1997) used the OECD average.

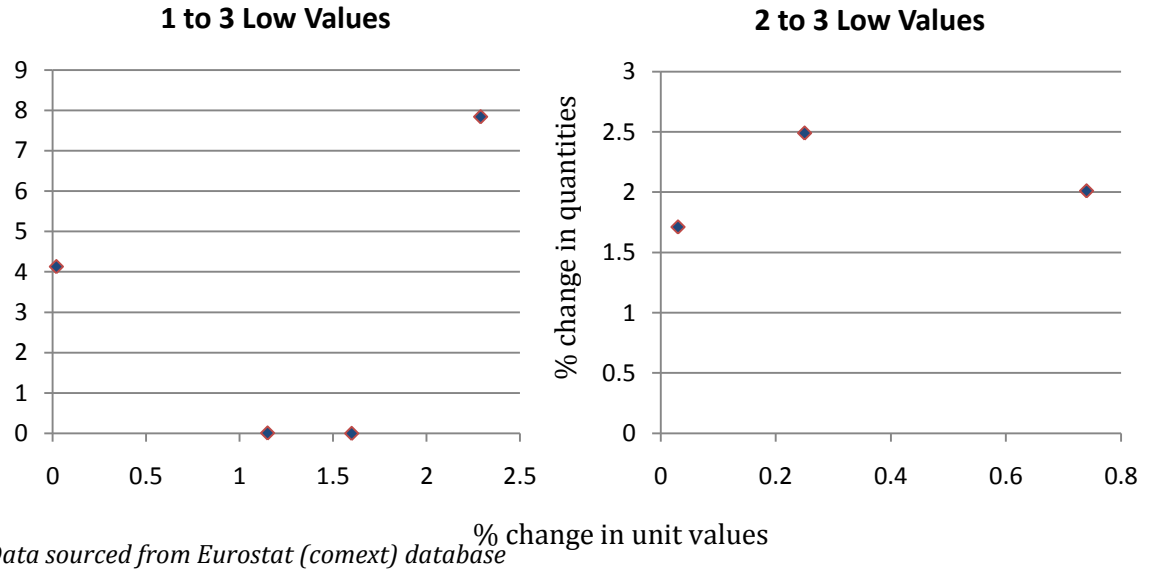
that specific item by more than 15 per cent (as in condition (1) in section 3). An item is classified as low-valued (or down-market) if its unit-value is below that of the rest of the world average for that item by more than 15 per cent (as in condition (2) in section 3). All items in-between are middle market items. Table 20 above, and figures 7 and 8 report the findings.

FIGURE 7. SCATTER PLOTS OF CHANGES IN QUANTITIES VS. UNIT VALUES FOR HIGH AND LOW VALUED ITEMS (3RD PROCEDURE)



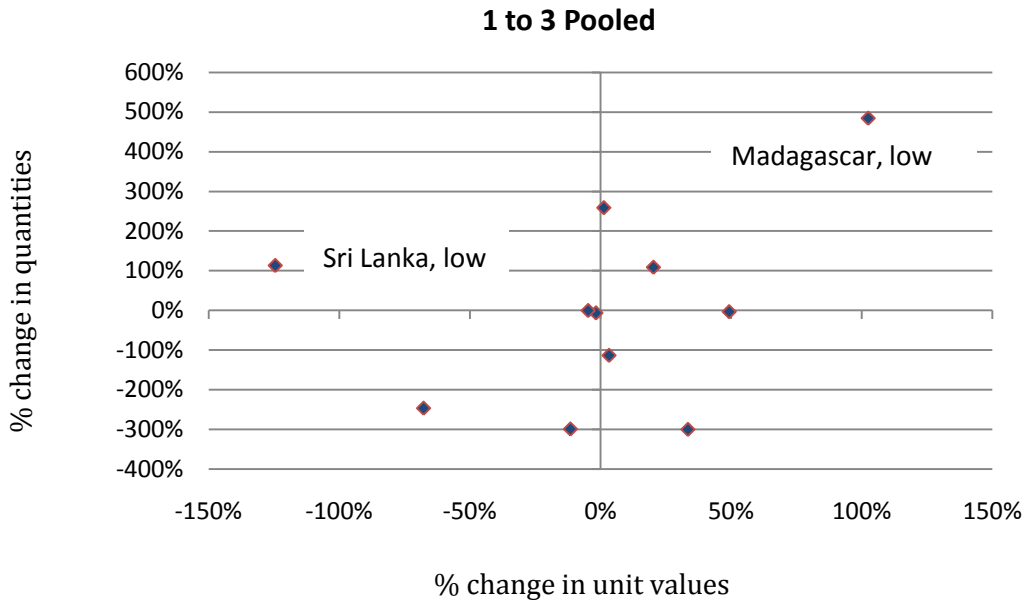
Correlation	*0.55*
Correlation w/o N. Mariana Isds.	*0.78*
Correlation w/o Maldives	*-0.06*

Correlation	*0.74*
Correlation w/o Maldives	*0.50*

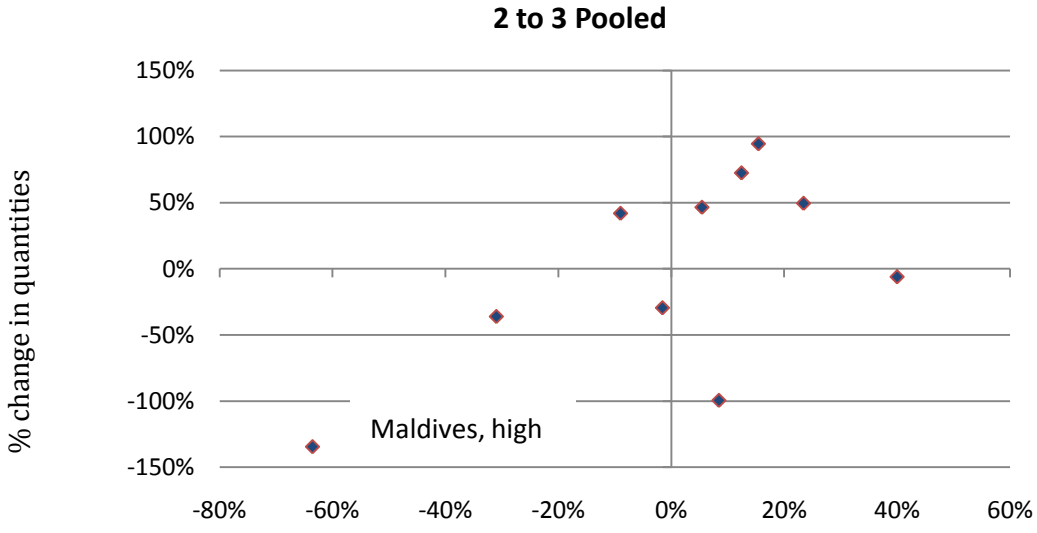


Data sourced from Eurostat (comext) database

FIGURE 8. SCATTER PLOTS OF POOLED DEVIATIONS FOR CHANGES IN QUANTITIES VS. UNIT VALUES (3RD PROCEDURE)



Correlation	0.34
Correlation w/o Sri Lanka (low)	0.63
Correlation w/o Madagascar (low)	-0.08



Correlation	0.61
Correlation w/o Maldives (high)	0.25

Data sourced from Eurostat (comext) database

The influence of the Maldives and the Northern Mariana Islands can be visualised in the scatter plots in figure 7. In the high-value segment, when the Northern Mariana Islands is omitted, the correlation in period 1 to 3 becomes strongly positive but when the Maldives is omitted, the correlation becomes negative. In period 2 to 3, when the Maldives is omitted, the correlation drops. In the low-value segment, no conclusions can be drawn since there are only few observations. Figure 8 reports the pooled deviations from the mean. There is a positive relationship in both periods. In period 1 to 3, the correlation becomes positive when omitting Sri Lanka (low) while it becomes negative when omitting Madagascar (low). In period 2 to 3, the dependence on the Maldives observations is emphasised again; the correlation drops when the Maldives is omitted. Tables 21 and 22 list the 5 highest and 5 lowest items as per the third procedure. The list of both high-valued and low-valued items closely resemble those of the first procedure at least for the 5 top items. But as mentioned previously, more items were classified as high-valued as per the third procedure.

There was an increase in the quantities (in 100 kg) of products produced by SRIEs over the three periods whether in the high or low value segments. Yet, the total number of product varieties fell for all SRIEs with the exception of Sri Lanka[54]. Table 23 reports the change in the number of product varieties. This suggests a tendency to specialise. In the following, I identify in which market segment SRIEs specialised. Figure 9 displays the share and evolution of the number of varieties in the high, low and middle value ranges for each country. With the exception of Sri Lanka and Maldives, all SRIEs were producing more than 60 per cent of high-valued varieties over the three periods. It is evident that SRIEs (except for Sri Lanka and Maldives) are producers of up-market varieties even in the pre-quota period.

However, over the whole period, the share of high-valued varieties decreased with the exception of Madagascar and the Maldives. Madagascar share of high-valued varieties was 84 per cent. The Mauritian share of high-valued varieties was stable around 80 per cent. Sri Lanka was producing less high-valued varieties but more of low-valued ones. Nevertheless, their share of upmarket products was still very high in the post-quota period. The ternary plots in figures 10, 11 and 12 display the shares of the three trade types as in periods 1, 2 and 3 respectively. These figures illustrate that, except for Maldives in period 1, Maldives and Sri Lanka in period 2 and Sri Lanka in period 3, SRIEs were producing well-over 50 per cent of high-valued varieties in all periods.

[54] For example, from period 1 to 2 quantities may have increased by 100 % but in period 1, shirts, blouses and overcoats (3 varieties) were produced while in period 2 only blouses and overcoats (2 varieties).

TABLE 21 LIST OF 5 HIGHEST VALUED PRODUCTS (3RD PROCEDURE)

	HS Codes	High-valued products	Unit value per 100kg
	610990	T-SHIRTS, SINGLETS ETC KNITTED OR CROCHETED	7920
	611030	JERSEYS, PULLOVERS, CARDIGANS, ETC	7617
Fiji	620293	WOMEN'S SKI-JACKETS, WIND-CHEATERS, ETC	7423
	620640	WOMEN'S BLOUSES, SHIRTS	6802
	610463	WOMEN'S TROUSERS, BIB AND BRACE OVERALLS	6245
	620729	MEN'S NIGHTSHIRTS, PYJAMAS OF TEXTILE MATERIALS	17647
	610719	MEN'S UNDERPANTS, BRIEFS OF OTHER TEXTILE MATERIALS	15822
Sri Lanka	620610	WOMEN'S BLOUSES, SHIRTS OF SILK	11779
	621230	CORSELETTES OF ALL TYPES OF TEXTILE MATERIALS	7198
	621010	GARMENTS MADE UP OF FELT OR NONWOVENS	7028
	621420	SHAWLS, SCARVES, MUFFLERS, OF WOOL OR FINE ANIMAL HAIR	52195
	621410	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF SILK OR SILK WASTE	35711
Madagascar	611410	SPECIAL GARMENTS FOR PROFESSIONAL, SPORTING	18411
	621440	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF ARTIFICIAL FIBRES	16396
	621510	TIES, BOW TIES AND CRAVATS OF SILK OR SILK WASTE	16364
	621410	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF SILK OR SILK WASTE	37807
	621310	HANDKERCHIEFS OF SILK OR SILK WASTE	21933
Mauritius	611012	JERSEYS, PULLOVERS, CARDIGANS OF HAIR OF KASHMIR GOATS	21262
	621440	SHAWLS, SCARVES, MUFFLERS, MANTILLAS OF ARTIFICIAL FIBRES	14577
	610822	WOMEN BRIEFS AND PANTIES	10549
	620630	WOMEN'S BLOUSES, SHIRTS AND SHIRT-BLOUSES OF COTTON (EXCL. K/C & VESTS)	5230
	620520	MEN'S SHIRTS OF COTTON (EXCL. K/C, NIGHTSHIRTS, SINGLETS AND OTHER VESTS)	2524
Maldives	610432	WOMEN'S JACKETS AND BLAZERS OF COTTON, K/C (EXCL. WIND-JACKETS ETC)	2458
	620343	MEN'S TROUSERS, BIB AND BRACE OF SYNTHETIC FIBRES	2173
	610462	WOMEN'S TROUSERS, BIB AND BRACE OVERALLS Etc OF COTTON, K/C	1539
	620451	WOMEN'S SKIRTS OF WOOL OR FINE ANIMAL HAIR	14000
	620459	WOMEN'S SKIRTS OF TEXTILE MATERIALS	12074
N. Mariana Islands	620461	WOMEN''S TROUSERS OF WOOL OR FINE ANIMAL HAIR	11285
	620432	WOMEN JACKETS AND BLAZERS OF COTTON	8135
	620463	WOMEN''S TROUSERS,OF SYNTHETIC FIBRES	8119
	620520	MEN'S SHIRTS OF COTTON (EXCL. K/C, NIGHTSHIRTS, SINGLETS AND OTHER VESTS)	9909
	621143	WOMEN'S TRACKSUITS &GARMENTS, N.E.S. OF MAN-MADE FIBRES (EXCL. K/C)	3419
F. Polynesia	610910	T-SHIRTS, SINGLETS AND OTHER VESTS OF COTTON, KNITTED OR CROCHETED	3115
	621142	WOMEN'S TRACKSUITS AND OTHER GARMENTS, N.E.S. OF COTTON (EXCL. K/C)	2666
	621430	SHAWLS, SCARVES, MUFFLERS, MANTILLAS, ETC OF SYNTHETIC FIBRES (EXCL.K/C)	2600

TABLE 22 LIST OF 5 LOWEST VALUED PRODUCTS (3RD PROCEDURE)

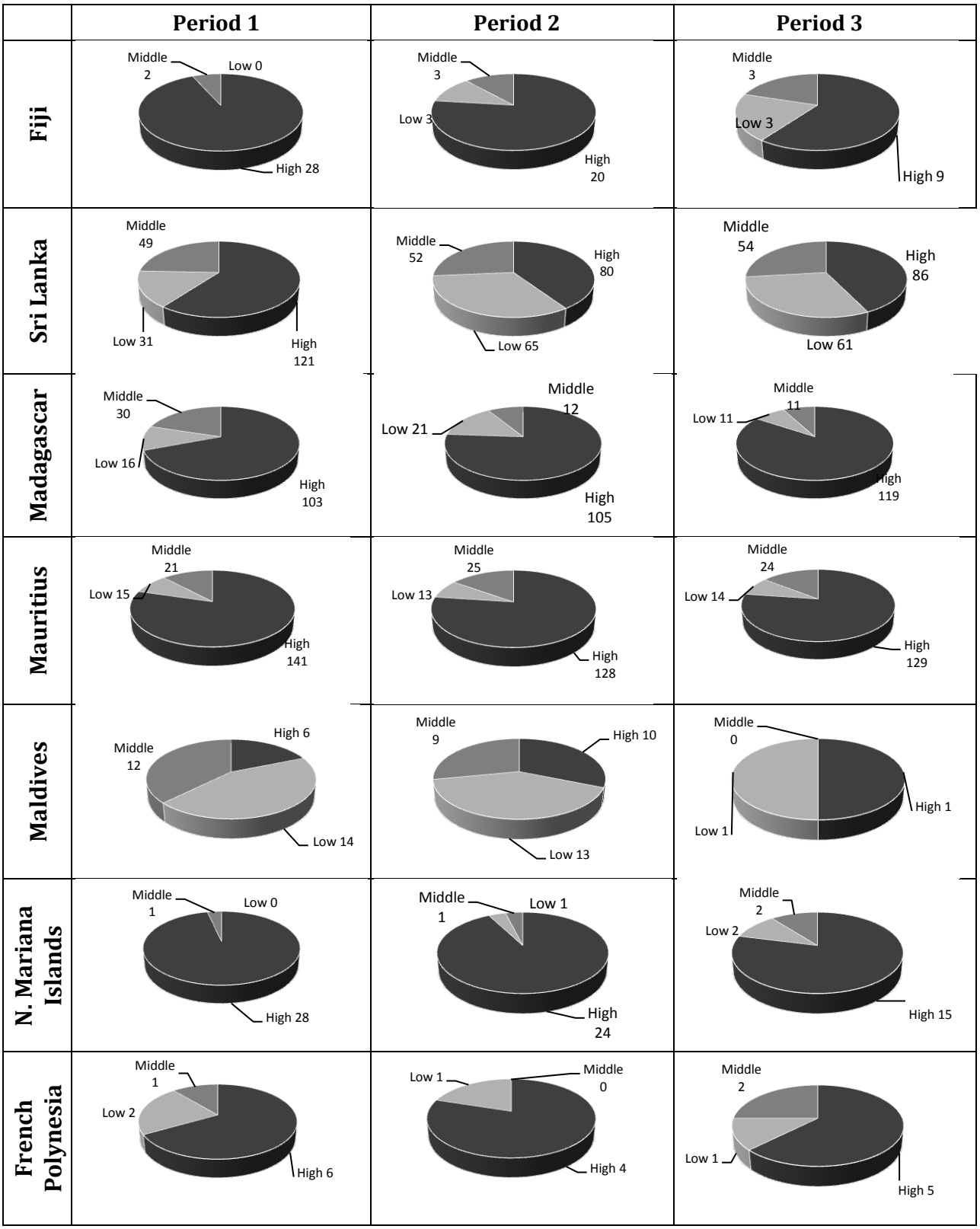
	HS Codes	Low-valued products	Unit value per 100kg
	620333	MEN'S JACKETS AND BLAZERS OF SYNTHETIC FIBRES (EXC. K/C &WIND-JACKETS AND SIMILAR ARTICLES)	1126
	611512	PANTY HOSE AND TIGHTS OF SYNTHETIC FIBRES, K/C	1023
Sri Lanka	610290	WOMEN''S OVERCOATS OF TEXTILE MATERIALS, K/C	966
	621133	MEN'S TRACKSUITS ETC, N.E.S. OF MAN-MADE FIBRES	948
	621132	MEN''S TRACKSUITS ETC, N.E.S. OF COTTON	622
	620312	MEN'S SUITS OF SYNTHETIC FIBRES (EXCL. K/C, TRACK SUITS, SKI SUITS AND SWIMWEAR)	1148
	620342	MEN''S TROUSERS, BIB, ETC, OF COTTON	1120
Madagascar	620530	MEN'S SHIRTS OF MAN-MADE FIBRES (EXCL. K/C NIGHTSHIRTS, SINGLETS ETC)	1088
	611490	SPECIAL GARMENTS FOR PROFESSIONAL, SPORTING OF TEXTILE MATERIALS, K/C	919
	610120	OVERCOATS, CAR COATS, CAPES, OF COTTON	687
	610429	WOMEN'S ENSEMBLES OF TEXTILE MATERIALS	1048
	621050	WOMEN'S GARMENTS OF TEXTILE FABRICS, RUBBERISED OR IMPREGNATED	989
Mauritius	620620	WOMEN'S OR GIRLS' BLOUSES, SHIRTS OF WOOL OR FINE ANIMAL HAIR	801
	611519	PANTY HOSE AND TIGHTS OF TEXTILE MATERIALS, K/C	597
	620191	MEN'S SKI-JACKETS, WIND-CHEATERS, OF WOOL OR FINE ANIMAL HAIR	532
	620192	MEN'S SKI-JACKETS, WIND-CHEATERS, COTTON	969
	610829	WOMEN'S OR GIRLS' BRIEFS AND PANTIES OF TEXTILE MATERIALS	935
Maldives	620332	MEN'S JACKETS AND BLAZERS OF COTTON	884
	610990	T-SHIRTS, SINGLETS AND OTHER VESTS OF TEXTILE MATERIALS	818
	610130	OVERCOATS, CAR COATS, CAPES	798
Fr. Polynesia	620630	WOMEN'S BLOUSES, SHIRTS OF COTTON	1109
	620442	WOMEN'S OR GIRLS' DRESSES OF COTTON	791

TABLE 23 CHANGE IN THE NUMBER OF PRODUCT VARIETIES

	Period 1	Period 2	Period 3	Change from 1-3
Fiji	30	26	15	**-50%**
Sri Lanka	201	197	201	**0%**
Madagascar	149	138	141	**-5%**
Mauritius	177	166	167	**-6%**
Maldives	32	32	2	**-94%**
N. Mariana Is.	29	26	19	**-34%**
F. Polynesia	9	5	8	**-11%**

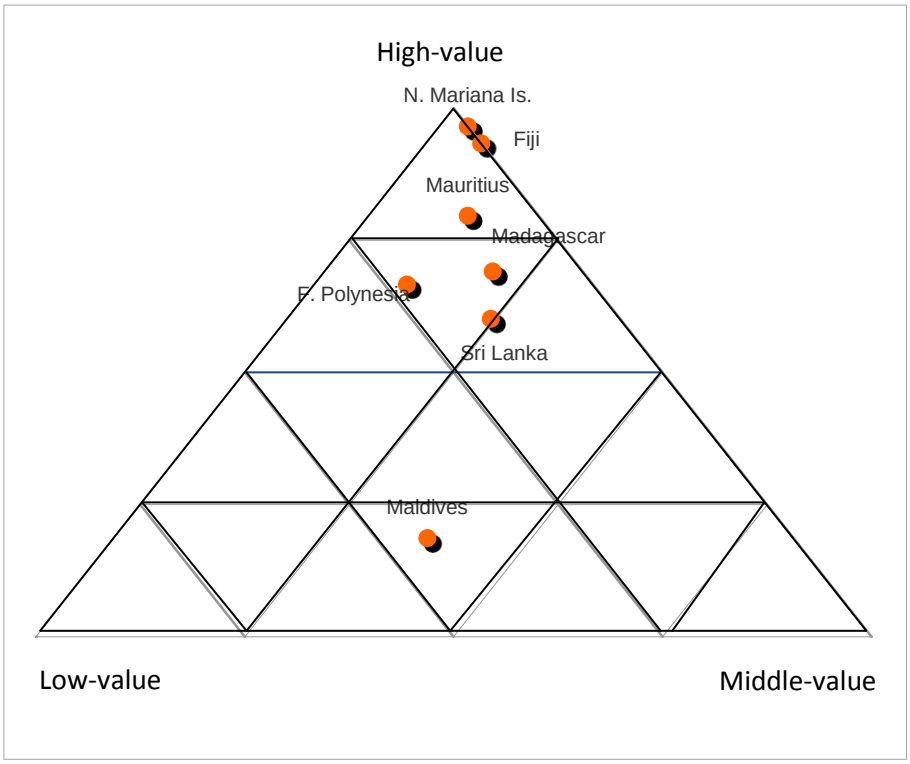
Data sourced from Eurostat (comext) database

FIGURE 9. SHARE OF THE NUMBER OF HIGH, LOW AND MEDIUM VALUED VARIETIES AND THEIR EVOLUTION



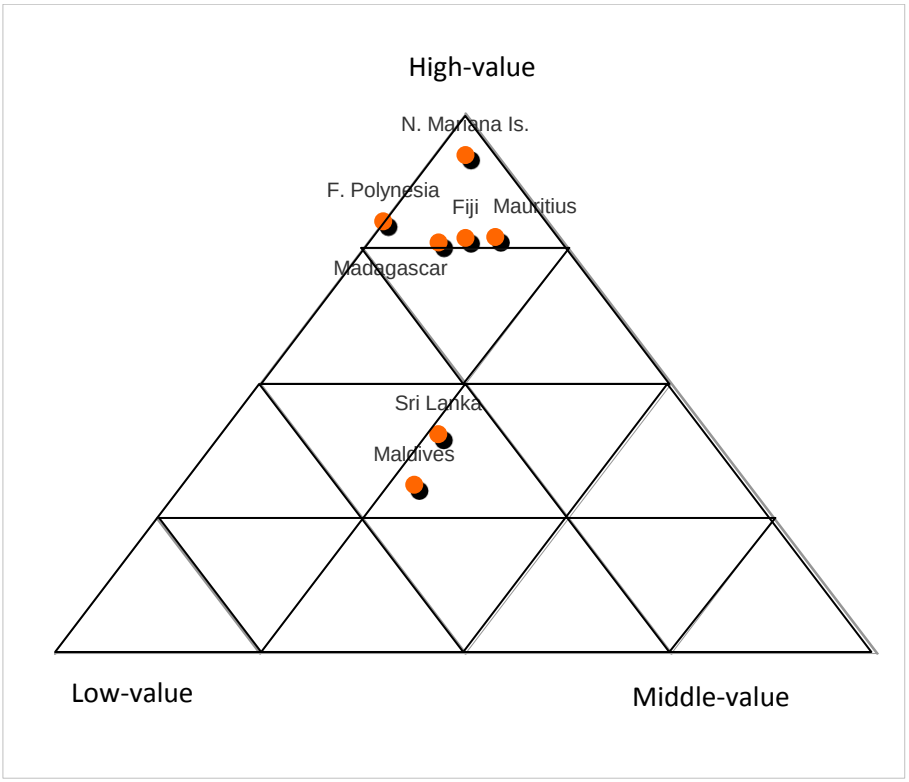
Data sourced from Eurostat (comext) database

FIGURE 10. SHARE OF DIFFERENT PRODUCT TYPES AS OF PERIOD 1



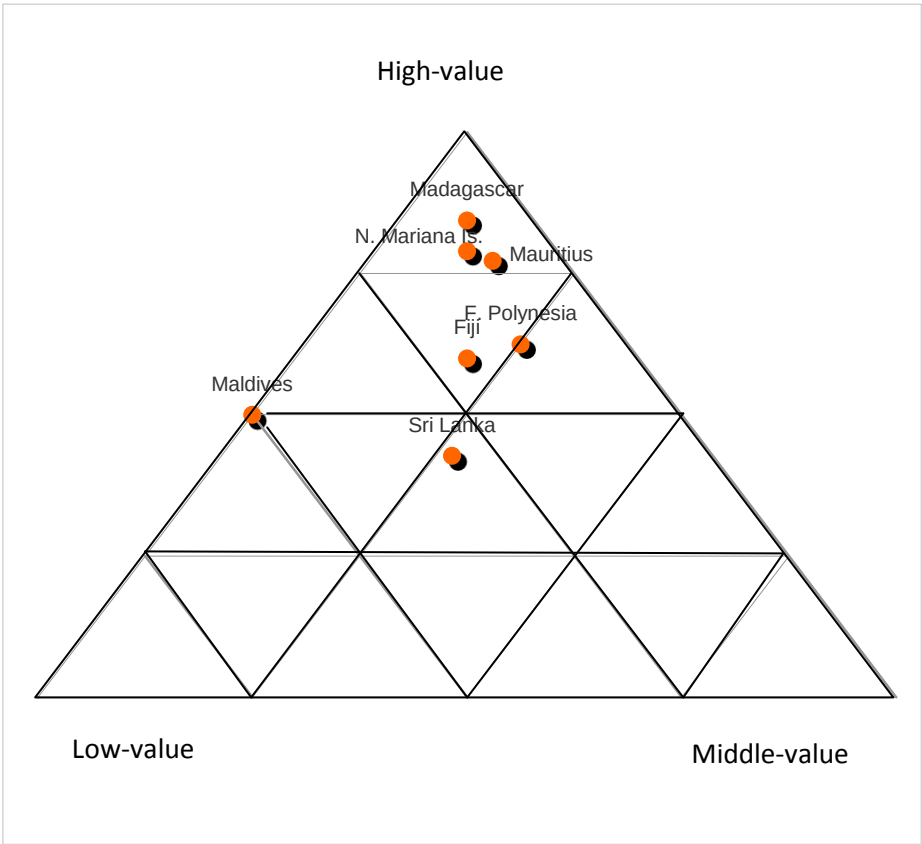
Data sourced from Eurostat (comext) database

FIGURE 11. SHARE OF DIFFERENT PRODUCT TYPES AS OF PERIOD 2



Data sourced from Eurostat (comext) database

FIGURE 12. SHARE OF DIFFERENT PRODUCT TYPES AS OF PERIOD 3



Data sourced from Eurostat (comext) database

The results from the third procedure provide broad confirmation of the positive relationship obtained in the first procedure. However, the results from the first procedure are stronger because the measurement method gives more data points and because the results of the third procedure are heavily dependent on the Maldives observations. The results from the second procedure are at variance with the others. In part this is because of the paucity of the number of observations but it also seems possible that the EU unit import values are not always representative.

In general, the exports of both high- and low-valued items have increased. The positive correlation of quantity and unit-values suggests that price is signalling production. However, it is difficult to say whether SRIES were moving towards up-market products because unit-values have been fluctuating. While quantities of high-valued items have increased their unit-values have decreased. On the contrary, the unit-values as well as the quantities of low-valued items have been increasing. However, as illustrated SRIEs are producers and exporters of up-market

varieties. Although there was a fall in the number of varieties in general, the share of high valued varieties was larger than that of low-valued varieties.

7.2.2 DID MADAGASCAN PRODUCTION REPLACE MAURITIAN PRODUCTION OF BASICS?

The T&C industries of Mauritius and Madagascar are linked by the transactions of sister companies between the countries. Mauritian firms relocated to Madagascar to benefit from lower labour costs than at home. This suggests that Madagascan production may have replaced some of the basic Mauritian production; hence, the correlations between percentage quantity changes for the two countries should be negative over the period and in the post-quota period. Table 20 reports the correlations. There is a small negative correlation for all the product types both in the post-quota period and in period 1 to 3. Low-valued products had the highest negative correlation over the period. This suggests that Mauritian manufacturers shifted their production of basics to Madagascar. This supports the fourth hypothesis that claims that competition will favour industrial upgrading that takes the form of intra-regional fragmentation of production and division of labour.

TABLE 24 CORRELATIONS BETWEEN MADAGASCAN AND MAURITIAN PERCENTAGE QUANTITY CHANGES

	1 to 3	2 to 3
High-valued	-0.07	-0.10
Middle-valued	-0.02	-0.06
Low-valued	-0.41	0.48
All	-0.06	-0.04

7.3 SUMMARY OF FINDINGS

Firstly, SRIEs tended to move towards higher valued products; however, these changes are reflected over the whole period not merely in the post-quota period. Hence, manufacturers altered their production decisions well before quotas were eliminated (which was the whole purpose of phasing-out quotas over a long span). Secondly, as illustrated by the different methods, SRIEs choose to produce high-valued products irrespective of their price variations.

Indeed, the unit-values of high-valued items decreased while those of low-valued items increased. According to the third procedure, the highest valued items range from €52195 per 100 kg (shawls, scarves, mufflers, mantillas and similar products made of wool or fine animal hair) to € 5230 per 100 kg (women's or girls' blouses, shirts and shirt-blouses of cotton).

In general, there appears to be a more specialised form of production: SRIEs were producing fewer varieties of products than the pre-quota period but were producing more of high-valued varieties than lower-valued ones. Only Sri Lanka maintained a high level of low-valued varieties but still it was producing more of high-valued varieties post-quota. The unit value analysis was useful in confirming the hypotheses stated and analysed in the case studies. Although SRIEs are all small and remote economies that faced increased competition when the MFA expired, they differ in the way they reacted to this external shock. The best performing SRIEs learned during the MFA period and acquired a comparative advantage beyond labour costs advantages. The poorest performing countries were those which did not innovate or upgrade. They were mostly foreign-run and exited production as the MFA was eliminated. Nevertheless, SRIEs were exporters of high and middle-valued products. The best performing SRIEs were not necessarily the ones who were producing higher-valued products. Sri Lanka was producing low-valued products alongside high-valued products but had a high RCA as shown previously in table 1 (Specialisation index and RCA in T&C). The analyses tend to suggest that there is a difference between small and smaller economies; smaller economies were at a disadvantage. As argued elsewhere in this thesis, scale economies matter for a successful manufacturing industry.

8. OVERALL CONCLUSION

The T&C global fragmentation of production was shaped by the establishment of the MFA quota-system. Production spread in those parts of the world where quotas were not applicable or where firms were able to take advantage of quotas that were not binding. In addition, the major producers decentralised their plants to these locations, including SRIEs, where labour costs were low. Essentially, assembly operations which required lower-skilled labour and low-investment were delocalised to SRIEs. Therefore, SRIEs became producers of apparel and clothing rather than textiles. Despite being a small part of world production, their clothing industry grew to become a major contributor to the economies of these islands. There were direct increases in employment and export earnings, while indirectly, it lead to the

emancipation of women and better prosperity. The elimination of quotas was, thus, a challenge for SRIEs. They were obliged to compete with larger low-cost producers. Their survival depended on a change in their production, sourcing and export strategies.

The general aim of this study has been to investigate the T&C value-chain of SRIEs pre- and post-quota removal. SRIEs represent a particular group of islands not previously analysed systematically in the trade liberalisation discourse. Yet, they are islands that face particular challenges due to their smallness and remoteness, both geographically and economically. This study addresses this gap in the literature. It draws on the standard trade theory and the recent value-chain framework to test different hypotheses.

Pre-quota period SRIEs were highly specialised in T&C but this specialisation declined post-quota. This indicates that the comparative advantage they had was a mere artificiality based on guaranteed market access. Nonetheless, the quota period protected SRIEs and allowed the more opportunistic and innovative islands to learn and develop a strong industry. They were those countries who had or managed to develop a real comparative advantage in the sector; this advantage was not only acquired by moving towards up-market products but also by exploiting any scale economies that they had. The less opportunistic SRIEs, which were those where firms were mostly foreign-run, did not survive since the foreign investors pinned their advantage primarily on quotas and/or cheap labour and, once those advantages disappeared, they moved out in search of better locations. The least performing ones were the smallest economies. This supports the claim that size matters for economic performance, at least in the performance of T&C industries.

The case studies also show that the removal of quotas impacted differently the small and the very small economies, although, initially, quotas led to an expansion of trade in these economies. The T&C industry in the smaller SRIEs, such as, the Maldives and the Samoa failed to survive in the quota-free environment. However, there are a few SRIEs that managed their way through this world trade policy change. For example, Mauritius successfully moved up in the value-chain and delocalized its production of basics to Madagascar. The latter seized this opportunity to expand its own production of basic clothing. Thus, although it appeared that most SRIEs had a comparative advantage in clothing, the sustainability of the sector depended on whether they were able to upgrade, i.e., target niche markets, move to higher-valued products and integrate their production systems with more performing countries. It appears that very small islands were unable to cope with shocks at the same pace as relatively larger islands.

SRIEs are dispersed across the oceans but are all far from the major world markets. One main findings of the study is that loss of preferential treatments shifted their trade away from the more remote world market (US) towards the less remote one (EU). The US is more remote than the EU as T&C exporting SRIEs are located in the Pacific and the Indian Oceans. This underlines the argument that, in a competitive environment, distance is a major determinant of trade. After the quota period, regional markets gained importance. In addition, there was also evidence of a higher level of upgrading which involves shifting from inter-regional trade towards intra-regional trade. The T&C trade of SRIEs is now increasingly being shaped by regional policies and other bilateral agreements.

9. REFERENCES

Abernathy, F.H. et al., 2004. Globalization in the apparel and textile industries. In *Locating global advantage : industry dynamics in the international economy*. Stanford University Press, pp. 23-51.

Abernathy, F.H., Volpe, A. & Weil, David, 2006. The future of the apparel and textile industries: prospects and choices for public and private actors. *Environment and Planning A*, 38(12), pp.2207 – 2232.

Adhikari, R. & Weeratunge, C., 2007. Textiles & clothing sector in South Asia: coping with post-quota challenges. *South Asian Yearbook of Trade and Development*.

Appelbaum, R.P., 2004. Commodity chains and economic development: one and a half proposals for spatially-oriented research. Available at: http://escholarship.org/uc/item/5hk6n754.

Bain, J., 1956. *Industrial organisation*, New York: Wiley.

Balassa, B., 1965. Trade liberalisation and "revealed" comparative advantage. *The Manchester School*, 33(2), pp.99–123.

De Benedictis, L. & Tamberi, M., 2004. Overall specialization empirics: techniques and applications. *Open Economies Review*, 15, pp.323–346.

Department of census and statistics, 2010. National accounts. Available at: http://www.statistics.gov.lk/page.asp?page=National%20Accounts [Accessed November 24, 2010].

Department of Commerce - Sri Lanka, 2007. Department of Commerce - Sri Lanka. Available at: http://www.doc.gov.lk/web/an_onsri_trade.php [Accessed November 24, 2010].

Dicken, P., 2003. *Global shift: reshaping the global economic map in the 21st century*, Sage Publications.

Disdier, A.-C. & Head, K., 2008. The puzzling persistence of the distance effect on bilateral trade. *Review of Economics and Statistics*, 90(1), pp.37-48.

Ernst, C. et al., 2005. *The end of the multi-fibre agreement and its implication for trade and employment*, International Labour Office. Available at: http://econpapers.repec.org/paper/iloempstr/2005-16.htm [Accessed January 25, 2011].

Estevadeordal, A. & Volpe, C., 2008. *Trade policy and specialization*, Technical report, Inter-American Development Bank.

Flatters, F. & Kirk, R., 2004. Rules of origin as tools of development? Some lessons from SADC. *Trade Policy and Economic Development, The Services Group (TSG), Virginia*.

Fontagné, L. & Freudenberg, M., 1997. Intra-industry trade: methodological issues reconsidered. *CEPII Working papers*, 01.

Gereffi, G., 1999. International trade and industrial upgrading in the apparel commodity chain. *Journal of international economics*, 48(1), pp.37–70.

Gereffi, G., 1994. The organization of buyer-driven global commodity chains: how US retailers shape overseas production networks. In *Commodity chains and global capitalism*. Contributions in economics and economic history. pp. 95–123.

Gereffi, G. & Memedovic, O., 2003. The global apparel value chain: what prospects for upgrading by developing countries. *UNIDO, Strategic Research and Economics Branch*.

Greenaway, D., Hine, R. & Milner, C., 1994. Country-specific factors and the pattern of horizontal and vertical intra-industry trade in the UK. *Review of World Economics*, 130(1), pp.77–100.

Grynberg, R., 2005. *Rules of origin: textiles and clothing sector*, London, UK: Cameron May.

Harrigan, J. & Barrows, G., 2009. Testing the theory of trade policy: evidence from the abrupt end of the multifiber arrangement. *The Review of Economics and Statistics*, 91(2), pp.282–294.

Joomun, G., 2006. The textile and clothing industry in Mauritius. In *The future of the textile and clothing industry in sub-Saharan Africa*. Bonn.

Kaplinsky, R., 1998. Globalisation, industrialisation and sustainable growth: the pursuit of the nth rent.

Kenney, M. & Florida, R.L., 2004. *Locating global advantage: industry dynamics in the international economy*, Stanford University Press.

Kowalski, P. & Molnar, M., 2009. Economic impacts of the phase-out in 2005 of quantitative restrictions under the agreement on textiles and clothing. In *Unveiling protectionism: regional responses to remaining barriers in the textiles and clothing trade*. UNESCAP, pp. 49-85. Available at: http://ideas.repec.org/p/oec/traaab/90-en.html [Accessed November 22, 2010].

Laursen, K., 1998. Revealed comparative advantage and the alternatives as measures of international specialisation. *DRUID Working Papers*.

Levchenko, A., Lewis, L. & Tesar, L., 2011. The "Collapse in Quality" hypothesis. In *AEA 2011 Annual meeting papers*.

Maminirinarivo, M., 2006. The textile and clothing industry of Madagascar. In *The future of the textile and clothing industry in sub-saharan africa*. Bonn.

Michaely, M., 1962. *Concentration in international trade*, North-Holland Pub. Co.

Moore, C.M. & Wigley, S.M., 2004. The anatomy of an international fashion retailer–the Giorgio Armani Group. Available at: http://eprints.hud.ac.uk/8709/.

Narayan, P., 2001. Globalisation of the garment industry: Implications for Fiji's economy.'. *Development Bulletin*, 55, pp.36–8.

Naumann, E., 2005. *Textiles and clothing: reflections on the sector's integration into the post-quota environment*, TRALAC Working Paper.

Nordas, H.K., 2004. The global textile and clothing industry post the agreement on textiles and clothing. *World Trade Organisation Secretariat*.

OECD, 1995. *Linkages: OECD and major developing economies*, OECD Publishing.

Rivoli, P., 2009. *The travels of a T-shirt in the global economy: an economist examines the markets, power, and politics of world trade*, John Wiley and Sons.

Storey, D., 2006. End of the line? Globalisation and Fiji's garment industry. In *Globalisation and governance in the Pacific Islands*. The Australian National University, pp. 217-239. Available at: http://epress.anu.edu.au/ssgm/global_gov/mobile_devices/ch11.html [Accessed January 12, 2011].

Sturgeon, T., 2009. From commodity chains to value chains: interdisciplinary theory building in an age of globalization. In *Frontiers of commodity chain research*. pp. 110–135.

Sturgeon, T. & Lee, J.R., 2005. Industry co-evolution and the rise of a shared supply-base for electronics manufacturing. In *Global Taiwan: building competitive strengths in a new international economy*. USA.

Tirole, J., 1988. *The theory of industrial organization*, MIT Press.

Weller, S., 2006. The embeddedness of global production networks: the impact of crisis in Fiji's garment export sector. *Environment and Planning A*, 38(7), p.1249.

Wijayasiri, J. & Dissanayake, J., 2008. The ending of the multi-fibre agreement and innovation in Sri Lankan textile and clothing industry. *OECD Trade Policy Working Papers*.

ANNEX I

TABLE 25 MAURITIUS T&C IMPORT/EXPORT PARTNERS AND COMPOSITION (2000)

Mauritian imports (%) from:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
China	36.7	Knitted or crocheted fabric	**China**	19.8	Cotton/ Manmade staple fibres
EU	16.4	Articles of apparel*/ Knitted or crocheted fabric	**EU**	15.2	Cotton/ Wool, animal hair, yarn and fabric thereof/ Manmade staple fibres
India	13.3	Articles of apparel, not knit or crochet	**India**	28.4	Cotton
Madagascar	1.8	Articles of apparel, knit or crochet	**South Africa**	4.6	Cotton/ Wool, animal hair, horsehair yarn and fabric thereof/ Manmade staple fibres
Malaysia	8.9	Knitted or crocheted fabric	**China, HK**	8.4	Cotton/ Special woven or tufted fabric, etc
China, HK	7.4	Knitted or crocheted fabric	**Rep. Of Korea**	3.3	Wool, etc/ Cotton/ Manmade filaments
Other Asia	7.6	Knitted or crocheted fabric	**Other Asia**	2.7	Cotton/ Manmade filaments
Singapore	2.0	Knitted or crocheted fabric	**Indonesia**	2.3	Cotton/ Manmade filaments
Thailand	2.0	Articles of apparel*	**Mali**	2.3	Cotton
Indonesia	1.4	Articles of apparel*	**Australia**	1.4	Cotton/ Wool, animal hair, etc
South Africa	0.6	Articles of apparel*/ Knitted or crocheted fabric	**Madagascar**	1.2	Cotton
Rep. Of Korea	0.6	Knitted or crocheted fabric	**Burkina Faso**	1.1	Cotton
Japan	0.3	Articles of apparel*/ Knitted or crocheted fabric	**Japan**	1.0	Manmade staple fibres
Philippines	0.2	Knitted or crocheted fabric	**Singapore**	0.7	Manmade staple fibres/ Special woven fabrics
USA	0.1	**Articles of apparel, knit or crochet**			
Mauritian exports (%) to:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
EU	65.8	Articles of apparel*	**Madagascar**	55.8	Cotton/ Wool, animal hair, etc
USA	29.1	Articles of apparel, not knit or crochet	**EU**	12.9	Cotton
Madagascar	2.2	Knitted or crocheted fabric	**South Africa**	6.5	Cotton
Canada	1.1	Articles of apparel*	**Zimbabwe**	6.3	Cotton
Japan	0.2	Articles of apparel, not knit or crochet	**China, HK**	3.3	Cotton/ Wool etc
Australia	0.1	Articles of apparel*	**Sri Lanka**	3.2	Cotton
			Thailand	1.8	Cotton
			China	1.2	Cotton
			Morocco	0.9	Cotton
			USA	0.5	Cotton
			India	0.9	Cotton
			Swaziland	0.9	Cotton
			Indonesia	0.9	Cotton
			Comoros	0.3	Manmade staple fibres/ Cotton
			Seychelles	0.3	Cotton
			Kenya	0.3	Cotton/ Manmade filaments
			Philippines	0.3	Cotton/ Special woven or tufted fabric
			Malaysia	0.2	Cotton/ Manmade staple fibres

Own compilation, Data from UNcomtrade

TABLE 26 MADAGASCAN T&C IMPORT/EXPORT PARTNERS AND COMPOSITION (2000)

Madagascan imports (%) from:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
Mauritius	41.5	Knitted or crocheted fabric/Articles of apparel*	**China**	34.0	Cotton/ Wool, animal hair, horsehair yarn and fabric thereof
China	26.0	Knitted or crocheted fabric/Articles of apparel*	**Mauritius**	17.4	Cotton/ Wool, animal hair, horsehair yarn and fabric thereof
China, Hong Kong SAR	14.1	Knitted or crocheted fabric	**EU**	16.4	Cotton/ Wool, animal hair, horsehair yarn and fabric thereof
Other	6.9	Knitted or crocheted fabric	**Other**	14.4	Cotton/ Silk
EU	4.9	Knitted or crocheted fabric/Articles of apparel*	**China, Hong Kong SAR**	8.8	Cotton/ Silk
Singapore	1.5	Knitted or crocheted fabric/Articles of apparel*	**Indonesia**	1.7	Cotton
Indonesia	0.9	Articles of apparel, knit or crochet	**India**	1.2	Cotton/ Manmade filaments
Malaysia	0.3	Knitted or crocheted fabric	**R. of Korea**	1.1	Wool etc/ Cotton
Sri Lanka	0.1	Knitted or crocheted fabric	**USA**	0.9	Manmade filaments/ Cotton
India	0.1	Articles of apparel*	**Singapore**	0.4	Wool/ Manmade filaments/ Special woven fabrics
USA	0.1	Articles of apparel*/ Hats, etc	**Malaysia**	0.2	Cotton
Cayman Is.	0.1	Knitted or crocheted fabric	**Sri Lanka**	0.1	Cotton/ Special woven or tufted fabric, lace, tapestry etc
			South Africa	0.1	Manmade staple fibres
			Thailand	0.1	Manmade staple fibres/ Manmade filaments
			Japan	0.1	Manmade staple fibres/ Manmade filaments
Madagascan exports (%) to:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
EU	67.2	Articles of apparel*	**EU**	63.9	Cotton/ Silk/ Special woven or tufted fabric, lace, tapestry etc
USA	30.3	Articles of apparel*	**USA**	21.6	Cotton/ Special woven or tufted fabric, lace, tapestry etc
Mauritius	0.4	Articles of apparel*	**Mauritius**	6.6	Cotton
Canada	0.3	Articles of apparel*	**Other**	5.7	Cotton/ Manmade filaments
Japan	0.2	Articles of apparel*	**China**	0.6	Manmade filaments/ Wool
Comoros	0.1	Articles of apparel*	**Other Asian countries**	0.3	Vegetable fibres
Australia	0.1	Articles of apparel*	**Morocco**	0.3	Vegetable fibres
			South Africa	0.2	Vegetable fibres
			Sri Lanka	0.1	Wadding, felt, nonwovens, cordage, etc
			China HK	0.1	Cotton/ Wool, animal hair, etc
			Japan	0.1	Cotton
			Comoros	0.1	Cotton

Own compilation, Data from UNcomtrade

TABLE 27 SRI LANKAN T&C IMPORT/EXPORT PARTNERS AND COMPOSITION (2000)

Sri Lankan imports (%) from:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
China, Hong Kong SAR	30.4	Knitted or crocheted fabric	**China, Hong Kong SAR**	22.4	Cotton/ Special woven fabrics
Other Asia, nes	28.9	Knitted or crocheted fabric	**Rep. of Korea**	19.4	Manmade staple fibres/ cotton
EU	6.4	Knitted or crocheted fabric	**Other Asia**	15.2	Manmade staple fibres/ cotton
Malaysia	5.7	Knitted or crocheted fabric	**EU**	8.3	Manmade staple fibres/ cotton/ Special woven fabrics
Rep. of Korea	3.8	Knitted or crocheted fabric	**India**	7.7	Cotton
China	3.7	Knitted or crocheted fabric/ Articles of apparel knit or crochet	**Indonesia**	4.8	Manmade staple fibres/ cotton
India	3.4	Articles of apparel, accessories, not knit or crochet	**China**	4.5	Manmade staple fibres/ cotton
USA	2.6	Knitted or crocheted fabric	**USA**	4.2	Manmade staple fibres/ cotton
Maldives	2.5	Articles of apparel*	**Japan**	3.8	Manmade staple fibres/ cotton
Singapore	2.5	Knitted or crocheted fabric/ Articles of apparel knit or crochet	**Thailand**	2.3	Manmade staple fibres/ cotton/ manmade filaments
Indonesia	2.3	Articles of apparel*	**Singapore**	2.0	Manmade staple fibres/ cotton/ manmade filaments
Israel	1.8	Articles of apparel*	**Pakistan**	1.6	Cotton
Australia	1.8	Knitted or crocheted fabric	**Malaysia**	0.8	Manmade staple fibres/ cotton
Thailand	0.9	Articles of apparel*/ Knitted or crocheted fabric	**United Arab Emirates**	0.4	Impregnated fabrics/ Cotton/ Manmade staple fibres
Japan	0.7	Knitted or crocheted fabric/ Articles of apparel*	**Australia**	0.3	Cotton/ Special woven fabrics
Philippines	0.5	Knitted or crocheted fabric	**Mauritius**	0.2	Cotton
Canada	0.2	Knitted or crocheted fabric	**Turkey**	0.1	Manmade staple fibres/ cotton
Iran	0.1	Articles of apparel, accessories, not knit or crochet	**Canada**	0.1	Manmade staple fibres/ Impregnated fabrics/ cotton
Turkey	0.1	Knitted or crocheted fabric	**Bangladesh**	0.1	Other vegetable fibres
Sri Lankan exports (%) to:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
USA	60.6	Articles of apparel*	**EU**	27.8	Other vegetable fibres/ Cotton
EU	34.1	Articles of apparel*	**USA**	23.9	Cotton/ Manmade staple fibre/ Other vegetable fibres
Canada	1.5	Articles of apparel*	**Rep. of Korea**	17.0	Manmade staple fibre/ Other vegetable fibres/ Cotton
Israel	0.7	Articles of apparel*	**Maldives**	5.2	Special woven fabric/ Cotton
Australia	0.4	Articles of apparel*	**Japan**	4.5	Other vegetable fibres
Maldives	0.4	Knitted or crocheted fabric	**UAE**	2.9	Cotton/Special woven fabric
Japan	0.4	Articles of apparel*	**Bangladesh**	1.9	Cotton
Mexico	0.2	Articles of apparel*	**India**	1.9	Manmade filaments/ Cotton
United Arab Emirates	0.2	Articles of apparel*	**China, Hong Kong SAR**	1.8	Cotton/Special woven fabric/ Manmade staple fibres

Finished products	%	Main component/s	Intermediate products	%	Main component/s
Panama	0.1	Articles of apparel*	**Australia**	1.4	Other vegetable fibres/ Carpets, etc
			Indonesia	1.2	Manmade staple fibre/ Manmade filaments
			Israel	0.9	Cotton/ other vegetable fibres
			Other South America	0.9	Special woven fabrics/ Manmade staple fibre/ Other vegetable fibres
			Egypt	0.8	Cotton
			Canada	0.6	Other vegetable fibres
			Pakistan	0.6	Manmade filaments/ Other vegetable fibres
			Syria	0.6	Manmade filaments/ Cotton
			Guatemala	0.5	Cotton
			Other Asia, nes	0.5	Manmade staple fibre/ Other vegetable fibres/ Cotton
			Qatar	0.5	Cotton
			Malaysia	0.4	Other vegetable fibres/ special woven fabrics
			Turkey	0.3	Carpets, etc/ Manmade filaments
			China	0.3	Other vegetable fibres/ Cotton/ Manmade filaments
			Mauritius	0.2	Cotton
			Bahrain	0.2	Cotton/ Manmade filaments
			Thailand	0.2	Other vegetable fibres/ Cotton/ Manmade filaments
			Singapore	0.2	Cotton
			New Zealand	0.1	Other vegetable fibres

Own compilation, Data from UNcomtrade

TABLE 28 FIJIAN T&C IMPORT/EXPORT PARTNERS AND COMPOSITION (2002)

Fijian imports (%) from:					
Finished products	**%**	**Main component/s**	**Intermediate products**	**%**	**Main component/s**
China, HK	27.8	Knitted or crocheted fabric	**Australia**	45.0	Cotton/ Manmade staple fibers
Australia	24.9	Articles of apparel*/ Knitted and crocheted fabrics	**Singapore**	9.7	Cotton/ Special woven fabrics
Singapore	20.1	Knitted or crocheted fabric	**China**	8.6	Manmade staple fibers/ Cotton
India	7.7	Articles of apparel*	**China, HK**	6.9	Cotton/ Manmade staple fibers
China	5.5	Knitted or crocheted fabric/ Articles of apparel*	**Other Asia**	6.4	Manmade staple fibres/ Cotton
Thailand	3.3	Articles of apparel*	**Indonesia**	4.6	Manmade staple fibers/ Manmade filaments/ Cotton
Indonesia	3.1	Articles of apparel*	**New Zealand**	4.4	Manmade staple fibers/ Manmade filaments/ Cotton
New Zealand	2.0	Articles of apparel*/ Knitted and crocheted fabrics	**Thailand**	2.5	Cotton/ Manmade staple fibers
US	1.9	Knitted or crocheted fabric	**Malaysia**	2.1	Manmade staple fibres/ Cotton
Other Asia	1.7	Knitted or crocheted fabric	**India**	2.0	Manmade staple fibers/ Cotton
Malaysia	1.4	Articles of apparel*	**USA**	2.0	Manmade staple fibers/ Manmade filaments/ Cotton
EU	0.1	Articles of apparel*	**Pakistan**	1.9	Cotton
Cook Isds	0.0	Articles of apparel, not knit or crochet	**EU**	1.7	Special woven or tufted fabric, etc/ Wool, fine or coarse animal hair/ Manmade staple fibers
			Japan	1.1	Manmade staple fibres/ Cotton
			Rep. of Korea	1.0	Manmade staple fibres/ Manmade filaments/ Cotton
			Canada	0.1	Manmade staple fibres
			Cook Isds	0.0	Manmade staple fibres
			French Polynesia	0.0	Wadding, etc/ Manmade filaments/ Cotton
Fijian exports (%) to:					
Finished products	%	Main component/s	**Intermediate products**	%	Main component/s
Australia	53.5	Articles of apparel*	**Australia**	25.7	Manmade filaments/ Cotton
USA	37.9	Articles of apparel, not knit or crochet	**China, HK**	13.0	Wool, etc
New Zealand	4.2	Articles of apparel*	**French Polynesia**	10.5	Cotton/ Manmade filaments
China, HK	1.1	Articles of apparel, not knit or crochet	**Samoa**	7.3	Cotton/ Manmade filaments
EU	1.0	Articles of apparel, not knit or crochet	**Other US Pacific Is**	7.0	Cotton
Samoa	0.3	Articles of apparel*	**Kiribati**	5.9	Cotton
Singapore	0.2	Articles of apparel*	**USA**	4.5	Manmade filaments

Finished products	%	Main component/s	**Intermediate products**	%	Main component/s
Cook Isds	0.1	Articles of apparel*	**Vanuatu**	4.3	Cotton/ Manmade filaments
French Polynesia	0.1	Articles of apparel*	**China**	4.0	Cotton
Kiribati	0.1	Articles of apparel*	**New Zealand**	3.0	Wadding / Manmade filaments/ Cotton
Tonga	0.1	Articles of apparel*	**Cook Isds**	2.9	Cotton
Tuvalu	0.1	Articles of apparel*	**Tonga**	2.3	Cotton/ Manmade filaments
Vanuatu	0.1	Articles of apparel*	**Tuvalu**	1.5	Cotton/ Manmade filaments
Wallis and Futuna Isds	0.1	Articles of apparel*	**New Caledonia**	1.4	Cotton
French Polynesia	0.1	Articles of apparel*	**Wallis and Futuna Isds**	1.3	Cotton/ Manmade filaments/ Wadding, felt, nonwovens, yarns, twine, cordage, etc
Japan	0.1	Articles of apparel*	**Other Asia**	1.0	
			Marshall Is	0.7	Cotton
			EU	0.6	Cotton/ Special woven fabrics
			Solomon 0.5	0.5	Cotton/ Manmade filaments
			Nauru	0.5	Cotton/ Manmade filaments
			India	0.4	Cotton
			Morocco	0.1	Wool, etc

Own compilation, Data from UNcomtrade

ANNEX II

List of HS Codes (4 digits) and corresponding products

50	**SILK**
5001	SILKWORM COCOONS SUITABLE FOR REELING
5002	RAW SILK 'NON-THROWN'
5003	SILK WASTE, INCL. COCOONS UNSUITABLE FOR REELING, YARN WASTE AND GARNETTED STOCK
5004	SILK YARN (EXCL. THAT OF SCHAPPE OR BOURETTE AND THAT PUT UP FOR RETAIL SALE)
5005	YARN SPUN FROM SILK WASTE (EXCL. THAT PUT UP FOR RETAIL SALE)
5006	SILK YARN AND YARN SPUN FROM SILK WASTE, PUT UP FOR RETAIL SALE; SILKWORM GUT
5007	WOVEN FABRICS OF SILK OR OF SILK WASTE
51	**WOOL, FINE OR COARSE ANIMAL HAIR; HORSEHAIR YARN AND WOVEN FABRIC**
5101	WOOL, NEITHER CARDED NOR COMBED
5102	FINE OR COARSE ANIMAL HAIR, NEITHER CARDED NOR COMBED (EXCL. WOOL, HAIR AND BRISTLES USED IN THE MANUFACTURE OF BROOMS AND BRUSHES, AND HORSEHAIR F...
5103	WASTE OF WOOL OR OF FINE OR COARSE ANIMAL HAIR, INCL. YARN WASTE (EXCL. GARNETTED STOCK, WASTE OF HAIR AND BRISTLES USED IN THE MANUFACTURE OF BROO...
5104	GARNETTED STOCK OF WOOL OR OF FINE OR COARSE ANIMAL HAIR, NEITHER CARDED NOR COMBED
5105	WOOL AND FINE OR COARSE ANIMAL HAIR, CARDED OR COMBED, INCL. COMBED WOOL IN FRAGMENTS
5106	CARDED WOOL YARN (EXCL. THAT PUT UP FOR RETAIL SALE)
5107	YARN OF COMBED WOOL (EXCL. THAT PUT UP FOR RETAIL SALE)
5108	CARDED OR COMBED YARN OF FINE ANIMAL HAIR (EXCL. THAT OF WOOL OR THAT PUT UP FOR RETAIL SALE)
5109	YARN OF WOOL OR FINE ANIMAL HAIR, PUT UP FOR RETAIL SALE
5110	YARN OF COARSE ANIMAL HAIR OR OF HORSEHAIR, INCL. GIMPED HORSEHAIR YARN, WHETHER OR NOT PUT UP FOR RETAIL SALE (EXCL. HORSEHAIR AND YARN NOT JOINED...
5111	WOVEN FABRICS OF CARDED WOOL OR OF CARDED FINE ANIMAL HAIR (EXCL. FABRICS FOR TECHNICAL USE OF HEADING 5911)
5112	WOVEN FABRICS OF COMBED WOOL OR OF COMBED FINE ANIMAL HAIR (EXCL. FABRICS FOR TECHNICAL PURPOSES OF HEADING 5911)
5113	WOVEN FABRICS OF COARSE ANIMAL HAIR OR OF HORSEHAIR (EXCL. FABRICS FOR TECHNICAL USES OF HEADING 5911)
52	**COTTON**
5201	COTTON, NEITHER CARDED NOR COMBED
5202	COTTON WASTE, INCL. YARN WASTE AND GARNETTED STOCK
5203	COTTON, CARDED OR COMBED
5204	COTTON SEWING THREAD, WHETHER OR NOT PUT UP FOR RETAIL SALE
5205	COTTON YARN OTHER THAN SEWING THREAD, CONTAINING >= 85% COTTON BY WEIGHT (EXCL. THAT PUT UP FOR RETAIL SALE)
5206	COTTON YARN CONTAINING PREDOMINANTLY, BUT < 85% COTTON BY WEIGHT (EXCL. SEWING THREAD AND YARN PUT UP FOR RETAIL SALE)
5207	COTTON YARN PUT UP FOR RETAIL SALE (EXCL. SEWING THREAD)
5208	WOVEN FABRICS OF COTTON, CONTAINING >= 85% COTTON BY WEIGHT AND WEIGHING <= 200 G/M²
5209	WOVEN FABRICS OF COTTON, CONTAINING >= 85% COTTON BY WEIGHT AND WEIGHING > 200 G/M²
5210	WOVEN FABRICS OF COTTON, CONTAINING PREDOMINANTLY, BUT < 85% COTTON BY WEIGHT, MIXED PRINCIPALLY OR SOLELY WITH MAN-MADE FIBRES AND WEIGHING <= 200...
5211	WOVEN FABRICS OF COTTON, CONTAINING PREDOMINANTLY, BUT < 85% COTTON BY WEIGHT, MIXED PRINCIPALLY OR SOLELY WITH MAN-MADE FIBRES AND WEIGHING > 200 ...
5212	WOVEN FABRICS OF COTTON, CONTAINING PREDOMINANTLY, BUT < 85% COTTON BY WEIGHT, OTHER THAN THOSE MIXED PRINCIPALLY OR SOLELY WITH MAN-MADE FIBRES
53	**OTHER VEGETABLE TEXTILE FIBRES; PAPER YARN AND WOVEN FABRICS OF PAPER YARN**
5301	FLAX, RAW OR PROCESSED, BUT NOT SPUN; FLAX TOW AND WASTE, INCL. YARN WASTE AND GARNETTED STOCK
5302	TRUE HEMP "CANNABIS SATIVA L.", RAW OR PROCESSED, BUT NOT SPUN; TOW AND WASTE OF TRUE HEMP, INCL. YARN WASTE AND GARNETTED STOCK
5303	JUTE AND OTHER TEXTILE BAST FIBRES, RAW OR PROCESSED, BUT NOT SPUN; TOW AND WASTE OF SUCH FIBRES,

	INCL. YARN WASTE AND GARNETTED STOCK (EXCL. FLAX, ETC)
5304	SISAL AND OTHER TEXTILE FIBRES OF THE GENUS AGAVE, RAW OR PROCESSED, BUT NOT SPUN; TOW AND WASTE OF SUCH FIBRES, INCL. YARN WASTE AND GARNETTED STOCK
5305	COCONUT, ABACA "MANILA HEMP OR MUSA TEXTILIS NEE", RAMIE AND OTHER VEGETABLE TEXTILE FIBRES, N.E.S., RAW OR PROCESSED, BUT NOT SPUN; TOW, NOILS AND...
5306	FLAX YARN
5307	YARN OF JUTE OR OF OTHER TEXTILE BAST FIBRES OF HEADING 5303
5308	YARN OF VEGETABLE TEXTILE FIBRES; PAPER YARN (EXCL. FLAX YARN, YARN OF JUTE OR OF OTHER TEXTILE BAST FIBRES OF HEADING 5303 AND COTTON YARN)
5309	WOVEN FABRICS OF FLAX
5310	WOVEN FABRICS OF JUTE OR OF OTHER TEXTILE BAST FIBRES OF HEADING 5303
5311	WOVEN FABRICS OF OTHER VEGETABLE TEXTILE FIBRES; WOVEN FABRICS OF PAPER YARN (EXCL. THOSE OF FLAX, JUTE, OTHER TEXTILE BAST FIBRES OF HEADING 5303 ...
54	**STRIP AND THE LIKE OF MAN-MADE TEXTILE MATERIALS**
5401	SEWING THREAD OF MAN-MADE FILAMENTS, WHETHER OR NOT PUT UP FOR RETAIL SALE
5402	SYNTHETIC FILAMENT YARN, INCL. SYNTHETIC MONOFILAMENTS OF < 67 DECITEX (EXCL. SEWING THREAD AND YARN PUT UP FOR RETAIL SALE)
5403	ARTIFICIAL FILAMENT YARN, INCL. ARTIFICIAL MONOFILAMENT OF < 67 DECITEX (EXCL. SEWING THREAD AND YARN PUT UP FOR RETAIL SALE)
5404	SYNTHETIC MONOFILAMENT OF >= 67 DECITEX AND WITH A CROSS SECTIONAL DIMENSION OF <= 1 MM; STRIP AND THE LIKE, E.G. ARTIFICIAL STRAW, OF SYNTHETIC TE...
5405	ARTIFICIAL MONOFILAMENT OF >= 67 DECITEX AND WITH A CROSS SECTIONAL DIMENSION OF <= 1 MM; STRIP AND THE LIKE, E.G. ARTIFICIAL STRAW, OF SYNTHETIC T...
5406	MAN-MADE FILAMENT YARN, PUT UP FOR RETAIL SALE (EXCL. SEWING THREAD)
5407	WOVEN FABRICS OF SYNTHETIC FILAMENT YARN, INCL. MONOFILAMENT OF >= 67 DECITEX AND WITH A CROSS SECTIONAL DIMENSION OF <= 1 MM
5408	WOVEN FABRICS OF ARTIFICIAL FILAMENT YARN, INCL. MONOFILAMENT OF >= 67 DECITEX AND A MAXIMUM DIAMETER OF <= 1 MM
55	**MAN-MADE STAPLE FIBRES**
5501	SYNTHETIC FILAMENT TOW AS SPECIFIED IN NOTE 1 TO CHAPTER 55
5502	ARTIFICIAL FILAMENT TOW AS SPECIFIED IN NOTE 1 TO CHAPTER 55
5503	SYNTHETIC STAPLE FIBRES, NOT CARDED, COMBED OR OTHERWISE PROCESSED FOR SPINNING
5504	ARTIFICIAL STAPLE FIBRES, NOT CARDED, COMBED OR OTHERWISE PROCESSED FOR SPINNING
5505	WASTE OF MAN-MADE STAPLE FIBRES, INCL. NOILS, YARN WASTE AND GARNETTED STOCK
5506	SYNTHETIC STAPLE FIBRES, CARDED, COMBED OR OTHERWISE PROCESSED FOR SPINNING
5507	ARTIFICIAL STAPLE FIBRES, CARDED, COMBED OR OTHERWISE PROCESSED FOR SPINNING
5508	SEWING THREAD OF MAN-MADE STAPLE FIBRES, WHETHER OR NOT PUT UP FOR RETAIL SALE
5509	YARN OF SYNTHETIC STAPLE FIBRES (EXCL. SEWING THREAD AND YARN PUT UP FOR RETAIL SALE)
5510	YARN OF ARTIFICIAL STAPLE FIBRES (EXCL. SEWING THREAD AND YARN PUT UP FOR RETAIL SALE)
5511	YARN OF MAN-MADE STAPLE FIBRES, PUT UP FOR RETAIL SALE (EXCL. SEWING THREAD)
5512	WOVEN FABRICS CONTAINING >= 85% SYNTHETIC STAPLE FIBRES BY WEIGHT
5513	WOVEN FABRICS CONTAINING PREDOMINANTLY, BUT < 85% SYNTHETIC STAPLE FIBRES BY WEIGHT, MIXED PRINCIPALLY OR SOLELY WITH COTTON AND WEIGHING <= 170 G/M²
5514	WOVEN FABRICS CONTAINING PREDOMINANTLY, BUT < 85% SYNTHETIC STAPLE FIBRES BY WEIGHT, MIXED PRINCIPALLY OR SOLELY WITH COTTON AND WEIGHING > 170 G/M²
5515	WOVEN FABRICS CONTAINING PREDOMINANTLY, BUT < 85% SYNTHETIC STAPLE FIBRES BY WEIGHT, OTHER THAN THOSE MIXED PRINCIPALLY OR SOLELY WITH COTTON
5516	WOVEN FABRICS OF ARTIFICIAL STAPLE FIBRES
56	**WADDING, FELT AND NONWOVENS; SPECIAL YARNS; TWINE, CORDAGE, ROPES AND CABLES AND ARTICLES THEREOF**
5601	WADDING OF TEXTILE MATERIALS AND ARTICLES THEREOF; TEXTILE FIBRES WITH A LENGTH OF <= 5 MM "FLOCK", TEXTILE DUST AND MILL NEPS (EXCL. WADDING AND A...
5602	FELT, WHETHER OR NOT IMPREGNATED, COATED, COVERED OR LAMINATED, N.E.S.
5603	NONWOVENS, WHETHER OR NOT IMPREGNATED, COATED, COVERED OR LAMINATED, N.E.S.
5604	TEXTILE-COVERED RUBBER THREAD AND CORD; TEXTILE YARN, STRIP AND THE LIKE OF HEADING 5404 AND 5405, IMPREGNATED, COATED, COVERED OR SHEATHED WITH RU...
5605	METALLISED YARN, WHETHER OR NOT GIMPED, BEING TEXTILE YARN, OR STRIP OR THE LIKE OF HEADING 5404 OR 5405, OF TEXTILE FIBRES, COMBINED WITH METAL IN...

5606	GIMPED YARN, GIMPED STRIP AND THE LIKE OF HEADING 5404 OR 5405; CHENILLE YARN, INCL. FLOCK CHENILLE YARN, AND LOOP WALE-YARN (EXCL. METAL YARN AND ...
5607	TWINE, CORDAGE, ROPES AND CABLES, WHETHER OR NOT PLAITED OR BRAIDED AND WHETHER OR NOT IMPREGNATED, COATED, COVERED OR SHEATHED WITH RUBBER OR PLAS...
5608	KNOTTED NETTING OF TWINE, CORDAGE OR ROPE, BY THE PIECE OR METRE; MADE-UP FISHING NETS AND OTHER MADE-UP NETS, OF TEXTILE MATERIALS (EXCL. HAIRNETS...
5609	ARTICLES OF YARN, STRIP OR THE LIKE OF HEADING 5404 OR 5405, OR OF TWINE, CORDAGE, ROPES OR CABLES OF HEADING 5607, N.E.S.
57	**CARPETS AND OTHER TEXTILE FLOOR COVERINGS**
5701	CARPETS AND OTHER TEXTILE FLOOR COVERINGS, OF TEXTILE MATERIALS, KNOTTED, WHETHER OR NOT MADE UP
5702	CARPETS AND OTHER TEXTILE FLOOR COVERINGS, WOVEN, NOT TUFTED OR FLOCKED, WHETHER OR NOT MADE UP, INCL. KELEM, SCHUMACKS, KARAMANIE AND SIMILAR HAND...
5703	CARPETS AND OTHER TEXTILE FLOOR COVERINGS, TUFTED "NEEDLE PUNCHED", WHETHER OR NOT MADE UP
5704	CARPETS AND OTHER FLOOR COVERINGS, OF FELT, NOT TUFTED OR FLOCKED, WHETHER OR NOT MADE UP
5705	CARPETS AND OTHER TEXTILE FLOOR COVERINGS, WHETHER OR NOT MADE-UP (EXCL. KNOTTED, WOVEN OR TUFTED 'NEEDLE PUNCHED', AND OF FELT)
58	**SPECIAL WOVEN FABRICS; TUFTED TEXTILE FABRICS; LACE; TAPESTRIES; TRIMMINGS; EMBROIDERY**
5801	WOVEN PILE FABRICS AND CHENILLE FABRICS (EXCL. TERRY TOWELLING AND SIMILAR WOVEN TERRY FABRICS, TUFTED TEXTILE FABRICS AND NARROW WOVEN FABRICS OF ...
5802	TERRY TOWELLING AND SIMILAR WOVEN TERRY FABRICS, TUFTED TEXTILE FABRICS (EXCL. NARROW WOVEN FABRICS OF HEADING 5806, CARPETS AND OTHER FLOOR COVERI...
5803	GAUZE (EXCL. NARROW WOVEN FABRICS OF HEADING 5806)
5804	TULLES AND OTHER NET FABRICS (EXCL. WOVEN, KNITTED OR CROCHETED FABRICS); LACE IN THE PIECE, IN STRIPS OR IN MOTIFS (EXCL. FABRICS OF HEADING 6002 ...
5805	HAND-WOVEN TAPESTRIES OF THE TYPE GOBELIN, FLANDERS, AUBUSSON, BEAUVAIS AND THE LIKE, AND NEEDLE-WORKED TAPESTRIES, E.G. PETIT POINT, CROSS-STITCH,...
5806	NARROW WOVEN FABRICS OF TEXTILE MATERIALS (EXCL. LABELS, BADGES AND SIMILAR ARTICLES); NARROW FABRICS CONSISTING OF WARP WITHOUT WEFT ASSEMBLED BY ...
5807	LABELS, BADGES AND SIMILAR ARTICLES, OF TEXTILE MATERIALS, IN THE PIECE, IN STRIPS OR CUT TO SHAPE OR SIZE, NOT EMBROIDERED
5808	BRAIDS OF TEXTILE MATERIALS, IN THE PIECE; ORNAMENTAL TRIMMINGS OF TEXTILE MATERIALS, IN THE PIECE, NOT EMBROIDERED, OTHER THAN KNITTED OR CROCHETE...
5809	WOVEN FABRICS OF METAL THREAD AND WOVEN FABRICS OF METALLISED YARN OF HEADING 5605, OF A KIND USED IN APPAREL, AS FURNISHING FABRICS OR FOR SIMILAR...
5810	EMBROIDERY ON A TEXTILE FABRIC GROUND, IN THE PIECE, IN STRIPS OR IN MOTIFS
5811	QUILTED TEXTILE PRODUCTS IN THE PIECE, COMPOSED OF ONE OR MORE LAYERS OF TEXTILE MATERIALS ASSEMBLED WITH PADDING BY STITCHING OR OTHERWISE (EXCL. ...
59	**IMPREGNATED, COATED, COVERED OR LAMINATED TEXTILE FABRICS; TEXTILE ARTICLES OF A KIND SUITABLE FOR INDUSTRIAL USE**
5901	TEXTILE FABRICS COATED WITH GUM OR AMYLACEOUS SUBSTANCES, OF A KIND USED FOR THE OUTER COVERS OF BOOKS, THE MANUFACTURE OF BOXES AND ARTICLES OF CA...
5902	TYRE CORD FABRIC OF HIGH-TENACITY YARN OF NYLON OR OTHER POLYAMIDES, POLYESTERS OR VISCOSE RAYON, WHETHER OR NOT DIPPED OR IMPREGNATED WITH RUBBER ...
5903	TEXTILE FABRICS IMPREGNATED, COATED, COVERED OR LAMINATED WITH PLASTICS (EXCL. TYRE CORD FABRIC OF HIGH-TENACITY YARN OF NYLON OR OTHER POLYAMIDES,...
5904	LINOLEUM, WHETHER OR NOT CUT TO SHAPE; FLOOR COVERINGS CONSISTING OF A COATING OR COVERING APPLIED ON A TEXTILE BACKING, WHETHER OR NOT CUT TO SHAPE
5905	TEXTILE WALL COVERINGS
5906	RUBBERISED TEXTILE FABRICS (EXCL. TYRE CORD FABRIC OF HIGH-TENACITY YARN OF NYLON OR OTHER POLYAMIDES, POLYESTERS OR VISCOSE RAYON)
5907	IMPREGNATED, COATED OR COVERED TEXTILE FABRICS; PAINTED CANVAS BEING THEATRICAL SCENERY, STUDIO BACK-CLOTHS OR THE LIKE, N.E.S.
5908	TEXTILE WICKS, WOVEN, PLAITED OR KNITTED, FOR LAMPS, STOVES, LIGHTERS, CANDLES OR THE LIKE; INCANDESCENT GAS MANTLES AND TUBULAR KNITTED GAS MANTLE...
5909	TEXTILE HOSEPIPING AND SIMILAR TEXTILE TUBING, WHETHER OR NOT IMPREGNATED OR COATED, WITH OR WITHOUT LINING, ARMOUR OR ACCESSORIES OF OTHER MATERIALS
5910	TRANSMISSION OR CONVEYOR BELTS OR BELTING, OF TEXTILE MATERIAL, WHETHER OR NOT IMPREGNATED, COATED, COVERED OR LAMINATED WITH PLASTICS, OR REINFORC...
5911	TEXTILE PRODUCTS AND ARTICLES, FOR TECHNICAL USE, SPECIFIED IN NOTE 7 TO CHAPTER 59
60	**KNITTED OR CROCHETED FABRICS**
6001	PILE FABRICS, INCL. "LONG PILE" FABRICS AND TERRY FABRICS, KNITTED OR CROCHETED
6002	KNITTED OR CROCHETED FABRICS, OF A WIDTH <= 30 CM, CONTAINING BY WEIGHT >= 5% OF ELASTOMERIC YARN OR RUBBER THREAD (EXCL. PILE FABRICS, INCL. "LO...
6003	KNITTED OR CROCHETED FABRICS, OF A WIDTH <= 30 CM (EXCL. THOSE CONTAINING BY WEIGHT >= 5% OF ELASTOMERIC YARN OR RUBBER THREAD, AND PILE FABRICS, ...
6004	KNITTED OR CROCHETED FABRICS, OF A WIDTH > 30 CM, CONTAINING BY WEIGHT >= 5% OF ELASTOMERIC YARN OR RUBBER THREAD (EXCL. PILE FABRICS, INCL. "LON...

6005	WARP KNIT FABRICS "INCL. THOSE MADE ON GALLOON KNITTING MACHINES", OF A WIDTH OF > 30 CM (EXCL. THOSE CONTAINING BY WEIGHT >= 5% OF ELASTOMERIC YA...
6006	FABRICS, KNITTED OR CROCHETED, OF A WIDTH OF > 30 CM (EXCL. WARP KNIT FABRICS "INCL. THOSE MADE ON GALLOON KNITTING MACHINES", THOSE CONTAINING BY ...
61	**ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, KNITTED OR CROCHETED**
6101	MEN"S OR BOYS" OVERCOATS, CAR COATS, CAPES, CLOAKS, ANORAKS, INCL. SKI JACKETS, WINDCHEATERS, WIND-JACKETS AND SIMILAR ARTICLES, KNITTED OR CROCH...
6102	WOMEN"S OR GIRLS" OVERCOATS, CAR COATS, CAPES, CLOAKS, ANORAKS, INCL. SKI JACKETS, WINDCHEATERS, WIND-JACKETS AND SIMILAR ARTICLES, KNITTED OR CR...
6103	MEN"S OR BOYS" SUITS, ENSEMBLES, JACKETS, BLAZERS, TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS (EXCL. WIND-JACKETS AND SIMILAR ARTICLES...
6104	WOMEN"S OR GIRLS" SUITS, ENSEMBLES, JACKETS, BLAZERS, DRESSES, SKIRTS, DIVIDED SKIRTS, TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS, KNI...
6105	MEN"S OR BOYS" SHIRTS, KNITTED OR CROCHETED (EXCL. NIGHTSHIRTS, T-SHIRTS, SINGLETS AND OTHER VESTS)
6106	WOMEN"S OR GIRLS" BLOUSES, SHIRTS AND SHIRT-BLOUSES, KNITTED OR CROCHETED (EXCL. T-SHIRTS AND VESTS)
6107	MEN"S OR BOYS" UNDERPANTS, BRIEFS, NIGHTSHIRTS, PYJAMAS, BATHROBES, DRESSING GOWNS AND SIMILAR ARTICLES, KNITTED OR CROCHETED (EXCL. VESTS AND SI...
6108	WOMEN"S OR GIRLS" SLIPS, PETTICOATS, BRIEFS, PANTIES, NIGHTDRESSES, PYJAMAS, NÉGLIGÉS, BATHROBES, DRESSING GOWNS, HOUSECOATS AND SIMILAR ARTICLES...
6109	T-SHIRTS, SINGLETS AND OTHER VESTS, KNITTED OR CROCHETED
6110	JERSEYS, PULLOVERS, CARDIGANS, WAISTCOATS AND SIMILAR ARTICLES, KNITTED OR CROCHETED (EXCL. WADDED WAISTCOATS)
6111	BABIES" GARMENTS AND CLOTHING ACCESSORIES, KNITTED OR CROCHETED (EXCL. HATS)
6112	TRACK-SUITS, SKI-SUITS AND SWIMWEAR, KNITTED OR CROCHETED
6113	GARMENTS, KNITTED OR CROCHETED, RUBBERISED OR IMPREGNATED, COATED OR COVERED WITH PLASTICS OR OTHER MATERIALS (EXCL. BABIES' GARMENTS AND CLOTHING ...
6114	SPECIAL GARMENTS FOR PROFESSIONAL, SPORTING OR OTHER PURPOSES, N.E.S., KNITTED OR CROCHETED
6115	PANTYHOSE, TIGHTS, STOCKINGS, SOCKS AND OTHER HOSIERY, INCL. STOCKINGS FOR VARICOSE VEINS AND FOOTWEAR WITHOUT APPLIED SOLES, KNITTED OR CROCHETED ...
6116	GLOVES, MITTENS AND MITTS, KNITTED OR CROCHETED (EXCL. FOR BABIES)
6117	MADE-UP CLOTHING ACCESSORIES, KNITTED OR CROCHETED; KNITTED OR CROCHETED PARTS OF GARMENTS OR OF CLOTHING ACCESSORIES, N.E.S.
62	**ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, NOT KNITTED OR CROCHETED**
6201	MEN"S OR BOYS" OVERCOATS, CAR COATS, CAPES, CLOAKS, ANORAKS, INCL. SKI JACKETS, WINDCHEATERS, WIND-JACKETS AND SIMILAR ARTICLES (EXCL. KNITTED OR...
6202	WOMEN"S OR GIRLS" OVERCOATS, CAR COATS, CAPES, CLOAKS, ANORAKS, INCL. SKI JACKETS, WINDCHEATERS, WIND-JACKETS AND SIMILAR ARTICLES (EXCL. KNITTED...
6203	MEN"S OR BOYS" SUITS, ENSEMBLES, JACKETS, BLAZERS, TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS (EXCL. KNITTED OR CROCHETED, WIND-JACKET...
6204	WOMEN"S OR GIRLS" SUITS, ENSEMBLES, JACKETS, BLAZERS, DRESSES, SKIRTS, DIVIDED SKIRTS, TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS (EXC...
6205	MEN"S OR BOYS" SHIRTS (EXCL. KNITTED OR CROCHETED, NIGHTSHIRTS, SINGLETS AND OTHER VESTS)
6206	WOMEN"S OR GIRLS" BLOUSES, SHIRTS AND SHIRT-BLOUSES (EXCL. KNITTED OR CROCHETED AND VESTS)
6207	MEN"S OR BOYS" SINGLETS AND OTHER VESTS, UNDERPANTS, BRIEFS, NIGHTSHIRTS, PYJAMAS, BATHROBES, DRESSING GOWNS AND SIMILAR ARTICLES (EXCL. KNITTED ...
6208	WOMEN"S OR GIRLS" SINGLETS AND OTHER VESTS, SLIPS, PETTICOATS, BRIEFS, PANTIES, NIGHTDRESSES, PYJAMAS, NÉGLIGÉS, BATHROBES, DRESSING GOWNS, HOUSE...
6209	BABIES" GARMENTS AND CLOTHING ACCESSORIES OF TEXTILE MATERIALS (EXCL. KNITTED OR CROCHETED AND HATS)
6210	GARMENTS MADE UP OF FELT OR NONWOVENS, WHETHER OR NOT IMPREGNATED, COATED, COVERED OR LAMINATED; GARMENTS OF TEXTILE FABRICS, RUBBERISED OR IMPREGN...
6211	TRACKSUITS, SKI SUITS, SWIMWEAR AND OTHER GARMENTS, N.E.S. (EXCL. KNITTED OR CROCHETED)
6212	BRASSIERES, GIRDLES, CORSETS, BRACES, SUSPENDERS, GARTERS AND SIMILAR ARTICLES AND PARTS THEREOF, OF ALL TYPES OF TEXTILE MATERIALS, WHETHER OR NOT...
6213	HANDKERCHIEFS, OF WHICH NO SIDE EXCEEDS 60 CM (EXCL. KNITTED OR CROCHETED)
6214	SHAWLS, SCARVES, MUFFLERS, MANTILLAS, VEILS AND SIMILAR ARTICLES (EXCL. KNITTED OR CROCHETED)
6215	TIES, BOW TIES AND CRAVATS OF TEXTILE MATERIALS (EXCL. KNITTED OR CROCHETED)
6216	GLOVES, MITTENS AND MITTS, OF ALL TYPES OF TEXTILE MATERIALS (EXCL. KNITTED OR CROCHETED AND FOR BABIES)
6217	MADE-UP CLOTHING ACCESSORIES AND PARTS OF GARMENTS OR CLOTHING ACCESSORIES, OF ALL TYPES OF TEXTILE MATERIALS, N.E.S. (EXCL. KNITTED OR CROCHETED)
63	**OTHER MADE-UP TEXTILE ARTICLES; SETS; WORN CLOTHING AND WORN TEXTILE ARTICLES; RAGS**
6301	BLANKETS AND TRAVELLING RUGS OF ALL TYPES OF TEXTILE MATERIALS (EXCL. TABLE COVERS, BEDSPREADS

	AND ARTICLES OF BEDDING AND SIMILAR FURNISHING OF HE...
6302	BEDLINEN, TABLE LINEN, TOILET LINEN AND KITCHEN LINEN OF ALL TYPES OF TEXTILE MATERIALS (EXCL. FLOORCLOTHS, POLISHING CLOTHS, DISHCLOTHS AND DUSTERS)
6303	CURTAINS, INCL. DRAPES, AND INTERIOR BLINDS; CURTAIN OR BED VALANCES OF ALL TYPES OF TEXTILE MATERIALS (EXCL. AWNINGS AND SUNBLINDS)
6304	ARTICLES FOR INTERIOR FURNISHING, OF ALL TYPES OF TEXTILE MATERIALS (EXCL. BLANKETS AND TRAVELLING RUGS, BEDLINEN, TABLE LINEN, TOILET LINEN, KITCH...
6305	SACKS AND BAGS, OF A KIND USED FOR THE PACKING OF GOODS, OF ALL TYPES OF TEXTILE MATERIALS
6306	TARPAULINS, SAILS FOR BOATS, SAILBOARDS OR LANDCRAFT, AWNINGS, SUNBLINDS, TENTS AND CAMPING GOODS :
6307	MADE-UP ARTICLES OF TEXTILE MATERIALS, INCL. DRESS PATTERNS, N.E.S.
6308	SETS CONSISTING OF WOVEN FABRIC AND YARN, WHETHER OR NOT WITH ACCESSORIES, FOR MAKING UP INTO RUGS, TAPESTRIES, EMBROIDERED TABLE CLOTHS OR SERVIET...
6309	WORN CLOTHING AND CLOTHING ACCESSORIES, BLANKETS AND TRAVELLING RUGS, HOUSEHOLD LINEN AND ARTICLES FOR INTERIOR FURNISHING, OF ALL TYPES OF TEXTILE...
6310	USED OR NEW RAGS, SCRAP TWINE, CORDAGE, ROPE AND CABLES AND WORN-OUT ARTICLES THEREOF, OF TEXTILE MATERIALS
6501	HAT-FORMS, HAT BODIES AND HOODS OF FELT, NEITHER BLOCKED TO SHAPE NOR WITH MADE BRIMS; PLATEAUX AND MANCHONS, INCL. SLIT MANCHONS, OF FELT
6502	HAT-SHAPES, PLAITED OR MADE BY ASSEMBLING STRIPS OF ANY MATERIAL (EXCL. BLOCKED TO SHAPE, WITH MADE BRIMS, LINED, OR TRIMMED)
6503	FELT HATS AND OTHER FELT HEADGEAR, MADE FROM THE HAT BODIES, HOODS OR PLATEAUX OF HEADING 6501, WHETHER OR NOT LINED OR TRIMMED (EXCL. MADE BY ASSE...
6504	HATS AND OTHER HEADGEAR, PLAITED OR MADE BY ASSEMBLING STRIPS OF ANY MATERIAL, WHETHER OR NOT LINED OR TRIMMED (EXCL. HEADGEAR FOR ANIMALS, AND TOY...
6505	HATS AND OTHER HEADGEAR, KNITTED OR CROCHETED, OR MADE UP FROM LACE, FELT OR OTHER TEXTILE FABRIC, IN THE PIECE (BUT NOT IN STRIPS), WHETHER OR NOT...
66	UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS, SEAT-STICKS, WHIPS, RIDING-CROPS AND PARTS THEREOF
6601	UMBRELLAS AND SUN UMBRELLAS, INCL. WALKING-STICK UMBRELLAS, GARDEN UMBRELLAS AND SIMILAR UMBRELLAS (EXCL. TOY UMBRELLAS AND BEACH TENTS)
3005	WADDING, GAUZE, BANDAGES AND THE LIKE, E.G. DRESSINGS, ADHESIVE PLASTERS, POULTICES, IMPREGNATED OR COVERED WITH PHARMACEUTICAL SUBSTANCES OR PUT U...

THE ROLE OF SIZE, DISTANCE, ISLANDNESS AND NATURE ON TOURISM PERFORMANCE AND TOURISM DEMAND

THE ROLE OF SIZE, DISTANCE, ISLANDNESS AND NATURE ON TOURISM PERFORMANCE AND TOURISM DEMAND

SUMMARY

The economic challenges imposed by small country size have attracted considerable scholarly attention. Similarly, the limits imposed by distance on trade are well-developed in the literature. Many economies, in particular, islands, are characterised by small size and remoteness. While these two features combined should deter economic performance, the aim of this paper is to assess their potential advantage. The theoretical background stems from standard international trade theory which contends that countries should specialise in industries in which they have abundant factors. Small and remote islands are well-endowed in natural attributes which are important for the tourism industry. An empirical analysis investigates the impact of natural attributes as well as size, distance and islandness on tourism performance and tourism demand. While distance is detrimental to tourism demand, remoteness coupled with islandness is favourable. However, how far remote matters; the *very remote* relates positively to tourism demand but the *moderately remote* does not. Very remote island tourism is proposed as a positional good.

Keywords: Small islands; comparative advantage; nature; remoteness; tourism
JEL classification: F14; L83; O13

1. INTRODUCTION

Size and geography contribute in an important way to shaping the economic structure of nations. The impact of these two factors on economic performance has gained considerable scholarly attention both in the past and recently (Kuznets 1960; Alesina & Spolaore 2003). Small size is believed to be detrimental to economic performance because small economies face greater economic challenges than larger ones. Small economies depend on a narrow range of exports and export markets because of their limited resources and limited capacity to exploit scale economies. This dependency makes them vulnerable to external shocks and such vulnerability results in economic volatility. The "hazard of geography" is an additional economic handicap for nations (Armstrong & Read 2006). In particular, remotely located and isolated countries are at a disadvantage as regards their economic transactions with the rest of the world. As well-documented in the gravity model literature, distance implies higher transportation costs that directly affect the volume and value of trade. Smallness and remoteness are two features that characterise many countries. *Islandness* is another geographical feature that has been widely studied. The impact of islandness on the economy depends on other geographical features including size and location. This paper explores the combined effects of these features on tourism performance and tourism demand. Smallness, remoteness and islandness are features that are likely to deter economic performance. However, these features can be advantageous for a tourist destination (Armstrong & Read 2006; Scheyvens & Momsen 2008).

The general aim of the present paper is to show that the small and remote are features that may improve tourism performance conditional on being island economies. In particular, it suggests that small and remote island tourism is a positional good[55]. This position is gained through the very features of smallness, remoteness and islandness. In more explicit terms, small remote island economies (SRIEs) are endowed with resources that are highly-valued by the consumer. They not only harbour a rich stock of natural attributes[56] but many of them are ideally located as far as the preferences of upmarket and nature-loving tourists are concerned.

[55] The concept was first coined and developed by Hirsch (1976). He distinguished between material and positional goods. While the demand for material goods relates positively to absolute real income, the demand for positional goods is a function of an individual's income or status relative to other people's. Hirsch referred to these goods as social: in simple terms, our enjoyment of these goods depends on whether or not other people are consuming them. Indeed, utility derived from these goods diminishes as others have them. These goods cannot be massed produced because they are scarce in an absolute sense or a socially imposed sense. Satisfaction is derived from such scarcity.

[56] Natural attributes refer to the non-conventional stock of natural capital such as scenery, exotic beauty, untouched environment, rich flora and fauna, unique culture and the like.

The tourism literature has identified natural attributes as the main determinant of the attractiveness of a destination (Hu & Ritchie 1993; Butcher 2006).

Indeed, today, nature-based tourism is a growing segment in the international tourism market. This is in part due to an increase in the number of environmentally conscious consumers. More so, it is due to the desire of the consumer to escape the modern way of life; the consumer seeks to "getting back in touch with nature" in its pure form (Kuenzi & McNeely 2008, p.156) and to do things differently from others[57]. Destinations more likely to feature a superior quality and unique form of nature where the consumer can experience things differently and "set themselves apart from others by their consumption" are small or remote islands (Eaton & Eswaran 2009, p.1). However, the supply of these destinations is scarce and this scarcity renders them status-enhancing. Hence, small and remote island tourism is a positional good.

The Heckscher-Ohlin paradigm which stipulates that countries should develop industries in which they have abundant factors forms the theoretical basis of this study. Since, small and remote islands are well-endowed in natural capital which is the main factor that makes a destination attractive, these resources should be optimally exploited by developing an upmarket tourism industry built on the characteristics of islandness and remoteness. Indeed, trade liberalisation has made it difficult for small and remote islands to export traditional traded goods, such as, sugar and textiles and clothing in which they probably do not enjoy comparative advantages. Moreover, recent studies suggest that island countries would fare better if they restructure their economies towards services, such as, tourism and off-shore banking rather than towards export manufacturing (Armstrong & Read 2000; Bertram 2004). This paper investigates whether the disadvantages of remoteness and smallness can be overcome by tourism development.

The following section provides a review of the well-developed literature on the disadvantages of small economies with particular references to small island economies. The negative impact of distance on economic transactions is also documented by pooling theoretical and empirical examples from the gravity models line of research. Second, an exploratory analysis is conducted to situate the unique natural assets of SRIEs which are enhanced by their smallness and remoteness. These attributes provide them a natural comparative advantage in tourism. Third, an empirical econometric analysis is conducted to assess the impact of nature, size, distance and islandness on tourism performance and tourism demand. The same analysis is also conducted for just the group of islands to compare the determinants of demand of the latter group with the determinants of all countries.

[57] This relates to the Veblenian concept of conspicuous consumption.

2. THE CURSE OF SMALLNESS AND REMOTENESS

2.1 THE DISADVANTAGES OF A SMALL ISLAND ECONOMY

One of the greatest drawbacks of small country size is the limit it imposes on scale-economies (Kuznets 1960). Since domestic demand is often insufficient, small countries cannot reach the minimum efficient scale of production. As a consequence, unit costs of production remains high. The incapability of these countries to create a critical mass has led to categorising them as sub-optimal economies (Armstrong & Read 2003). In turn, their ability to reap the benefits of scale economies in exports is limited. Their international competitiveness is affected and so is their growth rate. Indivisibilities in the domestic economy cause costs and prices to be higher. They lag behind in R&D, innovation and technological advances.

The formation of oligopolies and monopolies is a common feature of small countries because a small domestic market can usually be served by few firms. In addition, the administration and the provision of public goods are characterised by inefficiencies. For instance, Briguglio (1995) reports that the costs of providing government functions are high since these costs are spread only over a small number of taxpayers. A small population means a limited supply of labour; this problem is exacerbated when skilled labour migrates to larger markets. Out-migration for work purposes is common to small island economies. With a restricted domestic labour supply, a standard model of industrialisation in which a large pool of cheap labour is available to run manufacturing industries cannot be applied. Labour-intensive industries are winnowed down. In addition, the costs of trained and qualified labour are higher than in large states.

A small area limits the possibility of being endowed with conventional resources[58]. Those that are fortunate enough to be located in resource-rich zones usually have undiversified resources. More importantly, they typically lack the financial capital required to exploit these resources efficiently and in a sustainable way. In addition, the inability of small countries to produce on a large scale along with limited resources and lack of innovative technology do not give them much choice for export diversification. They are usually dependent upon a narrow range of exports. They often specialise in few economic activities rendering them highly vulnerable to external shocks via changing demand and prices. Moreover, they are usually

[58] The term "conventional" refers to resources such as minerals, etc which are used as factors of production. In this paper, natural resources are viewed from an ecological economics perspective. The argument is that some SRIEs are generously endowed with natural resources, for example, natural beauty and exotic fauna which provide welfare per se. They are likely to be byproducts of *islandness* and remoteness and they have not been fully exploited as a tourism strategy.

reliant on a few export markets which further exacerbate their vulnerability to global policy changes. Export earnings are volatile since SRIEs are price-takers and their volume of trade is an insignificant part of world trade.

While open economies benefit from creative competition, innovation, larger market opportunities, and higher income[59], they are also more exposed to external shocks, such as, changes in the terms of trade. The high degree of trade openness of small economies is mainly size-induced (Armstrong & Read 2003). A restricted production capacity compels them to import more. They are dependent on export earnings to finance strategic imports including oil and other fuels. Their *islandness* requires that such energy supplies be transported at a cost and they often have little storage capacity which increases this cost. Import-substitution is limited which often leads to overly protected domestic markets and results in low quality and high unit prices. In sum, SRIEs are economically vulnerable—susceptible to damage from changes in the external environment over which they can exercise little control. This accounts for the volatility in the GDP of small economies found in some studies (Easterly & Kraay 2000).

SRIEs are prone to yet another kind of exogenous shock—natural disasters, such as, cyclones, hurricanes, landslides, and so on (Briguglio 1995; Easter 1999). Although natural disasters are common to both islands and non-islands, the damage they may cause on a small territory is greater because agriculture and tourism infrastructure are important for small island economies. For example, in 2002, cyclone Dina severely affected the economy of Mauritius and Réunion. It caused damage to roads, the electricity network, the water distribution system and agricultural fields. In addition, the sugar sector, a major net foreign exchange earner for Mauritius, saw its growth rate falling from 9.9 per cent in 2001 to minus 19.3 in 2002 (AfDB/OECD 2004).

An SRIE's quest for development often poses a threat to its environment. Intense construction of housing and commercial buildings reduces agricultural land and can cause damage to the ecosystem. In Mauritius, sugar cane plantation plays a vital role in maintaining the ecological balance; studies have shown that if sugar plantation was to be eliminated, the lagoon will lose its greenness and beauty as a result of soil erosion. The coastal zones of small islands are constantly under pressure because of tourism development. Many small islands have made intense use of their natural resources bringing them today to near depletion: for example, gold in Fiji, manganese in Vanuatu, bauxite in Haiti and phosphate in Nauru (Briguglio 1995).

[59]Frankel and Rose (2002) report that every 1 percent increase in a country's overall trade (relative to GDP) raises income per capita by at least one-third of a percent.

Global warming and rising sea levels are other threats for small islands, especially, the low atolls. Parts of the Maldives are expected to be completely submerged in a projected 20 years time. Thus, an SRIE's environmental vulnerability can hinder its economic progress and at times can affect its very existence. The features described above are characteristics of most small islands. One feature that makes SRIEs different compared to other grouping of islands and probably more vulnerable as far as international trade relations are concerned, is their remoteness.

2.2 WHY IS REMOTENESS A CONCERN?

Given the above characteristics, small islands are obliged to resort to international trade. However, a significant subset of these islands is located away from the main world trading centres. This hazard of geography, in other words, their remoteness has a direct consequence on trade. First, remoteness limits access to markets. Countries which are a long distance from large foreign markets have a low degree of foreign market access. Second, remoteness limits access to and increases the costs of raw materials, intermediate goods and capital (Redding & Venables 2002). Third, distance reduces technology flows (Keller 2001) and hinders the development and application of R&D. Fourth, remoteness limits foreign direct investment (FDI) with an elasticity of -0.42 (Redding and Venables 2002 citing Di Mauro 2000) and also cross border equity transactions (Portes & Rey 2005).

Firms in remote islands face higher transportation costs and longer shipping time than firms located close to their markets. Although transport costs have been decreasing with technological advances, they comprise a significant part of trade costs; Redding and Venables (2002) report that they account for 28 per cent of the value of goods shipped. It is worth noting also that shipping costs are largely determined by monopolies in the carrier companies. As reported by Fink et al. (2002), monopoly practices raise transport prices by 25 per cent. The doubling of distance increases transport costs by 20 per cent or more (Limao & Venables 2001). In addition, transit time costs are considerably larger. An extra day of travel accounts for 0.3 per cent of the value of goods shipped; the number increases to 0.5 per cent if manufacturing goods are considered (Hummels 2001).

In sum, remoteness limits economic interactions. In other words, trade flows decline with distance. This tendency is corroborated by numerous trade studies that use gravity models; these studies estimate the elasticity of trade flows with respect to distance to be in the range of -0.95 to -1.5 (Redding & Venables 2002). Using a meta-analysis of 1467 distance effects

estimated in 103 papers, Disdier and Head (2008) confirmed the limits that distance imposes upon trade. They estimated that on average a 10 per cent increase in distance reduces bilateral trade by 9 per cent. This result is robust to different sample sizes and methodologies. In addition, the distance effect persists in studies that use more recent data. Such a result is in contradiction with the popular beliefs that the world is becoming smaller or that distance is disappearing (Friedman 2006).

Redding and Venables (2002) manipulated country locations in some experiments to illustrate how geography matters. They shifted country 1's to country 2's location and observed the resulting effect on income. They found that being either islands or landlocked reduces income. Around 7 per cent of GDP is lost by being an island. The two islands considered were Sri Lanka and Australia. This effect would undoubtedly be of greater magnitude if SRIEs were to be considered. In a paper emphasising economic geography, Redding and Venables (2004) found that halving distance between trading partners leads to an increase in per capita income of 25 per cent. The above suggests that the economic structure of remote and non-remote countries is likely to be different.

The sudden drop in the textiles and clothing trade performance of SRIEs following the elimination of the multifibre agreement[60] quotas provides evidence of their vulnerability to external shocks. Figure 1 in section 3.2 below illustrates the declining performance of SRIEs in clothing manufacturing over three time periods. Susceptibility to external shocks is more often evident for trade in tangible goods.

3. THE POTENTIAL BENEFITS OF REMOTENESS AND SMALL SIZE

While being an island, being small and being remote are disadvantageous for trade in goods, they can be assets for trade in tourism; the "accident of geography" of small islands can be transformed into "precious marketing assets" (Baldacchino 2002, p.254). In this vein, a few studies have brought forward the strengths of small and remote islands. Scheyvens and Momsen (2008) identified six assets of islands. First, they reported that "small is beautiful" and isolation is "exotic". Small and remote are, thus, features that are in demand from a niche

[60] Trade in textiles and clothing was fully liberalised in 2005 with the elimination of the multifibre agreement.

market tourism perspective. The tourist is lured by the "Robinson Crusoe factor[61]" of being far and away. Second, they reviewed the sound economic performance of islands. Islands benefit by exploiting their tourism potential as their *islandness* and smallness per se represent natural niche markets. Third, islands gain from their socio-cultural and natural assets which contribute to making these destinations authentic and unique. In the positional economy[62], uniqueness adds to satisfaction derived from the consumption of the good or service. Fourth, small island development strategies are usually holistic in nature in that they respect both traditional values and the environment. Fifth, islands benefit from their strong networks with the rest of the world in terms of trade and remittances. Lastly, the nationalism and coherence of small and remote island societies tend to contribute to their political strength.

Using standard OLS regressions, Brau et al. (2007) showed that smallness is not necessarily bad when small countries[63] specialise in tourism, that is, when their ratio of tourism receipts to GDP is more than 10 per cent. They showed that tourism countries grow faster than other group of countries, namely, OECD, Oil, LDC, and small country. A more interesting finding is the fact that small tourism countries perform much better than the rest of small countries. This implies that the choice of specialisation in a particular sector may affect the economic success of a small nation. Similar conclusions have been drawn previously by Algieri (2006) when she analysed the relationship between economic growth and tourism specialisation. She used time-series econometric analysis. Out of 25 high growth countries, 21 were specialised in tourism and these countries had small dimensions. These findings confirm the argument that the opportunity cost of specialisation in tourism correlates with country's size. Consequently, a small country has a smaller opportunity cost of specialising in tourism than a large country. The results also reveal that these economies are "well-endowed with high-quality natural attractions" in this case, sea and beaches (p.10).

3.1 A COMPARISON OF SRIES' TOURISM WITH OTHER GROUPS OF COUNTRIES

[61] To coin a contemporaneous term, I prefer to call this feeling of awe and oneness with nature when being on a remote and small island as the "lost factor"; the term comes from the title of the famous American TV series by Lieber, Abrams and Lindelof whose main storyline revolves about characters whose plane crashed on a mysterious tropical island in the Pacific.
[62] See Hirsch (1976) for a distinction between the positional and the material economy.
[63] Small countries are defined as those having an average population of less than one million during 1960-1995 as in Easterly and Kraay (2000).

Table 1 compares the tourist statistics of SRIEs with other groups of nations, namely, the *Caribbean islands*, *European islands* and *All islands*. SRIEs consist of islands which have a population of less than 1.5 million and are remote[64] from the major world trading centres, Brussels (EU), Washington D.C. (US) and Tokyo (Japan). Overall, tourist arrivals increased over the period. The Caribbean islands which are considered as non-remote islands because they are close to the US, a major trading centre, out-performed the other groups of islands[65]. SRIEs showed a very good performance. Looking just at the figures for *arrivals* is not necessarily revealing; arrivals numbers do not take length of stay and tourist-type into account, and may, understate demand. A high tourist arrival number may only be suggestive of mass tourism whereas tourism receipts can suggest sustainability of the tourism product.

TABLE 1 VISITOR ARRIVALS AND TOURIST EXPENDITURE

Tourist arrivals & expenditure	**Caribbeans**[α]	**SRIEs**[β]	**European Islands**[ρ]	**All islands**[κ]
% change in arrival (95-09)	45%	70%	6%	44%
% change in total tourist expenditure (95-09)	16%	97%	-20%	26%
% change in expenditure per tourist (95-09)	-24%	-3%	-25%	-16%
% change in expenditure per tourist (95-06)	-15%	6%	-20%	-7%

[α] Antigua and Barbuda, Aruba, Bahamas, Barbados, Bermuda, Cayman Islands, Dominica, Grenada, Guadeloupe, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, St Kitts, St Lucia, St Vincent& the Grenadines, Trinidad & Tobago, UK Virgin Islands, US Virgin Islands

[β] Fiji, Kiribati, Solomon Islands, Tonga, Vanuatu, Maldives, Cape Verde, Comoros, Madagascar, Mauritius, Reunion, Sao Tome & Principe, Seychelles

[κ] Antigua and Barbuda, Aruba, Bahamas, Barbados, Bermuda, Cayman Islands, Dominica, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, St Kitts, St Lucia, St Vincent & the Grenadines, Trinidad & Tobago, UK Virgin Islands, US Virgin Islands, Cyprus, Iceland, Malta, Sri Lanka, Philippines.

[ρ] Cyprus, Malta

Numbers are calculated using data from World Travel & Tourism Council website

[64] Remote means at least 4000 km away from the nearest major trading centre or 8500 km away from the three major trading centres.

[65] Cyprus is not considered an island in our empirical analysis as it shares a border with Akrotiri and Dhekelia. It is worth noting that the sharp decline in European receipts may possibly relate to their political problems.

SRIEs' total tourist expenditure increased by almost 100 per cent outperforming the other groups of islands. It is interesting to investigate how much each tourist brings to each group of nations' economies. Over the period, expenditure per tourist has been declining most probably as a result of shorter length of stays (Barros & Machado 2010). SRIEs experienced the lowest decline implying that they are still seen as attractive destinations. The tourism product is income elastic explaining why the recent global economic downturn had negatively influenced tourist movements around the world (Papatheodorou et al. 2010).

The final row of table 1 gives the percentage change in expenditure per tourist before the onset of the recent crisis as possibly providing a superior estimate of the underlying trend in demand. The negative trend persists except for SRIEs. The results suggest that tourists have been spending more on SRIEs—and thus putting a higher value on SRIEs tourism assets—than the other groups of nations. The valorisation of smallness and remoteness may have been the result of increased investment in tourism but reverse causality is not to be excluded.

McElroy (2003) developed a Tourism Penetration Index (TPI) which he applied to 51 islands. The TPI measures tourism development along three dimensions: visitor spending per capita (a measure of overall economic impact); average daily visitor density (the number of stay-over tourists multiplied by the average length of stay plus excursionists divided by the host population times 365) and; the number of hotel rooms per km^2 (a measure of tourism's impact on the physical environment). The findings are very interesting. The most penetrated islands are the Caribbean, Mediterranean, and North Pacific islands and the least penetrated are the Indian Ocean and Pacific islands. The former group are characterised by short stays, maintained attractions and large facilities whereas the latter with long stays, limited infrastructure and small facilities.

Many SRIEs are located in the Indian and the Pacific Oceans, the regions where the least penetrated islands are situated. It follows from McElroy's definition that SRIEs are less penetrated than other small island economies. There are 12 SRIEs in McElroy's list of "least tourism developed", 4 in "intermediate tourism developed" and none of them in "most tourism developed". The success of the "most tourism developed" countries is attributed to their mature status and their geography. The Caribbean islands are close to North America, the Mediterranean islands to Europe, and the Northern Pacific Islands to Japan. Proximity and accessibility to these lucrative markets help explaining their success. The least penetrated economies are remote and also exhibit a more diversified economy. McElroy's analysis suggests the contrasting development strategy of SRIEs and other groups of islands. The latter focused on mass tourism while SRIEs did not. The evolution in expenditure per tourist in table 1 also

exposes the tendency for tourists to spend increasingly more on SRIEs and this tendency suggests that SRIEs could be upmarket destinations.

3.2 HOW IMPORTANT IS TOURISM FOR ISLAND ECONOMIES?

Over the time period 1995-2009, travel and tourism (TT) direct contribution to the GDP, TT capital investment and TT employment of SRIEs grew remarkably as shown in table 2. TT employment grew by only 14 per cent for the Caribbean and TT capital investment grew by 15 per cent for the European islands. Indeed, tourism appears to be a growing sector in SRIEs. During the last decade, tourism contributed twice as much to the TT direct economy of SRIEs than of the Caribbean Islands. Is there evidence of above average performance in the tourism sector comparatively with other sectors?

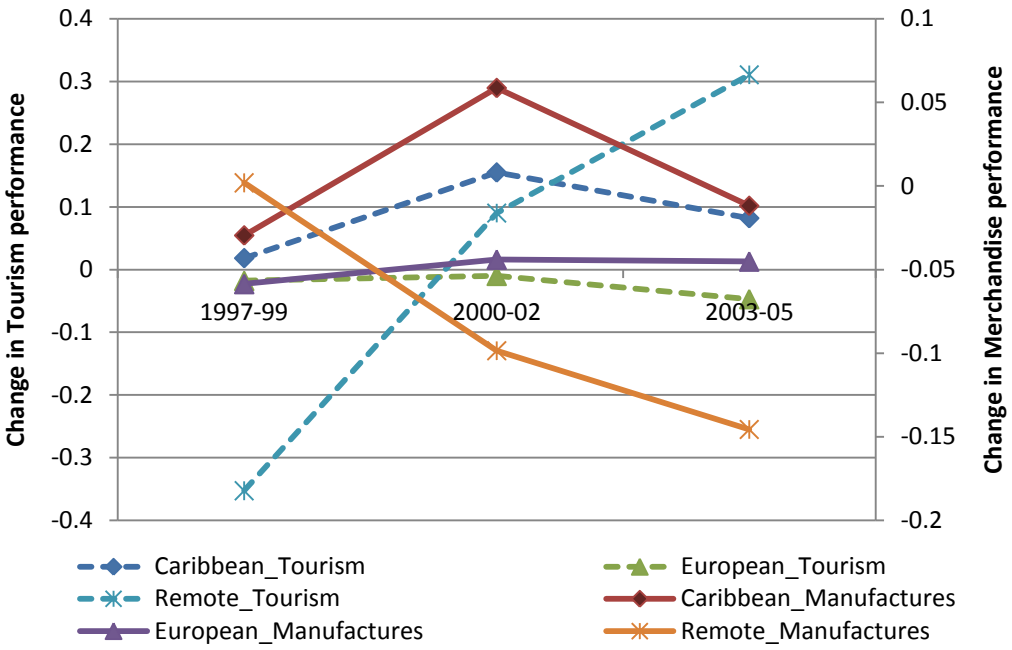
TABLE 2 PERCENTAGE CHANGE IN TRAVEL & TOURISM (TT) INDICATORS 1995-2009

	Caribbeans	SRIEs	European islands	Non-SRIEs
TT Capital Investment	43%	54%	15%	46%
TT Employment	14%	59%	-25%	7%
TT direct economy GDP	26%	54%	-18%	29%

Numbers computed using data from World Travel and Tourism Council website

Figure 1 allows one to compare the change in trade performance in tourism and manufactures of SRIEs, the Caribbean islands and the European islands over three time periods. While the growth rates in the manufactures trade performance of the Caribbean and European islands were positive, there was a sharp decline in the performance of SRIEs. Tourism performance growth was positive for the Caribbean islands but from period 2000-02 onwards there was a declining trend. In contrast, the tourism performance growth of SRIEs increased sharply over the whole period. This suggests that over the years the tourism sector has become an important industry for SRIEs possibly because of the gradual decline in manufacturing.

FIGURE 119 GROWTH IN TOURISM AND MANUFACTURES TRADE PERFORMANCE[Γ]



[Γ]Trade performance is measured by Balassa's index of revealed comparative advantage. Data are sourced from World Bank Development Indicators.

4. DESTINATIONS' ATTRACTIVENESS

4.1 IS NATURE ATTRACTIVE?

Islands have always been a source of attraction to men. The citation by King reflects the qualities that island countries suggest to tourists.

> *An island is a most enticing form of land. Symbol of the eternal contest between land and water, islands are detached, self-contained entities whose boundaries are obvious; all other land divisions are more or less arbitrary. For those of artistic or poetic inclination, islands suggest mystery and adventure; they inspire and exalt* (King 1993, p.14).

Although the attractiveness of a destination depends on multiple attributes, in an island context, the factor *natural endowment*[66] plays a key role. This section assesses the stock of natural

[66] The terms "natural capital" and "natural endowment" are used interchangeably throughout this thesis.

capital of SRIEs which contributes to make them unique tourist attractions. A major difficulty in this endeavour is to find a proper measurement of natural endowment. What constitutes attractive natural capital is not easy to define or measure. There is inevitably a normative aspect to the concept; what is considered as beautiful or not differs from one individual to another. However, the tourism literature has successfully identified the determinants of a destination's attractiveness and, as anticipated, the factor nature is highly ranked.

Butcher (2006) brings evidence from four case studies to emphasise the importance of natural capital in favouring tourism, in particular, ecotourism and, hence, further sustainable economic development. Hu and Ritchie (1993) reviewed the literature on the different factors that attract tourists and found that "natural scenery and climate" were the most important ones. In their own survey, they determined the relative importance of different attributes in contributing to a destination's attractiveness in two contexts: recreational and educational. In the recreational dimension, scenery, climate and accommodation ranked first, second and third respectively. In the educational dimension, uniqueness of the lives of local people, historical attractions and scenery ranked first, second and third respectively. In addition, across the five destinations they considered, scenery had a high score (a score greater than 4; 5 is the highest). The results, thus, emphasise the natural scenery factor in making a destination attractive.

In a paper studying whether there are socio-demographic differences in the value given to natural attributes, Oliveira and Pereira (2008) found that landscape and climate were the most important factors considered by tourists visiting the Madeira Island. "Authenticity of its nature" differentiated Madeira Island from other destinations (p.3). Similarly, Freytag and Vietze (2009) showed that biodiversity—an indicator of nature—enhances the attractiveness of a destination and hence contributes to tourism revenues.

4.2 SRIES AND NATURE

Are small remote islands well-endowed with natural capital? The NGO, *Conservation International*, has identified "biodiversity hotspots" around the world. They are "those parts of the world that contain the richest biological diversity" (Hu & Ritchie 1993, p.535). Region-wise, the hotspots spread across North and Central America, South America, Europe and Central Asia, Africa, and Asia-Pacific. Madagascar and the Indian Ocean islands form one of the sub-regions in Africa designated as biodiversity hotspots. They include the islands of Madagascar, Mauritius, Comoros, Réunion, and the Seychelles. The area hosts an impressively rich biodiversity spread

over 600,461 km^2. Detailed biodiversity statistics can be reviewed on the biodiversity hotspots website[67].

The Polynesia-Micronesia sub-region in Asia-Pacific covers Fiji and all the islands of Polynesia and Micronesia, including, Samoa, Tonga, and Cook Islands. East Melanesian islands include the Solomon Islands and Vanuatu islands. Together, these two sub-regions cover more than 146,000 km^2. Many SRIEs considered in this paper are located in the biodiversity hotspots designated areas. This in itself is indicative of their rich stock of natural capital. To support this observation, more than half of SRIEs are eco-regions. An eco-region[68], as defined by the *World Wildlife Fund*, is a large unit of land or water containing a geographically distinct assemblage of species, natural communities, and environmental conditions. Given such valuable resource endowments, it is intuitive to expect SRIEs to be attractive tourist destinations and henceforth to perform well as far as their tourism indicators are concerned.

5. THE IMPACT OF NATURE, SIZE, DISTANCE AND ISLANDNESS ON TOURISM PERFORMANCE AND DEMAND—THE ECONOMETRIC EVIDENCE

This section empirically assesses whether and the extent to which nature influences tourism performance and tourism demand. As previously documented, factor endowments, in particular, nature and scenery, are important determinants of a destination's attractiveness. In other words, a country will have a superior performance in tourism if it is well-endowed in these natural attributes. Thus, the theory of comparative advantage which emphasises spatial variations in endowments as the basis for trade is relevant in assessing the success of destinations. The theoretical foundation of this study is based upon standard Heckscher-Ohlin international trade theory which indeed stipulates that trade is based on relative factor endowments; differences in factor endowments determine production cost (Feenstra 2004).

In a two-sector and two-island world, island R is well endowed with natural beauty (exotic beaches) and island C is relatively richer in capital endowments. Tourism and manufactures are produced in each of the island economies using the two factors, nature and capital; tourism is nature-intensive while manufacturing is capital-intensive. According to Heckscher-Ohlin, each island will specialise in the sector in which it has a comparative advantage or where its unit production cost is the lowest. Thus, island R will specialise in

[67] http://www.biodiversityhotspots.org/.
[68] List of eco-regions can be obtained at http://wwf.panda.org/about_our_earth/ecoregions /

tourism (as it is well-endowed in nature) while island C in manufacturing (as it is well-endowed in capital).

This leads to the main hypothesis of the paper: countries with a rich natural endowment will have a better performance in tourism than those with a weak natural endowment. A standard OLS cross-country regression is used to assess this hypothesis[69]. The standard measure of tourism performance, a symmetric measure of revealed comparative advantage, is employed. The second hypothesis claims that sustained tourism revenues are largely dependent on the quality of natural resources present in a country. Tourism receipts, tourist arrival and tourism receipt per tourist are used as proxies for tourism demand.

5.1 DATA, VARIABLES AND ESTIMATION METHOD

5.1.1 TOURISM PERFORMANCE

Tourism performance (TP) is measured by using a symmetric measure of revealed comparative advantage. Balassa (1965) proposed that comparative advantage can be revealed without having to include all the factors that actually determine comparative advantage and he suggested a corresponding index. Thus, comparative advantage is inferred from observed data and is called revealed comparative advantage (RCA). RCA does not try to understand the sources of comparative advantage; it is a measure of trade performance. The traditional Balassa index measures a country's export of a commodity relative to a set of exports and relative to a set of countries. The index is as follows:

$$RCA = \frac{X_{ij} \,/\, \sum_{l=1}^{m} X_{il}}{\sum_{c=1}^{n} X_{cj} \,/\, \sum_{c=1}^{n} \sum_{l=1}^{m} X_{cl}} \qquad (1)$$

X represents exports, *i* is a country, *j* is tourism exports (measured in terms of tourism revenue), m is a set of commodities, and *n* is a set of countries. Country *i* is said to have a comparative advantage in commodity *j* when RCA > 1 and a comparative disadvantage when RCA <1.

However, the RCA index has a basic flaw because it is not comparable on both sides of unity. The symmetric measure proposed by Laursen (1998) solves this problem and is applied here as:

[69] Although panel estimation is superior, data unavailability constrained the estimation procedure. The main exogenous variable, *Nature,* is constant over the time period for which I have data. It could therefore be indistinguishable from island fixed effects.

$$TP = (RCA - 1)/(RCA + 1) \quad (2)$$

In the present case, n represents a set of 176 countries of the world and m represents all goods and services. The numerator represents the share of tourism exports of country *i* in national exports and the denominator represents the share of tourism exports of all countries in total world exports of all goods and services. In sum, TP reflects country's *i* relative export share of tourism in relation to all countries export share of tourism. Tourism performance is computed using relevant data from the *World Development Indicators* databank (WDI) (World Bank 2010) and the World Tourism Organisation database (UNWTO).

5.1.2 TOURISM DEMAND

Tourism demand is often defined as the quantity of tourism products and services that the consumers are willing to acquire during a specific period of time and under certain conditions (Song & Witt 2000). In their review of econometric modelling in tourism research, Li et al. (2005) reported that most studies have focused on the latter definition which is based on quantity. Furthermore, *tourist arrivals* is the main dependent variable used in these studies although other measures are increasingly being used. A derivative measure of arrivals is tourist participation rate which is calculated as tourist arrivals divided by population of the origin country. Demand can be measured in a variety of ways: in monetary terms including tourism receipts and share of tourism receipts in national income; in temporal terms including duration of stay; in geographical terms including distance travelled to a destination (Song et al. 2010).

Although *arrivals* is a popular measure of tourism demand, it ignores the length of stay and the quality of products being offered. Nevertheless, forecasting arrivals provides useful information for tourist capacity planning purposes. A qualitative measure of demand which focuses on value can be superior but still ambiguous; for instance, tourism receipts as a measure of demand entangles both expenditure and type of tourism products and services. In addition to tourism receipts and tourist arrivals, expenditure per tourist is used in this paper as a measure of tourism demand. This measure has been less often used in the tourism literature. It is, nonetheless, an appropriate measure as it captures the economic impact of tourism and the sustainability of the tourism product. In other words, large tourism receipts may be due to mass tourism and the impact of mass tourism and upmarket tourism on the economy obviously differ. The average tourist expenditure at a destination provides insights on the type of product or on

the tourist perception of the product. The data for calculating the different demand measures have been sourced from WDI databank and missing values were sourced from the UNWTO[70].

5.1.3 NATURE

In line with Freytag and Vietze (2009), biodiversity indicators from the World Resources Institute are used as proxies for nature. Freytag and Vietze (2009) used the number of bird species[71] relative to the size of a country as proxy for biodiversity. The focus of this paper is island economies: while the number of bird species is a good indicator of natural endowment, the number of fish species is also highly relevant for islands' environmental richness and health[72]. Thus, natural endowment is measured by the variable *L-nature*—the logarithm of the sum of the number of bird and fish species relative to each country's size—and it is the most important exogenous variable. The variable is given as:

$$L\_nature = log(\frac{fish\ species + bird\ species}{area}) \quad (3)$$

The variables *Nature* is log-transformed to cater for skewness. Other variables used in the models and their sources are listed below.

5.1.4 OTHER VARIABLES

i. *L-GDPpc*: GDP per capita is taken from the WDI databank (World Bank 2010); except otherwise stated, an average of the years 2003-2005 is used for most of the indicators to cater for non-availability of data. Missing data was complemented by figures from the *World Factbook* (Central Intelligence Agency 2011). This variable is log-transformed for normality purposes; other variables below are also log-transformed except where indicated otherwise.

[70] This dataset, hence, is an improvement over previous versions of the paper.
[71] Blair (1999) discusses some of the reasons why birds can be used as indicators of biodiversity. First, birds are distributed over a broad geographical area and as such they are present in almost all countries, political units or geographical units of the world. Second, they are sensitive to changes in the environment so that they can be good indicators of environmental wealth. Third, birds are found across all levels of development from relatively natural to highly urban areas. Fourth, the number of bird species is less likely to be subjected to political influence (Rawls & Laband 2004).
[72] The abundance of marine mammals is an indicator of marine ecosystem (Rosen & Trites 2000) and water quality (Gannon & Stemberger 1978) and changes in their environment (Whitfield & Elliott 2002). Fish like birds are diverse and distributed in rivers and oceans around the world and sensitive to changes in their environment.

ii. *L-dist*: Distance is sourced from the CEPII database[73]; CEPII provides data on the geodesic distances using the great circle formula. In this thesis, the variable distance measures distance to one of the closest world administrative/trading centres, namely, Brussels (EU), Washington D.C. (US), and Tokyo (Japan). Where data was not available, distance was manually calculated using distance calculators[74].

iii. *L-PC*: Tourism price competitiveness is taken from the *Travel and Tourism Competitiveness report* (2007) available on the *World Economic Forum* website (WEF 2010). When the figure for price competitiveness is high, it indicates that prices for tourist services are low relative to those in competitor countries. However, the dataset is reduced to 120 observations.

iv. *Coast*: Coastline is taken from the *World Factbook* and measures the length of the coast of each country in kilometres. The variable was scaled by area but not log-transformed as many countries have no coast.

v. *L-pop, L-area:* Population and Area; source WDI databank (2010).

vi. *L-internet:* Internet (per 100 persons): The connectivity level of a country is used as a proxy for the infrastructural development and technological advancement of a country. Source is WDI databank (2010).

vii. *L-abs, L-law:* Absence of violence (ranking) and Rule of Law are proxies for the safety of a destination. Data is obtained from the World Bank governance indicators.

Dummy variables:

viii. *Small country-pop:* includes all countries that have a population of less than 1.5 million people. Small country may include islands and non-islands irrespective of their remoteness. Since smallness can be defined by other criteria (area and/or GDP), another variable is used for comparative purposes.

ix. *Small country-area* is another measure of size based on area (<100,000 km^2).

x. *Remote country* includes all countries that are at least 4000 km away from the nearest world trading centre irrespective of their size or that their average distance from the three major trading centres is at least 8500 km[75].

[73] http://www.cepii.fr/anglaisgraph/bdd/distances.htm
[74] Distance is manually calculated for *American Samoa, Antigua & Barbuda, Channel Islands, Guam, Holy See, Isle of Man, Kosovo, Liechtenstein, Myanmar, Timor-Leste, and U.S. Virgin Islands.*
[75] The first essay provides the rationale for this measure.

xi. *V-remote country:* Very remote country includes all countries that are at least 6000 km away from the nearest world trading centre.

xii. Island is defined as a country or territory which has no borders with any other country or territory. Thus, Tonga and New Zealand are islands. Although small, Andorra is definitely not an island as it is landlocked. Even Haiti is not an island on this definition as it shares a 360 km border with the Dominican Republic. *Island* does not include "islands" which are connected by commuting structures to the continents; for example, Singapore is not classified as an island in this paper. This variable is not included in any of the models but its variants below are.

xiii. *Remote island* includes all islands that are at least 4000 km away from the nearest world trading centre irrespective of their size or that their average distance from the three major trading centres is at least 8500 km irrespective of their size.

xiv. *V-remote island:* Very remote island includes all islands that are at least 6000 km away from the nearest world trading centre irrespective of their size.

xv. *Small island-pop:* includes all islands that have a population of less than 1.5 million people.

xvi. *Small island-area* includes all islands that have an area of less than 100,000 km^2.

xvii. *srie:* The dummy SRIE captures islands that are both small and remote, with an area of less than 100,000 km2 and a distance greater than 6000 km. Other combinations of area and distance and GDP are used for comparison.

See the annex for a list of the different categories of countries.

5.1.5 MODELLING APPROACH

The present modelling context consists of a limited number of data points but a relatively large number of potential explanatory variables consistent with the theory. Variable selection is necessary to build a congruent model but the theory does not give much guide. So, the researcher has to choose empirically a basis of fit. A basic problem with an empirical selection of variables is that it gives rise to too many possibilities. The general-to-specific (GETS) approach to model selection is designed to deal with this problem.

GETS uses a model reduction procedure that sequentially removes statistically insignificant variables using a multi-path search. The basic principle behind the approach is model reduction: while a complicated model can describe the features of the economic world, a

simpler and more compact model is an improvement if it conveys all the information provided by the complicated model. In this essay, an automated GETS specification search is used where all explanatory variables are initially included. GETS is related to the theory of encompassing. Model I encompasses model II if it conveys all the information given by model II (Hoover & Perez 1999).

The models in this paper are estimated using the automatic model selection algorithm *Autometrics* in the econometrics software package *PCgive.* Autometrics is a relatively new algorithm for model selection in the GETS framework. The main steps in the algorithm are as follows: (i) The starting point of GETS is a relevant general unrestricted model (GUM) which contains the initial information set, that is, all the relevant variables. (ii) Through a tree search, insignificant variables are removed and the model is re-estimated. When all (not always, see next step) insignificant variables are eliminated, the path terminates. (iii) Another criterion for model reduction to succeed requires that the current model encompasses the GUM. Thus, an F-test is performed on the removed variables to ensure encompassing. If the current model fails the encompassing test, the variable is kept in the model even if it is insignificant. (iv) Furthermore, every estimated model is subjected to the usual diagnostic tests including tests for normality, residual correlation and so on. If the current model fails any of the tests, the model is rejected and the next is considered. (v) The procedure often results in multiple terminal models. An iterative procedure then begins. The terminal models are united to form a new GUM; the GUM goes through the all of the previous steps until there is convergence to one single model (Castle & Shephard 2009).

Autometrics has an option for fixing variables; that is, preventing the algorithm from deleting these regressors. This is useful to assess the importance of variables of interest. Autometrics can also deal with outliers; it has the capacity to neutralise large residuals in the GUM by adding impulse dummies. This allows the investigator to check whether the results reflect the influence of particular, possibly anomalous, observations. Leverage points, observations whose value on the predictor variables deviate significantly from the mean, can affect the outcome of the regression. For more information on Autometrics algorithm, see chapter 4, Autometrics in The Methodology and Practice of Econometrics: A Festschrift in Honour of David F. Hendry by Castle and Shephard (2009).

5.2 TOURISM PERFORMANCE AND NATURE

The following equation is applied to test the first hypothesis,

$$TP_i = \beta_0 + \beta_1 L\_nature_i + \beta_2 x_i + \varepsilon_{1i} \quad (4)$$

where TP_i is tourism performance of country *i* which is calculated using equation (2), *L-nature* is the natural endowments of islands calculated as in (3) above, and x_i is a set of control variables (all of these variables are initially included in the GUM): *L-GDPpc*, *L-law, L-abs, L-pop, L-area, L-internet*, *coast*, *L-dist* and dummies: *Small country-pop*, *Small country-area, Small island-pop*, *Small island-area, Remote country, V-remote country, Remote island, V-remote island* and *srie* among others. Price competitiveness (*L-PC*) is excluded from the set of regressors since it is an outcome and not a determinant of comparative advantage. Estimation is by OLS.

According to the hypothesis under investigation, *L-nature* should relate positively to tourism performance because, as documented previously, nature is the most important factor in determining a destination's attractiveness. *L-GDPpc* captures the economic size of a country and is expected to relate negatively to tourism performance. Tourism performance is a measure of tourism specialisation. Previous studies report the following stylised fact: the opportunity cost of specialisation in tourism is positively related to size, hence, small countries are more likely to specialise in tourism (Algieri 2006; Brau et al. 2007). Thus, *L-GDPpc* should show a negative sign. The tourism literature documents that developing countries have a higher tourism growth rate than the more developed ones (Roe et al. 2004); in addition, Eugenio-Martín et al. (2004) report that in Latin American countries tourism growth is positively related to per capita GDP only for low and medium income countries; it ensues that large economies with high GDP per capita should have a low tourism performance.

L-law proxies the safety and stability of a destination and is expected to promote to TP. The variable *L-internet* is an indicator of the infrastructural and technological development; hence, it is expected to show a positive sign. *Coast* is also expected to add to TP since longer coastline implies the increased possibility of coastal and beach tourism. The more remote a country, the less accessible it is to potential tourist; thus distance is expected to negatively impact TP so that the coefficients of the variables *L-dist, Remote country, V-remote country* should be negative. However, remote island tourism may be a positional good whose high value appeals to tourist. Thus, it could be that the negative impact of distance is reduced by the factor "remote islandness"; a positive sign is expected for both *remote islands* and *very remote islands*. On one hand, smallness is expected to deter TP; hence, the coefficients of *Small country (by population or by area)* should show a negative sign. On the other hand, islandness is expected to favour TP and *Small island (by population or by area)* should have a positive sign.

Table 3 reports the results after running the automatic model selection algorithm[76]. Model I is the terminal model after the GUM has gone through the reduction procedure. Model II is a terminal model which has passed through an outlier detection process. Only five parameters are retained in model I including the dummy for *very remote island*. The positive estimated coefficients of the variable *L-nature* in both models points to the confirmation of the hypothesis that richer natural endowments promote tourism performance.

TABLE 3 THE IMPACT OF NATURE, SIZE, DISTANCE AND ISLANDNESS ON TOURISM PERFORMANCE

	I	II
L-nature	0.151** (4.18)	0.031* (2.19)
L-GDPpc	-0.102** (-3.98)	-0.094** (-3.88)
L-law	0.254** (4.65)	0.263** (5.19)
L-area	0.065* (2.36)	
Coast		0.024 (1.69)
Dummies:		
Small island-Area		0.398** (4.06)
V-remote island	0.263* (3.51)	
Papua New Guinea		-0.892** (-27.2)
	N=178	N=178
t-values in (), *significant at 5 % level ** significant at 1 % level		
Diagnostic tests with p-values in ()		
Model I Normality test: Chi^2(2) = 2.4779 [0.2897] Hetero test: F(9,168) = 2.9955 [0.0025]** Hetero-X test: F(15,162) = 2.2764 [0.0061]** RESET23 test: F(2,171) = 0.54931 [0.5784]		
Model II Normality test: Chi^2(2) = 0.61194 [0.7364] Hetero test: F(9,167) = 4.0264 [0.0001]** Hetero-X test: F(15,161) = 3.6684 [0.0000]** RESET23 test: F(2,170) = 1.0858 [0.3400]		

N.B. Since the diagnostic tests reveal heteroscedasticity, robust standard errors have been computed. The acceptable diagnostic test p-value is 0.01.

As expected, economic size does not favour tourism performance as indicated by the negative sign on the GDP per capita coefficients in both models. The governance indicator *L-law*

[76] These results are robust to the manual procedure of sequentially eliminating the most insignificant variable in STATA.

is positive as expected and significant. Large size as represented by *L-area* promotes TP. In line with the above reasoning, a very remote island (*V-remote island*) favors TP; this suggests that remote island tourism is a positional good. The simple distance variable does not appear in the terminal model. In another model, the variable *L-dist* was fixed (forced to be kept in the model) before going through the model reduction procedure; its coefficient was insignificant although positive but not very different from zero.

Model II also includes the dummy *small island-area* which has a positive sign and is significant. Thus, small islandness is favourable to TP. Papua New Guinea is detected as an outlier which exerts a negative impact on TP. Indeed, the country does not have a dominant tourism sector. A number of variables of interest are not retained in the model. For instance, the variable *small island-pop* is not found to be significant and is automatically omitted. Similarly, the combination of smallness and remoteness (variable *srie*) does not improve tourism performance. The level of infrastructural and technological development does not seem to have an impact on TP. The length of coastline was also not retained as a predictor of TP.

Inscription to the world heritage sites was included as a proxy for cultural endowment; consequently, the number of observations dropped considerably and it decreases the explanatory power of the model (the results are not reported here). The variable nature was substituted by "protected areas", both marine and terrestrial relative to each country's size. The results, not reported in this paper, suggested that tourism performance is enhanced by having more protected areas which is another proxy for the extent of natural endowment; however, their coefficients were not significant.

5.3 TOURISM DEMAND AND NATURE

To test the second hypothesis, three aggregate demand functions are estimated. In each function, TD represents tourism demand for country *i* where *d* represents tourism receipts, tourist arrivals and expenditure per tourist in the first, second and third functions respectively. The log-linear demand function is as follows:

$$\log TD_i^d = \alpha_0 + \alpha_1 L\_Nature_i + \alpha_2 x_i + \varepsilon_{2i} \quad (5)$$

x_i represents a set of control variables: *L-GDPpc*, *L-law, L-abs, L-pop, L-area, L-internet*, *coast*, *L-dist, L-PC* and dummies: *Small country-pop*, *Small country-area, Small island-pop*, *Small island-area, Remote country, V-remote country, Remote island, V-remote island*, *srie.*

In line with the reasoning that tourists are primarily attracted to nature, natural endowments should positively influence tourism demand but its effect on the different measures of demand is expected to differ. Contrarily to its effect on TP, GDP per capita should promote TD as it portrays the general level of development, safety and stability in the host destination (Freytag & Vietze 2009); since foreign visitors expect the host destination to be a safe destination, *L-GDPpc* should positively affect receipts, arrivals and expenditure per tourist. Governance indicators are expected to relate positively to TD. In line with the literature on distance costs, distance should negatively impact TD as the costs of travelling to remote countries are higher than to nearer destinations and, hence, they should reduce demand. Population proxies size of a country; the larger the country the more tourists it can accommodate and cater for, thus, there should be a positive relationship between tourism receipts and population. The variable area is expected to behave in the same way as population.

Dummy variables are used to assess the importance of islandness, smallness and remoteness. Small size is expected to bring less receipts and arrivals, hence, *Small country-pop*, *Small country-area, Small island-pop* and *Small island-area* should have negative estimated coefficients. However, small island tourism is a positional good and tourism on small islands is primarily upmarket tourism; hence, the impact of smallness and islandness combined should relate positively to expenditure per tourist as the measure expenditure per tourist can give a better indication of the sustainability of the tourism product.

As predicted by the gravity models of trade, long distance to a destination should discourage the majority of tourists to travel due to high distance costs. Those who do travel would be less likely to spend a lot. As such, the coefficients of *Remote country, V-remote country* should be negative. Nevertheless, long distance travel to islands may show a positive sign as remote island tourism is also a positional good. Remote islands harbour a rich stock of nature to which tourists are attracted and are willing to pay for. Hence, *Remote island, V-remote island* should relate positively to receipts and expenditure per tourist but not to arrivals. The combined effects of smallness and remoteness may not relate positively to receipts and arrivals, since small size would limit the extent of tourism activities. The variable *L-PC* is an index of tourism price competitiveness and is expected to have a positive relationship to TD. This is because the more price-competitive a country is the lower are the prices in relation to competitor countries.

5.3.1 TOURISM RECEIPTS

The general-to-specific modelling is also adopted in the demand equation with receipts as the dependent variable; the results are reported in table 4. Model I and II are the terminal models; model II includes dummies for two outliers. Model I is very parsimonious with only four parameters retained and excludes the variable nature. The model does not perform well on the diagnostic tests. Model II performs better. Two influential observations, Papua New Guinea and Liberia, are controlled for. Liberia is included as a dummy as it has a very low GDP per capita although a high tourism performance. All the variables are significant and behave as expected. The estimated coefficient of nature reveals that natural attributes positively affect receipts.

The indicators of development and stability of a destination, GDP per capita and rule of law positively influence tourism receipts. Size appears to be an important factor in determining tourism receipts; large countries have higher receipts than smaller ones as is illustrated by the variable population. Large countries have the capacity to accommodate more tourists and have the resources necessary to efficiently run the tourism industry. An interesting observation is the difference between remote islands and very remote islands. While being an island and remote deter tourism receipts, being an island and very remote (>6000 km away from the nearest trading centre) significantly improve tourism receipts. The variable internet was substituted for the variable foreign direct investment (FDI) to assess the level on infrastructural development on receipts. The results were not significant and not reported here. Thus, the variable internet appears to be a better indicator of infrastructural development than FDI.

Price is an important determinant of demand. The usual proxy that is used in the literature for prices is the consumer price index. However, this variable is not reliable as it does not accurately proxies goods and services consumed by tourists[77]. The variable tourism price competitiveness (*L-PC*) is a more reliable variable produced by the *World Economic Forum* in the Travel and Tourism competitiveness report in 2007. Model III in table 4 is augmented with the variable *L-PC.* Unfortunately, this reduces the number of observations to 120.

Figure 2 compares the different groupings of countries in the unrestricted sample and the restricted sample which has only 120 observations. The more price-competitive a country is the higher should be tourism receipts; a positive sign is expected. The result shows that *L-PC* has a positive estimated coefficient but is not significant. The variable nature loses its significance and is not retained in the model. Interestingly, the size of a small island when

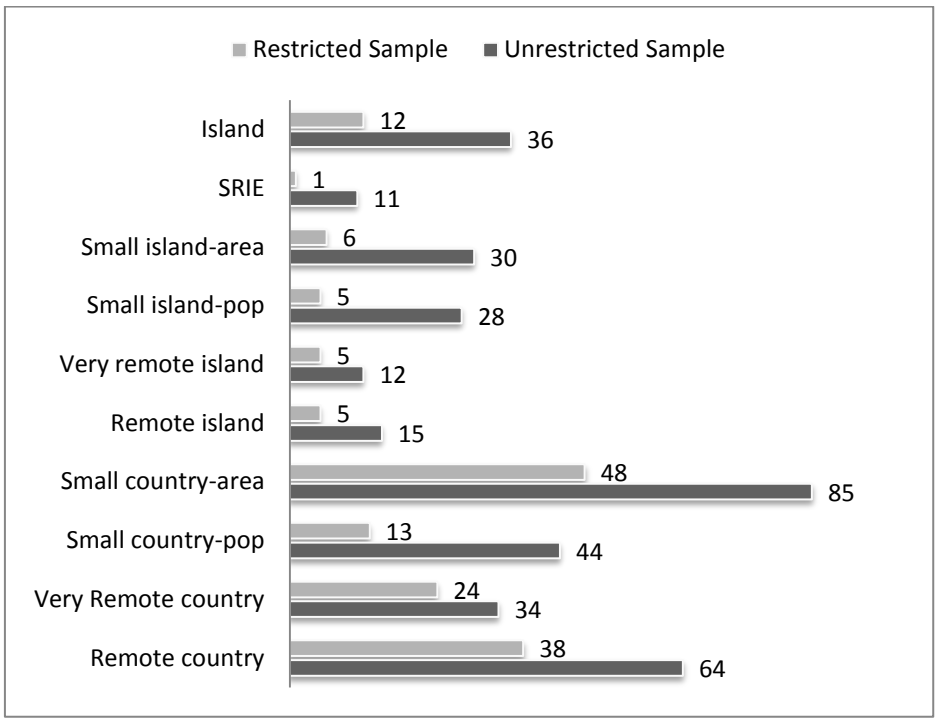
[77] The variable CPI was included in other models (not reported here) and it did show the expected sign, that is, tourism receipts related negatively to prices. This variable was only available for a limited number of observations.

measured by population shows a negative sign but when measured by area, it shows a positive sign. No firm conclusion can be drawn because of the reduced number of observations.

TABLE 4 IMPACT OF NATURE, SIZE AND DISTANCE ON TOURISM RECEIPTS

	I	II	III (inc. L-PC)
L-nature		0.189** (4.65)	
L-GDPpc	0.847** (15.6)	0.676** (9.85)	0.563*** (5.91)
L-law	0.575** (5.52)	0.522** (5.19)	0.496** (2.67)
L-abs			0.231 (1.59)
L-internet		0.233** (3.22)	0.288** (3.05)
L-pop	0.846** (19.2)	0.855** (25.73)	0.835*** (23.52)
L-area	-0.167** (-3.64)		
Coast			0.767 (0.88)
L-PC			0.602 (1.50)
Dummies:			
V-remote island		1.662** (3.04)	
Remote island		-1.229* (-2.45)	
Small island-pop			-0.532 (-0.98)
Small island-area			0.879 (1.83)
Liberia		2.680** (3.01)	
Burundi		-2.569** (-2.99)	
Algeria			-2.08* (-2.62)
	N=179	N=179	N=120
t-values in (), *significant at 5 % level ** significant at 1 % level			
Diagnostic tests with p-values in ()			
Model I Normality test: Chi^2(2) = 7.1150 [0.0285]* Hetero test: F(8,170) = 3.1311 [0.0025]** Hetero-X test: F(14,164) = 2.4943 [0.0031]** RESET23 test: F(2,173) = 2.1145 [0.1238]			
Model II Normality test: Chi^2(2) = 5.7550 [0.0563] Hetero test: F(12,164) = 2.0393 [0.0238]* Hetero-X test: F(22,154) = 1.7418 [0.0277]* RESET23 test: F(2,168) = 2.3509 [0.0984]			
Model III Normality test: Chi^2(2) = 2.2879 [0.3186] Hetero test: F(16,102) = 2.0614 [0.0157]* Hetero-X test: F(37,81) = 2.1078 [0.0027]** RESET23 test: F(2,108) = 2.6325 [0.0765]			

FIGURE 20 NUMBER OF OBSERVATIONS IN THE RESTRICTED AND THE UNRESTRICTED SAMPLE



5.3.2 TOURIST ARRIVALS

Table 5 reports the results of the demand equation with tourist arrivals as dependent variable. Model I is the terminal model. Nature is not a significant determinant of arrivals and does not appear in the best model. The stability of a country, the level of development, the population level and governance indicators all improve tourist arrivals as expected. Distance deters arrivals in line with theoretical reasoning. Surprisingly, size as measured by area deters tourist arrivals. Large countries may not necessarily be tourism countries. The coefficients of the dummies reveal that being a small country by area, a remote country or a remote island do not improve arrivals. However, the variable very remote country has a positive estimated coefficient.

Three influential outliers have been included in model II. Kuwait and Moldova have a negative impact while Zimbabwe has a positive impact on arrivals. Nature is retained in this model but has a negatively influences arrivals. This is in line with the argument that *arrivals* is an indicator of mass tourism as opposed to *receipts* which indicates quality tourism. The difference between remote and very remote islands is again confirmed here; the estimated coefficient of very remote islands is positive and significant.

TABLE 5 IMPACT OF NATURE, SIZE AND DISTANCE ON ARRIVALS

	I	II	III (inc. L-PC)
L-nature		-0.444**	
		(-3.77)	
L-GDPpc	0.386**	0.347**	0.330**
	(4.61)	(4.49)	(3.22)
L-law	0.496**	0.620**	
	(3.95)	(5.17)	
L-internet	0.270**	0.273**	
	(2.88)	(3.34)	
L-pop	0.735**	0.753**	0.607**
	(13.6)	(13.8)	(14.3)
L-dist	-0.149*		-0.243*
	(-1.98)		(2.26)
L-area	-0.167**	-0.514**	
	(-2.87)	(-4.14)	
L-abs			0.414**
			(3.11)
L-PC			1.087
			(1.75)
Dummies:			
Small country-area	-0.439*		
	(-2.07)		
Remote country	-0.283		
	(-1.26)		
V-remote country	0.874**		
	(3.50)		
Remote island	-0.714*	-1.513**	
	(-2.33)	(-2.98)	
V-remote island		1.257*	
		(2.29)	
Kuwait		-3.313**	
		(-3.90)	
Moldova		-3.302**	
		(-3.88)	
Zimbabwe		2.779**	
		(3.11)	
	N=174	N=174	N=119
t-values in (), *significant at 5 % level ** significant at 1 % level			
Diagnostic tests with p-values in ()			
Model I Normality test: Chi^2(2) = 7.7497 [0.0208]* Hetero test: F(16,157) = 0.81322 [0.6692] Hetero-X test: F(31,142) = 1.0143 [0.4559] RESET23 test: F(2,162) = 4.6957 [0.0104]*			
Model II Normality test: Chi^2(2) = 4.6585 [0.0974] Hetero test: F(14,156) = 1.0307 [0.4259] Hetero-X test: F(29,141) = 1.3565 [0.1247] RESET23 test: F(2,161) = 4.6237 [0.0112]*			
Model III Normality test: Chi^2(2) = 8.7955 [0.0123]* Hetero test: F(12,106) = 0.75527 [0.6944] Hetero-X test: F(27,91) = 0.96872 [0.5182] RESET23 test: F(2,111) = 1.9378 [0.1489]			

The latter result points to the argument that very remote island is a positional good. Size, here, measured by population has a positive and significant influence on arrivals. Model III includes the price competitiveness variable and the number of observations dropped to 119. The variable has a positive estimated coefficient but is not significant. Nature is not retained as a significant variable. The three models pass all the diagnostic tests as shown in the lower part of the table.

5.3.3 EXPENDITURE PER TOURIST

Compared to the two measures of demand used formerly, expenditure per tourist is a better indicator of sustainable tourism. Table 6 reports the results of the demand equation with expenditure per tourist as the dependent variable. Model I shows the terminal model. Model II includes the most influential outliers. Model III includes the variable price competitiveness and outliers. In all the three models, nature positively influences expenditure per tourist and so do the safety and stability of a country (GDP per capita). Contrarily to the tourist arrivals models, large size as represented by area of country favours expenditure per tourist; large countries would usually have more tourist facilities. In model I, population size has a positive estimated coefficient but it is not significant. This variable does not appear in the other reduced models.

As opposed to the negative impact of distance on arrivals, model I reveals that distance has a positive impact on expenditure per tourist. Interestingly, very remote countries do not have the same effect. However, when distance is combined with islandness, the variable shows a positive estimated coefficient; both remote and very remote islands have a positive influence on expenditure per tourist. Model I fails the normality test but when the outliers are included as controls, the results became acceptable as illustrated by model II. Burundi, Moldova and Papua New Guinea exerted strong negative influence while Belarus exerted a positive influence.

Model III reports the results of the regression with the variable *L-PC* which negatively impacts receipts brought per tourist. This suggests that the more price-competitive a country is the less is the expenditure of a typical tourist. It appears that price is irrelevant once the tourist has arrived at the selected destination. Thus, if the tourist decides to travel to a high-value destination, say a remote island such as the Maldives, her expenditure will be higher there than in a lower cost destination. It seems possible that expenditure per tourist relates more to the type of tourists than does *arrivals*. All the other variables have the expected sign. Again the difference between islands and non-islands is illustrated through the negative estimated coefficient of *very remote country* but the positive estimated coefficient of *very remote islands.*

TABLE 6 IMPACT OF NATURE, SIZE AND DISTANCE ON EXPENDITURE PER TOURIST

	I	II	III (inc. L-PC)
L-nature	0.433** (3.36)	0.763** (11.49)	0.714** (6.72)
L-GDPpc	0.284** (8.77)	0.233** (7.90)	0.145** (2.85)
L-law			0.394** (3.28)
L-pop	0.074 (1.54)		
L-dist	0.159* (2.51)		
L-area	0.356** (2.70)	0.734** (16.40)	0.653** (7.56)
L-PC			-0.023 (-0.08)
Dummies:			
Small country-area		0.321* (2.35)	
V-remote country	-0.736** (-3.85)	-0.528** (-3.32)	-0.428* (-2.52)
Remote island	1.125** (4.02)		
V-remote island	1.125** (4.02)	1.010** (4.19)	0.993** (3.12)
Belarus		2.788** (4.38)	
Burundi		-2.819** (-4.27)	-2.471** (-3.87)
Moldova		2.734** (4.26)	2.861** (4.60)
Papua New Guinea		-2.461** (-3.84)	
	N=174	N=174	N=119
t-values in (), *significant at 5 % level ** significant at 1 % level			
Diagnostic tests with p-values in ()			
Model I Normality test: Chi^2(2) = 29.343 [0.0000]** Hetero test: F(12,161) = 1.8286 [0.0475]* Hetero-X test: F(22,151) = 1.6585 [0.0408]* RESET23 test: F(2,165) = 4.4175 [0.0135]*			
Model II Normality test: Chi^2(2) = 7.2816 [0.0262]* Hetero test: F(9,160) = 1.7970 [0.0725] Hetero-X test: F(12,157) = 1.6942 [0.0727] RESET23 test: F(2,162) = 4.0029 [0.0201]*			
Model III Normality test: Chi^2(2) = 4.6599 [0.0973] Hetero test: F(12,104) = 2.1954 [0.0170]* Hetero-X test: F(22,94) = 1.4119 [0.1293] RESET23 test: F(2,108) = 2.5932 [0.0794]			

5.3.4 ISLANDS ONLY: TOURISM PERFORMANCE AND DEMAND

The impact of the different determinants of tourism performance and tourism demand are assessed for the restricted sample consisting of just islands. Table 7 reports the results. The aim of these regressions is to assess whether the impact of size, distance and nature are different for the sample of islands when compared to the sample with all countries. The results show that the variable nature is an important determinant of tourism receipts and expenditure per tourist but not of tourism performance and tourist arrivals. These results parallel those of the regressions including all countries; they suggest that *arrivals* is not an indicator of nature-tourism.

Tourism performance is negatively influenced by being large by population but tourist arrivals and receipts benefit from size. In contrast to the results for all countries, distance is positive in all the models in which it appears. This confirms the hypothesis that remote islands attract tourist. However, an interesting finding is the different signs of the estimated coefficients for remote and very remote islands. Very remote islands are tourist attractors but not remote islands. From these results, it seems that a country should be at least 6000 km away from its nearest trading centre to be considered as a genuine remote island. Thus, Seychelles, Samoa and Vanuatu are very remote islands that attract tourists but it seems possible that the tourist does not perceive the Marshall Islands, Sao Tome and Principe or the Solomon Islands as remote.

It is not possible to assess the importance of the explanatory variable price competitiveness as it was available for very few observations.

5.3.5 OVERALL FINDINGS FROM THE REGRESSIONS

One of the interesting finding from the regressions is the opposite effects of nature on tourist arrivals, on one hand, and on tourism receipts and expenditure per tourist, on the other. Nature promotes receipts and expenditure per tourist but not arrivals. The variable a*rrivals* is an indicator of mass tourism and there is no relationship between mass tourism and nature. This results hold for the sample consisting of just islands. In all the regressions, the level of development, GDP per capita, affects tourism demand positively. Rule of law seems to be a better governance indicator than absence of violence in determining the choice of a destination. Population, a size variable, appears to be important for arrivals and receipts but less important for expenditure per tourist. The large size of a country does not necessarily imply that a tourist will spend more.

TABLE 7 THE DETERMINANTS OF ISLAND TOURISM PERFORMANCE AND DEMAND

	Tourism Performance	Tourism Receipts	Tourist Arrivals	Expenditure per tourist
L-nature		0.863* (2.87)		0.510** (4.42)
L-GDPpc		0.541** (4.17)		0.224** (5.48)
L-abs	0.170* (2.56)			
L-law			1.156** (6.17)	
L-pop	-0.114** (-5.95)	0.519** (5.20)	0.516** (11.3)	
L-internet		0.344* (2.25)	0.482** (4.07)	
L-dist	0.178** (3.74)	0.375* (3.18)		0.227** (4.15)
L-area		0.759* (2.50)		0.514** (5.09)
Coast		-0.256* (-3.24)	-0.187* (-2.56)	
Dummies:				
Small island-pop	-0.412* (-2.57)			
Small island-area	0.311* (2.50)			
Remote island	-0.473** (-4.15)	-2.33** (-5.39)	-1.400* (-3.34)	
V-remote island	0.406* (3.47)	2.10** (5.35)	1.240* (3.03)	
t-values in (), *significant at 5 % level ** significant at 1 % level				
Diagnostic tests with p-values in ()				

`Tourism performance model`
`Normality test: Chi^2(2) = 3.6136 [0.1642]`
`Hetero test: F(10,24) = 1.5363 [0.1871]`
`Hetero-X test: F(13,21) = 1.1649 [0.3660]`
`RESET23 test: F(2,26) = 4.0129 [0.0303]*`				

`Tourism receipts model`
`Normality test: Chi^2(2) = 0.39873 [0.8192]`
`Hetero test: F(16,19) = 0.73371 [0.7318]`
`RESET23 test: F(2,25) = 3.0558 [0.0650]`				

`Tourist arrivals model`
`Normality test: Chi^2(2) = 2.8623 [0.2390]`
`Hetero test: F(10,25) = 0.50660 [0.8692]`
`Hetero-X test: F(16,19) = 1.2122 [0.3410]`
`RESET23 test: F(2,28) = 2.6720 [0.0867]`				

`Expenditure per tourist model`
`Normality test: Chi^2(2) = 0.41477 [0.8127]`
`Hetero test: F(8,27) = 0.93528 [0.5043]`
`Hetero-X test: F(14,21) = 2.1087 [0.0593]`
`RESET23 test: F(2,30) = 0.30024 [0.7428]`				

From the estimated coefficients, the level of infrastructural development plays an important role in attracting tourists. As expected, distance has a negative impact on arrivals but a positive impact on expenditure per tourist. However, for the sample consisting of just islands, distance has a positive estimated coefficient on all the measures of demand used. This finding supports the argument that upmarket tourist are attracted by remoteness.

The standard variable analysed in this literature is total tourism receipts. This variable may be decomposed into the product of total arrivals and expenditure per tourist. My analysis has suggested that these two variables have different determinants and it is therefore preferable to model them separately. In particular, while price factors seem to be important in determining destination choice, and hence arrivals, they seem to be less important in determining expenditures once the tourist has arrived at the destination. Price may be a sorting factor with the result that low value tourists choose more competitive destinations. This might be further analyzed if access is obtained to data on individual tourist destinations and expenditure choices. This is an avenue for future research.

While the findings support the claim that remote island tourism could be a positional good, they reveal that there is a distinction between remote islands and very remote islands. From the estimated coefficients only the latter qualify as upmarket tourist attractions. With development in communications and transportation technologies, the remote has become more accessible and less desired by the tourist. However, the *very remote* continues to appeal to nature-loving and high-end tourists. In fact, being an island which is 4500 km away from the nearest trading centres, is not favourable for tourism demand. Surprisingly, the length of coastline does not appear in these models as a significant determinant of tourism demand. The demand equation with expenditure per tourist as dependent variable is in effect very informative. Very remote islands have a comparative advantage relative to remote but non-island nations. Even though they are relatively expensive destinations, the tourist will still spend as long as the destination package has been sold to him.

6. CONCLUSION

The aim of this paper is to empirically assess the impact of various geographical features namely, size, distance to major trading centres, islandness and natural endowments on tourism performance and tourism demand. Small and remote countries face a number of economic disadvantages as they have small markets, limited human and capital resources, they are dependent on foreign exchange earnings and are vulnerable to external shocks. While smallness

and remoteness are characteristics that constrain island economies, these features can be turned into valuable assets which are particularly relevant for the tourism sector. Small islands have always fascinated and attracted tourists given the unique product they have to offer; in addition, the qualitative literature stresses that remoteness enhances the attractiveness of islands.

In this paper, I have underlined the geographical advantage of SRIEs as they are located in rich biodiversity areas and eco-regions. A comparative analysis shows that over the last 15 years, tourist spending in SRIEs grew faster than those in the Caribbean and the European islands. Moreover, tourism has been a major pillar of the economies of SRIEs. The results of a cross country OLS regressions show that nature is a significant determinant of tourism performance. An improvement of Freytag and Vietze's measure of biodiversity is used to capture an island's natural endowment. According to the economics literature on gravity models, distance should negatively affect trade, here, trade in tourism. However, a very remote island relates positively with tourism performance, suggesting that remoteness when coupled with islandness is not a detriment to tourism performance. This supports the argument that remote island tourism is a positional good. As found in previous studies, large size relates negatively to tourism performance. Hence, small size tends to promote tourism performance.

Three aggregate demand functions are estimated where tourism receipts, tourist arrivals and expenditure per tourist are used as proxies for tourism demand in each case. When receipts and expenditure per tourist are used as measures of tourism demand, the results provide further evidence of the importance of nature in promoting tourism. In contrast, nature does not promote arrivals. This result may suggest an undervaluation of a country's natural endowments and have implications for eco-tourism economics. As a matter of fact, for the sample consisting of just islands, nature is not a relevant determinant of arrivals. The argument that *arrivals* is a poor indicator of sustainable tourism is confirmed with the latter finding.

Governance indicators, GDP per capita and population positively affect tourism demand. While being a remote island reduces demand, being a very remote island promotes demand. This may be due to advances in communications and transportation technologies which have made access to moderately remote islands easier so that the tourist tends to perceive only the very remote as genuinely remote and, hence, as a positional good. In line with demand theory, price factors seem to have a negative effect on tourism receipts and arrivals. Distance positively affects tourism performance, tourism receipts and expenditure per tourist for the restricted sample with islands only: this suggests that when coupled with islandness, remoteness is appealing.

The results of the third demand equation—receipts per tourist as dependent variable—are of particular relevance. It reveals that being very remote per se is detrimental to tourism success. However, when the remote and the very remote country are islands, they relate positively to expenditure per tourist in an important way. Price matters for destination choices, hence, arrivals, but it seems possible that it does not matter when the tourist has reached its destination. The length of coastline which is generally believed to attract tourists does not appear to matter in the models of tourism performance and demand for all countries. This suggests that the length of coastline is an unsuitable indicator of the length or quality of beaches. In fact, it relates negatively to tourism demand when the sample of islands is considered.

The findings of this study are crucial when marketing a destination. Islands should adopt marketing strategies that showcase their rich and exotic natural and cultural resources rather than just focusing on the traditional sun-sand-sea destination. Remote islands should capitalise on their position. In the positional economy, the value of remoteness can easily offset the cost of distance. However, they should sustain this advantage through nature-friendly policies since a degradation of nature may deter the perception of uniqueness and, consequently, deter the success of the tourism sector. While specialization in industries in which one has abundant factors is relevant and beneficial for tourism countries, sustained economic benefits depend on various other factors such as scale economies, transaction costs, innovation and knowledge expansion which were not covered in this thesis.

7. REFERENCES

AfDB/OECD, 2004. *African Economic Outlook*, OECD Development Centre. Available at: http://www.oecd.org/dataoecd/24/25/32430158.pdf [Accessed March 4, 2011].

Alesina, A. & Spolaore, E., 2003. *The size of nations*, 2003 Massachusetts Institute of Technology: The MIT Press.

Algieri, B., 2006. International tourism specialisation of small countries. *International Journal of Tourism Research*, 8(1), pp.1-12.

Armstrong, H.W. & Read, R., 2000. Comparing the economic performance of dependent territories and sovereign microstates. *Economic Development and Cultural Change*, 48(2), pp.285–306.

Armstrong, H.W. & Read, R., 2006. Geographical "handicaps" and small states: some implications for the Pacific from a global perspective. *Asia Pacific Viewpoint*, 47(1), pp.79–92.

Armstrong, H.W. & Read, R., 2003. The determinants of economic growth in small states. *The Round Table*, 92(368), pp.99–124.

Balassa, B., 1965. Trade liberalisation and "revealed" comparative advantage. *The Manchester School*, 33(2), pp.99–123.

Baldacchino, G., 2002. A taste of small-island success: a case from Prince Edward island. *Journal of Small Business Management*, 40(3), pp.254–259.

Barros, C.P. & Machado, L.P., 2010. The length of stay in tourism. *Annals of Tourism Research*, 37(3), pp.692–706.

Bertram, G., 2004. On the convergence of small island economies with their metropolitan patrons. *World Development*, 32(2), pp.343–364.

Blair, R.B., 1999. Birds and butterflies along an urban gradient: surrogate taxa for assessing biodiversity? *Ecological Applications*, 9(1), pp.164–170.

Brau, R., Lanza, A. & Pigliaru, F., 2007. How fast are small tourism countries growing? Evidence from the data for 1980-2003. *Tourism Economics*, 13(4), pp.603–614.

Briguglio, L., 1995. Small island developing states and their economic vulnerabilities. *World Development*, 23(9), pp.1615-1632.

Butcher, J., 2006. Natural capital and the advocacy of ecotourism as sustainable development. *Journal of Sustainable Tourism*, 14(6), pp.529–544.

Castle, J. & Shephard, N., 2009. *The methodology and practice of econometrics: a Festschrift in honour of David F. Hendry*, Oxford University Press.

Central Intelligence Agency, 2011. CIA - The World Factbook. Available at: https://www.cia.gov/library/publications/the-world-factbook/ [Accessed March 25, 2011].

Disdier, A.-C. & Head, K., 2008. The puzzling persistence of the distance effect on bilateral trade. *Review of Economics and Statistics*, 90(1), pp.37-48.

Easter, C., 1999. Small states development: A commonwealth vulnerability index. *The Round Table*, 88(351), pp.403–422.

Easterly, W. & Kraay, A., 2000. Small states, small problems? Income, growth, and volatility in small states. *World development*, 28(11), pp.2013–2027.

Eaton, B.C. & Eswaran, M., 2009. Well-being and affluence in the presence of a veblen good. *The Economic Journal*, 119(539), pp.1088-1104.

Eugenio-Martín, J.L., Morales, N.M. & Scarpa, R., 2004. Tourism and economic growth in Latin American countries: a panel data approach. *Fondazione Eni Enrico Mattei Working Paper Series*, 26.

Feenstra, R.C., 2004. *Advanced international trade: theory and evidence*, Princeton Univ Pr.

Fink, C., Mattoo, A. & Neagu, I.C., 2002. Trade in international maritime services: how much does policy matter? *The World Bank Economic Review*, 16(1), p.81.

Frankel, J.A. & Rose, A., 2002. An estimate of the effect of common currencies on trade and income 1. *Quarterly Journal of Economics*, 117(2), pp.437–466.

Freytag, A. & Vietze, C., 2009. Biodiversity and international tourism: a story of comparative advantage. *The Open Political Science Journal*, 2(1), pp.23–34.

Friedman, T.L., 2006. *The world is flat: A brief history of the twenty-first century*, Farrar Straus & Giroux.

Gannon, J.E. & Stemberger, R.S., 1978. Zooplankton (especially crustaceans and rotifers) as indicators of water quality. *Transactions of the American Microscopical Society*, 97(1), pp.16–35.

Hendry, D.F., 2000. *Econometrics: alchemy or science* New., Oxford, Oxford University Press.

Hirsch, F., 1976. *Social limits to growth* First Edition., Harvard University Press.

Hoover, K.D. & Perez, S.J., 1999. Data mining reconsidered: encompassing and the general-to-specific approach to specification search. *The Econometrics Journal*, 2(2), pp.167–191.

Hu, Y. & Ritchie, J.R.., 1993. Measuring destination attractiveness: A contextual approach. *Journal of Travel Research*, 32(2), p.25.

Hummels, D., 2001. *Time as a trade barrier*, Purdue University.

Keller, W., 2001. The geography and channels of diffusion at the world's technology frontier. *NBER Working Paper*.

King, R., 1993. The geographical fascination of islands. *The development process in small island states*, pp.13–37.

Kuenzi, C. & McNeely, J., 2008. Nature-based tourism. In O. Renn & K. D. Walker, eds. *Global Risk Governance*. Dordrecht: Springer Netherlands, pp. 155-178. Available at: http://www.springerlink.com/content/l422456214666576/ [Accessed September 24, 2011].

Kuznets, S., 1960. Economic growth of small nations. In *The Economic Consequences of the Size of Nations*. pp. 14–32.

Laursen, K., 1998. Revealed comparative advantage and the alternatives as measures of international specialisation. *DRUID Working Papers*.

Li, G., Song, H. & Witt, S.F., 2005. Recent developments in econometric modeling and forecasting. *Journal of Travel Research*, 44(1), p.82.

Limao, N. & Venables, A.J., 2001. Infrastructure, geographical disadvantage, transport costs, and trade. *The World Bank Economic Review*, 15(3), p.451.

McElroy, J.L., 2003. Tourism development in small islands across the world. *Geografiska Annaler: Series B, Human Geography*, 85(4), pp.231–242.

Oliveira, P., Pereira, T. & others, 2008. Who values what in a tourism destination? The case of Madeira Island. *Tourism Economics*, 14(1), pp.155–168.

Papatheodorou, A., Rosselló, J. & Xiao, H., 2010. Global economic crisis and tourism: consequences and perspectives. *Journal of Travel Research*, 49(1), p.39.

Portes, R. & Rey, H., 2005. The determinants of cross-border equity flows. *Journal of international Economics*, 65(2), pp.269–296.

Rawls, R.P. & Laband, D.N., 2004. A public choice analysis of endangered species listings. *Public Choice*, 121(3), pp.263–277.

Redding, S. & Venables, A.J., 2004. Economic geography and international inequality. *Journal of International Economics*, 62(1), pp.53–82.

Redding, S. & Venables, A.J., 2002. The economics of isolation and distance. *Nordic Journal of Political Economy*, (28), pp.93-108.

Roe, D. et al., 2004. Tourism and the poor: analysing and interpreting tourism statistics from a poverty perspective. *PPT Working paper*, 16.

Rosen, D.A.. & Trites, A.W., 2000. Pollock and the decline of Steller sea lions: testing the junk-food hypothesis. *Canadian Journal of Zoology*, 78(7), pp.1243–1250.

Scheyvens, R. & Momsen, J.H., 2008. Tourism and poverty reduction: issues for small island states. *Tourism Geographies*, 10(1), pp.22–41.

Song, H. & Witt, S.F., 2000. *Tourism demand modelling and forecasting: modern econometric approaches*, Pergamon Pr.

Song, H. et al., 2010. Tourism demand modelling and forecasting: how should demand be measured? *Tourism Economics*, 16(1), pp.63-81.

Whitfield, A.K. & Elliott, M., 2002. Fishes as indicators of environmental and ecological changes within estuaries: a review of progress and some suggestions for the future. *Journal of Fish Biology*, 61, pp.229–250.

World Bank, 2010. World Development Indicators | Data. Available at: http://data.worldbank.org/data-catalog/world-development-indicators [Accessed March 25, 2011].

World Economic Forum, 2010. Travel and Tourism Competitiveness Report. Available at: http://www.weforum.org/issues/travel-and-tourism-competitiveness/ [Accessed March 25, 2011].

ANNEX

Country	Remote country	Very Remote country	Small country-pop	Small country-area	Remote island	Very remote island	Small island-pop	Small island-area	SRIE	All Islands
Albania	0	0	0	1	0	0	0	0	0	0
Algeria	0	0	0	0	0	0	0	0	0	0
Angola	1	1	0	0	0	0	0	0	0	0
Antigua and Barbuda	0	0	1	1	0	0	1	1	0	1
Argentina	1	1	0	0	0	0	0	0	0	0
Armenia	0	0	0	1	0	0	0	0	0	0
Aruba	0	0	1	1	0	0	1	1	0	1
Australia	1	1	0	0	1	1	0	0	0	1
Austria	0	0	0	1	0	0	0	0	0	0
Azerbaijan	0	0	0	1	0	0	0	0	0	0
Bahamas, The	0	0	1	1	0	0	1	1	0	1
Bahrain	0	0	1	1	0	0	0	0	0	0
Bangladesh	0	0	0	0	0	0	0	0	0	0
Barbados	0	0	1	1	0	0	1	1	0	1
Belarus	0	0	0	0	0	0	0	0	0	0
Belgium	0	0	0	1	0	0	0	0	0	0
Belize	0	0	1	1	0	0	0	0	0	0
Benin	1	0	0	0	0	0	0	0	0	0
Bermuda	0	0	1	1	0	0	1	1	0	1
Bhutan	0	0	1	1	0	0	0	0	0	0
Bolivia	1	1	0	0	0	0	0	0	0	0
Bosnia and Herzegovina	0	0	0	1	0	0	0	0	0	0
Botswana	1	1	0	0	0	0	0	0	0	0
Brazil	1	1	0	0	0	0	0	0	0	0
Brunei Darussalam	1	0	1	1	0	0	0	0	0	0
Bulgaria	0	0	0	0	0	0	0	0	0	0
Burundi	1	1	0	1	0	0	0	0	0	0
Cambodia	1	0	0	0	0	0	0	0	0	0
Cameroon	1	0	0	0	0	0	0	0	0	0
Canada	0	0	0	0	0	0	0	0	0	0
Cape Verde	0	0	1	1	0	0	1	1	0	1
Cayman Islands	0	0	1	1	0	0	1	1	0	1
Central African Re.	1	0	0	0	0	0	0	0	0	0

Country	Remote country	Very Remote country	Small country-pop	Small country-area	Remote island	Very remote island	Small island-pop	Small island-area	SRIE	All Islands
Chile	1	1	0	0	0	0	0	0	0	0
China	0	0	0	0	0	0	0	0	0	0
Colombia	1	0	0	0	0	0	0	0	0	0
Comoros	1	1	1	1	1	1	1	1	1	1
Congo	1	1	0	0	0	0	0	0	0	0
Costa Rica	0	0	0	1	0	0	0	0	0	0
Côte d'Ivoire	1	0	0	0	0	0	0	0	0	0
Croatia	0	0	0	1	0	0	0	0	0	0
Cuba	0	0	0	0	0	0	0	0	0	0
Cyprus	0	0	1	1	0	0	0	0	0	0
Czech Republic	0	0	0	1	0	0	0	0	0	0
Denmark	0	0	0	1	0	0	0	0	0	0
Djibouti	1	0	1	1	0	0	0	0	0	0
Dominica	0	0	1	1	0	0	1	1	0	1
Dominican Republic	0	0	0	1	0	0	0	0	0	0
Ecuador	1	0	0	0	0	0	0	0	0	0
Egypt, Arab Rep.	0	0	0	0	0	0	0	0	0	0
El Salvador	0	0	0	1	0	0	0	0	0	0
Eritrea	1	0	0	0	0	0	0	0	0	0
Estonia	0	0	1	1	0	0	0	0	0	0
Ethiopia	1	0	0	0	0	0	0	0	0	0
Fiji	1	1	1	1	1	1	1	1	1	1
Finland	0	0	0	0	0	0	0	0	0	0
France	0	0	0	0	0	0	0	0	0	0
Gabon	1	0	1	0	0	0	0	0	0	0
Gambia, The	0	0	1	1	0	0	0	0	0	0
Georgia	0	0	0	1	0	0	0	0	0	0
Germany	0	0	0	0	0	0	0	0	0	0
Ghana	1	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0	0	0	0	0	0	0
Grenada	0	0	1	1	0	0	1	1	0	1
Guatemala	0	0	0	0	0	0	0	0	0	0
Guinea	1	0	0	0	0	0	0	0	0	0
Guinea-Bissau	0	0	1	1	0	0	0	0	0	0
Guyana	1	0	1	0	0	0	0	0	0	0
Haiti	0	0	0	1	0	0	0	0	0	0
Honduras	0	0	0	0	0	0	0	0	0	0

Country	Remote country	Very Remote country	Small country-pop	Small country-area	Remote island	Very remote island	Small island-pop	Small island-area	SRIE	All Islands
Hong Kong SAR, China	0	0	0	1	0	0	0	0	0	0
Hungary	0	0	0	1	0	0	0	0	0	0
Iceland	0	0	1	0	0	0	1	0	0	1
India	0	0	0	0	0	0	0	0	0	0
Indonesia	1	0	0	0	0	0	0	0	0	0
Iran, Islamic Rep.	0	0	0	0	0	0	0	0	0	0
Iraq	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	1	0	0	0	0	0	0
Israel	0	0	0	1	0	0	0	0	0	0
Italy	0	0	0	0	0	0	0	0	0	0
Jamaica	0	0	0	1	0	0	0	1	0	1
Japan	0	0	0	0	0	0	0	0	0	1
Jordan	0	0	0	1	0	0	0	0	0	0
Kazakhstan	0	0	0	0	0	0	0	0	0	0
Kenya	1	1	0	0	0	0	0	0	0	0
Korea	0	0	0	1	0	0	0	0	0	0
Kuwait	0	0	0	1	0	0	0	0	0	0
Kyrgyz Republic	0	0	0	0	0	0	0	0	0	0
Lao PDR	0	0	0	0	0	0	0	0	0	0
Latvia	0	0	0	1	0	0	0	0	0	0
Lebanon	0	0	0	1	0	0	0	0	0	0
Lesotho	1	1	0	1	0	0	0	0	0	0
Liberia	1	0	0	1	0	0	0	0	0	0
Libya	0	0	0	0	0	0	0	0	0	0
Lithuania	0	0	0	1	0	0	0	0	0	0
Luxembourg	0	0	1	1	0	0	0	0	0	0
Macao SAR, China	0	0	1	1	0	0	0	0	0	0
Macedonia, FYR	0	0	0	1	0	0	0	0	0	0
Madagascar	1	1	0	0	1	1	0	0	0	1
Malawi	1	1	0	1	0	0	0	0	0	0
Malaysia	1	0	0	0	0	0	0	0	0	0
Maldives	1	1	1	1	1	1	1	1	1	1
Mali	0	0	0	0	0	0	0	0	0	0
Malta	0	0	1	1	0	0	1	1	0	1
Marshall Islands	1	0	1	1	1	0	1	1	1	1
Mauritius	1	1	1	1	1	1	1	1	1	1
Mexico	0	0	0	0	0	0	0	0	0	0

Country	Remote country	Very Remote country	Small country-pop	Small country-area	Remote island	Very remote island	Small island-pop	Small island-area	SRIE	All Islands
Micronesia, Fed. Sts.	0	0	1	1	0	0	1	1	0	1
Moldova	0	0	0	1	0	0	0	0	0	0
Mongolia	0	0	0	0	0	0	0	0	0	0
Morocco	0	0	0	0	0	0	0	0	0	0
Mozambique	1	1	0	0	0	0	0	0	0	0
Namibia	1	1	0	0	0	0	0	0	0	0
Nepal	0	0	0	0	0	0	0	0	0	0
Netherlands	0	0	0	1	0	0	0	0	0	0
New Zealand	1	1	0	0	1	1	0	0	0	1
Nicaragua	0	0	0	0	0	0	0	0	0	0
Niger	0	0	0	0	0	0	0	0	0	0
Nigeria	1	0	0	0	0	0	0	0	0	0
Norway	0	0	0	0	0	0	0	0	0	0
Oman	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0
Palau	0	0	1	1	0	0	1	1	0	1
Panama	0	0	0	1	0	0	0	0	0	0
Papua New Guinea	1	0	0	0	0	0	0	0	0	0
Paraguay	1	1	0	0	0	0	0	0	0	0
Peru	1	0	0	0	0	0	0	0	0	0
Philippines	0	0	0	0	0	0	0	0	0	1
Poland	0	0	0	0	0	0	0	0	0	0
Portugal	0	0	0	1	0	0	0	0	0	0
Puerto Rico	0	0	0	1	0	0	0	1	0	1
Qatar	0	0	1	1	0	0	0	0	0	0
Romania	0	0	0	0	0	0	0	0	0	0
Russian Federation	0	0	0	0	0	0	0	0	0	0
Rwanda	1	1	0	1	0	0	0	0	0	0
Samoa	1	1	1	1	1	1	1	1	1	1
Sao Tome and Principe	1	0	1	1	1	0	1	1	1	1
Saudi Arabia	0	0	0	0	0	0	0	0	0	0
Senegal	0	0	0	0	0	0	0	0	0	0
Serbia	0	0	0	1	0	0	0	0	0	0
Seychelles	1	1	1	1	1	1	1	1	1	1
Sierra Leone	1	0	0	1	0	0	0	0	0	0
Singapore	1	0	0	1	0	0	0	0	0	0
Slovak Republic	0	0	0	1	0	0	0	0	0	0

Country	Remote country	Very Remote country	Small country-pop	Small country-area	Remote island	Very remote island	Small island-pop	Small island-area	SRIE	All Islands
Slovenia	0	0	0	1	0	0	0	0	0	0
Solomon Islands	1	0	1	1	1	0	1	1	1	1
South Africa	1	1	0	0	0	0	0	0	0	0
Spain	0	0	0	0	0	0	0	0	0	0
Sri Lanka	1	1	0	1	1	1	0	1	0	1
Saint Kitts and Nevis	0	0	1	1	0	0	1	1	0	1
Saint Lucia	0	0	1	1	0	0	1	1	0	1
St Vincent & Grenadines	0	0	1	1	0	0	1	1	0	1
Sudan	0	0	0	0	0	0	0	0	0	0
Suriname	1	0	1	0	0	0	0	0	0	0
Swaziland	1	1	1	1	0	0	0	0	0	0
Sweden	0	0	0	0	0	0	0	0	0	0
Switzerland	0	0	0	1	0	0	0	0	0	0
Syrian Arab Republic	0	0	0	0	0	0	0	0	0	0
Tajikistan	0	0	0	0	0	0	0	0	0	0
Tanzania	1	1	0	0	0	0	0	0	0	0
Thailand	1	0	0	0	0	0	0	0	0	0
Togo	1	0	0	1	0	0	0	0	0	0
Tonga	1	1	1	1	1	1	1	1	1	1
Trinidad and Tobago	0	0	1	1	0	0	1	1	0	1
Tunisia	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0
Uganda	1	1	0	0	0	0	0	0	0	0
Ukraine	0	0	0	0	0	0	0	0	0	0
United Arab Emirates	0	0	0	1	0	0	0	0	0	0
United Kingdom	0	0	0	0	0	0	0	0	0	0
United States of America	0	0	0	0	0	0	0	0	0	0
Uruguay	1	1	0	0	0	0	0	0	0	0
Uzbekistan	0	0	0	0	0	0	0	0	0	0
Vanuatu	1	1	1	1	1	1	1	1	1	1
Venezuela, RB	0	0	0	0	0	0	0	0	0	0
Vietnam	0	0	0	0	0	0	0	0	0	0
Yemen, Rep.	1	0	0	0	0	0	0	0	0	0
Zambia	1	1	0	0	0	0	0	0	0	0
Zimbabwe	1	1	0	0	0	0	0	0	0	0
Total	**64**	**34**	**44**	**85**	**15**	**12**	**28**	**30**	**11**	**36**

CONCLUDING REMARKS

CONCLUSION OF THESIS

This research investigates and amalgamates three characteristics of nations—smallness, *islandness* and remoteness—that, individually, are known to significantly impact the economic structure and, hence, the performance of nations. The concepts of smallness, islandness and remoteness have been the subject of numerous studies but little analytical research has brought these features together to investigate their implications. Yet, many countries exhibit these three combined characteristics to a lesser or greater extent. A number of problems emerged in the literature regarding these concepts: first, there is no consensus as to what constitutes a small state and an island; second, non-islands are often included within the island categories when studying islands; third, islandness and remoteness are often confounded in that many scholars adopt a simplistic argument that all islands are remote because they are detached from the continents. However, not all islands are geographically remote: from an economic perspective, Bermuda is not as remote as Tonga. In the opinion of the present author, it, therefore, seems pertinent to investigate the economic consequences of smallness, islandness and remoteness. This thesis proposes a novel categorisation: small remote island economies (SRIEs). The distinguishing features of SRIEs are highlighted and some of the most contemporary economic challenges are investigated.

The problem in developing a new categorisation in economics is conceptual. Although, Aristotle claimed that definitions and classifications form the summit of scientific knowledge, defining the category of SRIEs is no easy task. This thesis does not seek to provide definitions but rather its aim is to bring together countries that exhibit similar inherent characteristics which entail similar economic implications and, ultimately, might be subject to similar policies. The category SRIEs is thus useful for economic analysis. The starting point of this work has been to bring SRIEs into context by drawing from the literature. The first essay introduces the concept of smallness, islandness and remoteness. The general observation is that SRIEs face economic challenges that are also encountered by small states and this is well documented in the literature. They face limited resource endowments, concentration of production and exports, high dependency on trade and, subsequently, vulnerable to external shocks.

Besides being small, SRIEs are island economies. As argued in this thesis, this salient feature adds to their vulnerability. First, they are environmentally more susceptible to damage: they have fragile and rich ecosystems that form a large percentage of their territory. Unplanned developmental activities, such as manufacturing and tourism, can have greater detrimental effects on nature than on other countries. Second, SRIEs are prone to natural disasters, such as,

cyclones and storms, which can cause damage that has lasting impacts as islands are often dependent on agriculture and tourism.

Many economic problems depend on how much distance affects trade: increasing returns to scale models; the extent of sub-contracting and outsourcing; research and development; factor price equalisations among others depend on distance costs. In sum, distance tends to limit economic transactions as shown by numerous gravity models. Since not all small and island states are remote, the category SRIE singles out the factor 'remoteness' in order to highlight the impact of geography. Given the various implications of being an SRIE, a list consisting of countries that qualify as SRIEs is drawn. They include independent islands, such as, Fiji and Mauritius but also dependent islands, such as, the Northern Mariana Islands and French Polynesia.

As documented, a high degree of economic openness and export concentration expose SRIEs to exogenous shocks—shocks that are large in relation to the size of these economies. Many SRIEs were recently exposed to such a shock—the dismantling of the multifibre agreement (MFA) that provided them with guaranteed access to lucrative markets and protection from direct competition with large low-cost producers. According to economic theory, a country would specialise in the production of goods and services in which it has a comparative advantage. Heckscher-Ohlin theory established that comparative advantage stems from a country's relative stock of factors of production. The clothing sector is relatively labour-intensive requiring unskilled or semi-skilled labour depending on the product segment in which the firm specialises. The textile sector is relatively more capital-intensive requiring automation throughout almost the whole production process. SRIEs have small populations, thus, limited labour resources. They also have limited capital resources. Nevertheless, SRIEs produce and export both textile and clothing products. It is therefore intriguing to examine the T&C trade of these islands before and after the ending of the MFA. The essay makes use of network analysis.

Network analysis is used for extracting information from complex systems that involve multiple interacting elements: for example, trade flows between countries. The use of network theory in trade is novel and a useful methodology which allows the researcher to see beyond direct trade links. In this research, network analyses reveal several interesting conclusions. Network statistics show that the T&C trade map was shaped by the MFA quota-allocations as trade patterns differed in the post-quota period. Indeed, there was convergence in trade as shown by less variability and a decline in centrality. This is indicative that in a freer trade environment only the most competitive and most efficient producers would survive—those that have a comparative advantage. The results confirm a tendency towards a flatter trade hierarchy

with larger developing countries, such as, India, moving towards the core. The density of the networks also declined supporting the thesis that countries which do not have a comparative advantage in T&C had to exit the market. The relative importance of the major world traders declined while that of SRIEs changed or disappeared. Not all SRIEs survived: the smaller or weaker of them, such as, the Comoros, reported no exports while the stronger or more opportunistic of them were still competitive. Thus, it is evident that the MFA distorted natural trade patterns.

One important observation made from the analysis is the distinction between final and intermediate products. The decrease in SRIEs export links in the post-quota period was greater for intermediate products than for final products. This suggests that their relative comparative advantages lie in clothing rather than intermediate products. Network analysis confirmed that geography and, hence, remoteness, matters. While trade between SRIEs increased, trade between SRIEs and the rest of the world decreased. Thus, there was a tendency to trade with proximal partners rather than previously guaranteed but distant markets. The trade environment is complex: apart from the MFA other preferential arrangements were in place such as the SPARTECA and AGOA. Network analysis, however, does not provide deeper information. From the network analysis, it is obvious that a few SRIEs distinguished themselves, especially those that managed to develop a comparative advantage during the MFA period. To better understand the mechanisms that led to the survival of some SRIEs, this dissertation further investigated the T&C value chain of SRIEs.

A number of hypotheses emanating from trade theory and the global value chain framework are examined. Trade expanded where quotas were not binding, particularly for small producers like SRIEs. However, the removal of quotas did not always cause a reduction in trade. Since most T&C exporting SRIEs are located in the Pacific and Indian Ocean, the US is a more remote market than the EU. Loss of preferential treatments shifted trade away from the US to the EU. This conclusion paralleled the findings from the network analysis that, in the absence of distortions, countries prefer to trade with closer partners. In particular, value-chain analysis showed that, in a free trade environment, low prices discourage production. More importantly, those SRIEs which survived moved towards upgraded products and/or production structure as hypothesised. SRIEs that remained competitive had targeted niche markets, moved to higher-valued products, and/or integrated their production system with more performing countries among others. The example of Mauritius and Madagascar exposed the productive chain between the two countries. While Mauritius gained by delocalising its production of basics to Madagascar, the latter seized this opportunity to expand its own production of basic clothing.

The importance of regional integration was highlighted. It was noted that T&C trade of SRIEs is now increasingly shaped by regional policies and other bilateral agreements.

In the absence of trade preferences, the exports of traditional traded goods, such as textiles and clothing, became difficult for many SRIEs. The economic limits imposed by islandness and remoteness are evident from the previous results. This dissertation demonstrates that these features are advantageous for tourist destinations. The attraction of islandness and remoteness is empirically shown. SRIEs are well-endowed in natural resources as they are situated in eco-regions and biodiversity hotspots. The existence of such resources, as measured by an improved variable *nature*, contributes significantly to tourism performance. In addition, remote islands fare well in tourism despite the negative effect of distance on trade. Hence, it is argued that remote island tourism is a positional good. These findings hold only for the very remote rather than moderately remote islands. Different measures of tourism demand were used. While nature is an important determinant of tourism receipts and expenditure per tourist, it is irrelevant for tourist arrivals. The demand indicator *arrivals* is interpreted as a poor indicator of sustainable tourism. The measure *expenditure per tourist* provides useful information and confirms that being a remote island is a significant factor in bringing revenue. It is proposed that marketing oriented at showcasing nature would be policies that would boost island tourism.

An interesting conclusion from this work is that the two variables used a proxy for tourism demand, arrivals and expenditure per tourist, have different determinants and modelling them separately proved informative. Price is an important determinant of destination choices, hence, arrivals but less a determinant of expenditure per tourist once the tourist reached its destination. Price acts as a sorting factor so that high value tourists choose less competitive but remote destinations. Thus, the costs of remoteness can be offset by the value attributed to remoteness by tourists. Islands should take advantage of their remoteness to better their economic performance.

MAIN CONTRIBUTIONS

This dissertation is original as it researches a group of islands not previously addressed together in the economics and island studies literature. It proposes a novel categorisation of islands. The new categorisation aims at better understanding the economics of these islands, in particular, the exacerbated impacts of these combined features: smallness, islandness and remoteness. This thesis contributes to the economics of islands.

The second paper contributes to the trade literature by analysing the impact of trade liberalisation in the T&C sector on a group of structurally weak economies. There is no lack of studies on the implications of the elimination of the MFA yet most of the studies focus on large developing countries. Economies whose trade form a small share of world trade are often neglected. In addition, SRIEs relied on T&C trade more than most other developing nations, thus, the impact of this trade shock on their economy deserved attention. Most of previous studies were conducted pre-MFA abolition, hence, they estimated rather than analysed the impacts of quota removals. Contrarily, this study uses more recent data which has the advantage of reflecting the full-effect of the quota-free environment. Therefore, this study enables the researcher to evaluate whether MFA-affected countries have re-structured their industry and re-positioned themselves. Indeed, the evolution of network statistics showed that the period 2005-2006 was quite unstable with trade reaching its peak but in the later years trade stabilised. This study also conducted separate analysis of final and intermediate products. These two segments have different production structures and, hence, best analyse separately.

This thesis also uses a novel approach to study trade relations. Network analysis has been recently applied to study trade relations and trade patterns. Most of these studies analysed the total world trade which confounds all industries and they found no changes in the structural properties of the network over time. In this essay, a specific industry is taken as its object of study and this industry is segmented between final and intermediates. Indeed, changes in the network structure are observed both in the network of intermediate and final products. This research adds to the network literature and highlights the analytical capabilities of such a tool in probing into the dynamics of an industry. In fact, the network of T&C shows convergence following structural changes in the global industry.

In order to understand the processes of competitive advantages, a unit value analysis complements the network analysis. The global value-chain framework is applied to very small players such as SRIEs as opposed to previous work which mainly focuses on newly industrialised Asian countries. The conclusions of this study contribute to reinforcing the global value chain framework and confirm its applicability even to smaller producers.

This thesis provides an alternative explanation for the notion of remoteness. While remoteness is always attributed to a negative distance effect, the fourth essay of this thesis shows the contrary. Remoteness is positively associated with tourism performance. While the island and tourism literature talks about the “attraction” and “fascination” of remoteness, little empirical research related remoteness to positive economic performance. This thesis bridges this gap in the literature. It also extends analysis regarding nature-based tourism. An improved

measure of nature is proposed and its causal relation to tourism performance and demand is demonstrated. The knowledge that nature matters for small island economies allows for appropriate development strategies to be formulated. It highlights that nature and eco-tourism should not be neglected at the expense of beach tourism. Moreover, it proposes that remote island tourism is a positional good.

In sum, the findings of this dissertation are useful for policy implications. SRIEs have specific characteristics. Development policy on an SRIE will differ from that of a Caribbean island. The Caribbean islands have relatively easier access to one of the world's major markets compared to SRIEs. Development based on export-led manufacturing industries sustained SRIEs for decades but changes in global policies put to test their comparative advantages. These economies have a natural comparative advantage in tourism, some in beach tourism and others in nature-based tourism among others. An appropriate development strategy would be to locate in which niche they have an advantage and exploit this potential. It is suggested that the smaller SRIEs are better off specialising in up-market tourism since their ability to compete with larger developing countries in manufacturing exports is limited. They have a comparative advantage in tourism vis-à-vis those countries or other island economies. The larger SRIEs, which have managed to sustain a strong manufacturing industry, may enhance their economic performance by strengthening their tourism industry.

DIRECTIONS FOR FUTURE RESEARCH

A comprehensive understanding of the economics of SRIEs is beyond the scope of this dissertation. It aims at investigating some salient economic problems. In consequence, there is ample room for future research. The focus of this work was SRIEs, thus, it investigates the impacts of the MFA quotas on SRIEs. However, to better comprehend the effects of remoteness, further research should aim at comparing the networks of SRIEs with those of non-remote islands: the Caribbean islands would be suitable candidates for this purpose since they were also group of countries that largely benefitted from the MFA quotas. Comparing the effects of the quota-removal with SRIEs would provide better insights. However, they were subsequently affected by other preferential trading agreements and this might biased the findings of any comparison.

Network analysis is a relatively new and useful methodology but not well-received by mainstream economists. Network position alone cannot explain performance due to unobservable characteristics. Future research could cross-check the results through other

methodologies. The use of value-chain analysis and revealed comparative advantage analysis in this thesis confirmed the robustness of the results of the network analysis performed. Moreover, better insights into T&C value chains would require undertaking an analysis at the level of the firms. One could, in turn, cross-check results of the unit-value analysis undertaken by using another source of exports data.

This thesis shows that price acts as a sorting factor: the low value tourist chooses the more competitive destinations while the high value tourist chooses remote destinations. In particular, price factors determine arrivals/destination choices but are irrelevant in determining expenditure at the destinations. This finding would benefit from further analysis such as analysing expenditure choices at individual tourist destinations. A comparative analysis of expenditures on a remote island and a non-remote island would provide further insights.

This research also proposes that it would be best for SRIEs to specialise in tourism given their tourism potential. However, little was said about the type of tourism activities that is appropriate for each SRIE. It was understood that any types of tourism strategy for SRIEs should be sustainable with minimal undesirable externalities. SRIEs are all well-endowed in nature but the extent and variety of this resource differ. Further investigation of this issue could be done through case-studies.

Network analysis is useful in analysing economic problems that involve flows. Tourism represents flows from one country to another. An enterprising but interesting avenue for future research would be the use of quantitative network analysis to analyse tourism flows to and from a country. Little research has been undertaken in this respect. In fact, existing research merely focuses on connectivity between stakeholders within a destination. However, network analysis would be especially useful to understand this global economic phenomenon. In particular, it would be an apposite tool to investigate the tourism markets of SRIEs and also determine the impact of geography on tourism.