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di CASTELLANETA FRANCESCO
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A DEDICATION TO MY WIFE

by T.S. Eliot

To whom I owe the leaping delight

That quickens my senses in our wakingtime

And the rhythm that governs the repose of our sleepingtime,

the breathing in unison.

Of lovers whose bodies smell of each other

Who think the same thoughts without need of speech,

And babble the same speech without need of meaning...

No peevish winter wind shall chill

No sullen tropic sun shall wither

The roses in the rose-garden which is ours and ours only

THE DOUBLE-EDGED SWORD OF EXPERIENCE IN STRATEGIC DECISIONS: EVIDENCE FROM THE PRIVATE EQUITY SECTOR

Introduction

The study of how firms evolve and change lies at the core of management scholarship. The study of organization evolution has been debated at length. Different streams of research and several branches of literature have tackled the question of if and how organizations evolve, coming to different conclusions. On one extreme, population ecology scholars argue that most structural change at the population level is done through selection. Though organizations do adapt their structures, it is often too slow to successfully react to environmental changes (Hannan and Freeman 1984). Population ecologists propose that change is hampered at the organizational level by the presence of inertial forces. On the other side, a series of other theoretical contributions grounded on the behavioral school (Cyert and March 1963; March and Simon 1958) have proposed that organizations change and are able to cope with environmental change. Building on this last stream of research, this dissertation offers a number of opportunities to break new ground in our current understanding of organizational change, adaptation and renewal. Nevertheless, this dissertation sheds new light on our understanding of the conditions under which experiential learning factors become a form of organizational rigidity, generating inertial forces difficult to overcome.

The overarching objective of my dissertation is to contribute to our understanding of the positive and negative experiential learning factors linked to the development of organizational

capabilities in strategic tasks. Experience is both an opportunity and a restriction – a resource and an obstacle for change, a space to explore and a prison. To gain insights into the puzzling role of experience, my work examines the following research question: *under what conditions does experience produce the type of positive effects seen in learning curves and under what conditions will experience have no significant positive impact or, even more interestingly, a negative impact?* My dissertation disentangles the positive and negative effects of experience to show that they coexist and work in different directions in the context of private equity investments (i.e., buyouts).

The empirical setting I have chosen to test my theory is the private equity industry and in particular the management buyouts. Notwithstanding the notorious challenges in terms of data access to this setting, I have established cooperative agreements with a number of key operators in the industry, and obtained access to data in both large quantity and rare depth of information. My database contains: 11,704 buyouts realized by 334 private equity funds globally; 1,500 Curriculum Vitas of private equity funds managers. Using this unique database, I analyze experiential learning processes at different levels of analysis – organizational, team and individual level – over the full investment history of the private equity funds.

The dissertation is composed by three different studies. The first study, called "The boundaries of bounded rationality: experience, superstition and the weight of activity load in management buyouts" explores the experiential learning factors that might influence the negative impact of activity load (defined as the number of relevant activities simultaneously carried out by a firm) on performance. I examine the link between activity load and

performance by focusing on the role that two experiential learning processes play in strengthening and weakening this link: the quantity (i.e., the stock) of prior experience, and the quality (i.e., the past performance) of past experience. First, the stock of prior experience (i.e., the number of previous buyouts) reduces the negative impact of activity load on performance. Routines, which arise from the accumulation of experience, represent an easy, fast and almost automatic way to access the repertoire of knowledge, cognition and competences that are stored in an organization. Second, the quality of past experience (i.e, the performance of previous buyouts) increases the impact of activity load on performance. This is because superstitious learning mechanisms tend to lead to flawed reasoning by analogy and an illusion of control.

The second study, called "Towards learning-by-interacting: how to overcome the failures of organizational and individual learning-by-doing", uses a multilevel approach to examine learning-by-doing mechanisms on the organizational and the individual levels. To increase our understanding of the factors responsible for the learning curves on the two levels of analysis, this study examines the contribution of each kind of experience to buyout performance, while controlling for the impact of the other. The results show that organizational experience has a significant, negative impact on buyout performance. This counterintuitive finding shows that experience might hurt learning processes in strategic events. In contrast, individual experience is not significantly related to buyout performance. In addition, the study uncovers a U-shaped relationship between the amount of experience shared by the group of decision-makers and buyout performance. Through the accumulation of experience, groups of decision-makers develop from novices to experts, which lowers the

likelihood of inappropriate discrimination and superstitious learning effects. Therefore, the initial negative relationship between the amount of experience shared by the group of decision-makers and performance is reversed as experience is accumulated.

This third study, called "Strategic entrepreneurship and capabilities development processes: an empirical investigation in divisional buyouts", investigates the key value creation levers in divisional buyouts, where the presence of the private equity funds should reduce agency problems and spur a strategic entrepreneurship orientation. The analysis is conducted on an unique sample of 1364 buyouts. The impact of the six different strategic approaches is measured and then compared between the divisional and the standalone subsamples. Data show that divisional buyouts have a superior probability of top-performing, in terms of gross IRR generated, when growth oriented and refocusing based strategies are undertaken, whereas standalone buyouts are more likely to end with a top IRR when a restructuring strategy is implemented. The analysis also produced evidence of a relatively poor impact of revitalization strategies in divisional buyouts compared to standalone deals.

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"Experience, superstition and the weight of activity load in management buyouts:

theory and evidence from management buyouts"

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"Experience, superstition and the weight of activity load in management buyouts:

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ABSTRACT

This paper builds on the attention-based view of the firm (Ocasio, 1997) to study the influence of two boundaries of bounded rationality on performance outcomes in complex strategic tasks. In this paper, bounded rationality is construed as the negative link between activity load and performance. It focuses on the role of prior experience as a positive moderator of that link and the quality of such experience (e.g., the performance of past events) as a negative moderator. A sample of 7,267 investments made by 256 private equity funds offers support for the hypothesized effects. Surprisingly, the stock of prior experience has a strong, direct, negative effect on the performance of the focal acquisition, which contrasts with the positive, indirect effect arising from routinization and economization of scarce attention resources. These results have important implications for our understanding of attention processes in strategic decision making, and the effects of experiential and superstitious learning processes on performance outcomes.

Keywords: organizational learning, superstitious learning, experience, past performance, private equity, bounded rationality

INTRODUCTION

Rationality in decision making has attracted interest in disciplines as varied as economics, management, psychology, artificial intelligence, anthropology, neurology and philosophy. Bounded rationality, in particular, is a cornerstone assumption in debates on the theory of the firm in transaction cost economics (Coase, 1937; Williamson, 1975), team theory (Marschak *et al.*, 1972), and the Carnegie school of organization theory (Cyert *et al.*, 1963; March *et al.*, 1958; Simon, 1947). Bounded rationality also serves as a fundamental pillar of organization and strategic management research, as it marks a clear deviation from the generally accepted assumptions of hyper-rationality in neo-classic economics research. As such, it plays a central role in explanations of why organizations are structurally biased in their evaluations of simultaneous decision alternatives (Ocasio, 1997), why they make frequent and predictable errors when attempting to chose the optimal alternative (Finkelstein *et al.*, 2009), and why they use simplifying rules or heuristics to reduce the cognitive demands of decision making (Gavetti *et al.*, 2005).

In existing literature, bounded rationality is typically treated as an axiomatic assumption or as a basis for theoretical argumentations (e.g., "because of bounded rationality, we expect that…"). In such theory-building efforts, little has been done with the construct itself, mainly because of the difficulty associated with operationalizing bounded rationality in a way that is empirically tractable. Connected to that difficulty is the self-imposed artificial limit that arises when bounded rationality is considered only in theory of the firm discourses. However, although the cognitive boundaries of human capacities cannot be easily endogenized in a model, their effects on measurable constructs can. In addition, an "aggregate level" of

analysis is needed when dealing with the concept of bounded rationality (Simon, 1991). Bounded rationality has profound consequences for the organization, consequences that go beyond anything that could be inferred simply by observing rationality in isolated individuals. On the organizational level, factors that enable and constrain the effects of bounded rationality can be both theorized and empirically evaluated.

This paper proposes a way of studying the effects of bounded rationality on an aggregate level as well as the conditions under which these effects might be stronger or weaker. The main research question is: *what are the factors that might influence the negative impact of bounded rationality on task performance?* We define *bounded rationality* as the negative impact of the activity load on task performance (Ocasio, 1997). *Activity load* is defined as the number of relevant activities that are simultaneously carried out by decision makers during a specific period of time (Edmunds *et al.*, 2000; Eppler *et al.*, 2004). We examine the link between activity load and the performance of strategic tasks by focusing on the role that experiential learning processes play in strengthening or weakening this link. At its simplest level, the core intuition is that activity load determines more or less negative effects on task performance depending on the degree to which individuals and groups interpret and economize attention on the basis of past experience.

We investigate two boundaries of bounded rationality: the quantity of prior experience (i.e., the stock) and the quality of such experience (i.e., past performance). First, the *stock* of prior experience reduces the negative impact of activity load on the performance of strategic tasks (Argote *et al.*, 2003; Epple *et al.*, 1991; Rerup, 2005). Routines, which are developed through the accumulation of experience, represent an easy, fast and almost automatic way to access

the repertoire of knowledge, cognition and competences that are stored in an organization (Ocasio, 1997). By increasing the number of tasks that require only limited attention and alertness, routines facilitate the handling of a number of complex strategic activities. Moreover, routines are an "engine" of rationality because they provide heuristics, rules of thumb and knowledge that guide search processes (Levinthal *et al.*, 2006). Second, the *quality* of past experience – the performance of previous strategic tasks – increases the negative impact of activity load on performance (Greve, 2008). Past performance offers objective feedback on the quality of past strategic decisions. However, it exacerbates superstitious learning due to an increase in the organization's confidence in its competences to a level that tends to be inaccurate (Lampel *et al.*, 2009), leading to flawed reasoning by analogy and an illusion of control.

In this paper, these concepts and the linkages among them are studied in a suitable empirical context of particular economic relevance – private equity investments (Kaplan *et al.*, 2005). We draw on a sample of 7,267 investments undertaken by 256 private equity houses. This dataset takes the full history of investments made by these private equity houses into account and provides an objective measure of performance based on the gross internal rate of return of those investments (Barkema *et al.*, 2008). This unique dataset not only enables the study of the effect of activity load, measured as the number of investments simultaneously handled by a private equity house during the focal investment, on the performance of a focal deal. It also allows for the construction of precise measures of both stocks of experience and past performance, which are moderators of the negative impact of activity load on the performance of the focal investment.

The paper is structured as follows. Following a theoretical introduction to the role of activity load in strategic tasks, the impact of activity load on task performance is discussed. Two hypotheses are then presented about the quantity and quality of experience, and how they influence the effect of activity load on task performance. Finally, an empirical study is presented to show how the impact of activity load on private equity investments is moderated by the quantity and quality of past experience. The paper concludes with a discussion of the implications of these results in terms of understanding the limits of activity load and bounded rationality.

THEORETICAL FRAMEWORK

The foundational studies of the Carnegie School (Cyert *et al.*, 1963; March *et al.*, 1958; Simon, 1947) propose that organizational attention is a valuable, scarce resource (Augier, 2001). As a result of bounded capacity, decision makers can pay only limited attention to the various consequences of their actions, to the objective valuation of those consequences and to the scope of available decision alternatives (Simon, 1947). As the number of relevant activities simultaneously carried out by decision makers increases, decision makers selectively distribute their limited attention capacity among the competing organizational issues. Therefore, an increase in the number of activities carried out by decision makers negatively affects the amount of attention that can be devoted to each single task (Ocasio, 1997). Consequently, problems compete for the limited attention of decision makers. In turn, an increase in the activity load negatively affects the quality of decision making and results in poorer performance (Laamanen *et al.*, 2009; Sullivan, 2010).

Strategy and organizational scholars typically ascribe the negative effects of activity load to information loads that exceed an organization's capability to process available data (Speier *et al.*, 1999). This view centers on the computational information processing perspective, according to which the problem organizations face is one of searching for and processing relevant information when such searches are costly and decision makers are boundedly rational (Lant *et al.*, 2001). Although the computation information processing perspective is used in this paper, the research presented here advances the understanding of the mechanisms that generate activity load in strategic tasks, and builds on more recent research on sense making and interpretation (Sutcliffe *et al.*, 2008).

In order to explore the factors that might influence the impact of activity load on the performance of strategic tasks, one must first understand the theoretical mechanisms that explain how activity load is generated in strategic tasks and why it negatively affects the quality of decision making (Sutcliffe *et al.*, 2008). Therefore, this paper analyzes the main differences between operating and strategic tasks before explaining the theoretical mechanisms that cause performance declines in strategic tasks as a result of activity load.

The generation of activity load: operational vs. strategic tasks

The tendency of existing literature to primarily investigate the impact of information processing on activity load generation arises from its narrow focus on operational tasks (Lampel *et al.*, 2009). Operational tasks are characterized by relatively high frequency, high homogeneity, low causal ambiguity and a relatively marginal impact on economic performance (Schneider, 1987), such as the tasks undertaken during car assembly – a

manufacturing process in which parts are added to the product in a sequential manner in accordance with previously optimally planned logistics. The content and process of each action on the assembly line are well known by the employees and programmed in detail in advance (Starbuck, 2009; Yelle, 1979). Operational tasks can, therefore, be executed by assembly line employees using a low level of attention and alertness. Moreover, the attention required by those actions tends to decrease as experience is accumulated (Nelson *et al.*, 1982). In contrast, strategic tasks are characterized by relatively low frequency, high heterogeneity, high casual ambiguity and high economic relevance (Zollo, 2009). Similar strategic tasks that belong to the same knowledge domain tend to be characterized by relatively similar processes but by different content. For example, integration processes at Cisco have been highly standardized and routinized as a result of more than 115 acquisitions made since 1993 (Paulson, 2001). However, each acquisition was characterized by a somewhat different content, even when the acquisitions were related (e.g., similar sector, country, product or size). Every new acquisition, regardless of its similarity to previous acquisitions, has idiosyncratic characteristics that require a certain level of attention and alertness (Barkema *et al.*, 2008).

Schneider (1987) proposes that the different pieces of information that generate activity load are not equal because they are characterized by different attributes, such as the level of novelty, ambiguity, uncertainty, intensity or complexity. These characteristics are not orthogonal to the level of activity load generation (Schneider, 1987). Following this line of reasoning, we specifically focus our attention on the mechanisms that generate activity load in strategic tasks.

Strategic tasks: activity load and declines in performance

The computational approach, which builds on the assumptions that organizational searches are costly and decision makers are boundedly rational, emphasizes that the major problem that organizations face is the need to search for and process relevant information (Sutcliffe *et al.*, 2008). Information processing in relation to strategic tasks easily saturates the limited attention capacity of an organization. Given the complexity of each decision, the processing capacity required for each task tends to be very close to, or exceed, the available organizational attention capacity (Speier *et al.*, 1999). In addition, activity load in strategic tasks tends to generate a sub-optimal allocation of attention capacity (Hahn *et al.*, 1992; March *et al.*, 1976; Sutcliffe *et al.*, 2008). The allocation of the limited organizational attention capacity becomes more sub-optimal as the activity load increases (Lant *et al.*, 2001).

The computational approach only partially explains why attention capacity tends to be saturated when decision makers must undertake strategic tasks. To fully understand how and why attention capacity saturates and negatively affects the quality of decision making in strategic tasks, it is necessary to analyze the difficulties that organizations face in terms of interpreting complex decisions (Daft *et al.*, 1984; Thomas *et al.*, 1990). Strategic decisions represent a challenge for the organization's limited attention capacity, even if the organization has had to address similar decisions in the past. The attribution of meaning to each piece of information in strategic tasks requires a certain level of attention and alertness, since all information tends to be characterized by a certain degree of unfamiliarity and incomplete knowledge (Sutcliffe *et al.*, 2008).

Strategic decisions must generally take account of ambiguous and conflicting information, shifting goals, time pressure and dynamic environmental conditions. All of these elements make every strategic decision unique, although decisions can be in the same strategic domain. For this reason, past experience cannot be mindlessly applied to a current strategic task. Strategic decisions always require a certain level of attention and effort in order to differentiate between past experience and the current situation (Rerup, 2005; Weick *et al.*, 2006).

The negative effects of activity load tend to be exacerbated by the number of strategic tasks that are simultaneously being handled by the organization (Ocasio, 1997; Wueman, 2001). Given their limited attention capacity, organizations do not attend to problems indiscriminately (March *et al.*, 1958; Simon, 1957). Instead, they tend to allocate their attention to different types of problems in turn (Cyert *et al.*, 1963). Simultaneous projects, especially those that are characterized by a high level of complexity, such as strategic tasks, increase the information processing capacity requirements simply by their nature of being simultaneous (Eppler *et al.*, 2004). An increase in simultaneous strategic tasks tends to saturate the organization's attention capacity, thereby generating errors in interpretation and sense-making processes. This leads to declines in performance (Ocasio, 1997; Sullivan, 2010). Based on this understanding of the negative impact of activity load on task performance, we focus on the two factors that influence the link between activity load and performance: the stock of prior experience and past performance.

HYPOTHESES DEVELOPMENT

The role of experience in overcoming attention capacity limitations

To enrich our understanding of the conditions under which the attention capacity of the organization can increase or decrease, we must first understand how organizations learn from past experience (Ocasio, 1997; Rerup, 2005; Sullivan, 2010; Sutcliffe *et al.*, 2008; Weick *et al.*, 2006). The selective focus of attention of decision makers is ameliorated, at least in part, by routines or well-known activities (Laamanen *et al.*, 2008; Ocasio, 1997). The more a decision is based on reoccurring routines (Tushman *et al.*, 1978), the lower is the activity load (Eppler *et al.*, 2004). One important virtue of routinized behaviors is the fact that they economize on scarce organizational attention (Greve, 2003), even when the decisions are complex (Schneider, 1987). Given the limitedness and scarcity of an organization's attention capacity, routines reduce the level of necessary mindfulness and allow the organization to preserve attention capacity for other tasks or projects with a greater impact on organizational performance (Levinthal *et al.*, 2006). The effect of routines on the economization of organizational attention can be understood by analyzing the two fundamental modes of organizational attentional processing: automatic and controlled.

Automatic processing. Automatic processing, which is difficult to alter or suspend, occurs when little active control is required from decision makers. It is dependent on extensive, long-term learning. In this case, action is highly routinized and decisions are unreflexively triggered by environmental stimuli to which a response is automatically generated. The decision process is less mindful – fewer cognitive processes are activated less often – since

organizations rely on routines to a significant extent (March *et al.*, 2000; Nelson *et al.*, 1982). Therefore, less-mindful processes free the organization from tasks that do not require vigilance and intervention, so that time and energy can be directed towards tasks that do. Routines are central to decision processes based on automatic processing. They represent an easy, quick way to access the repertoire of knowledge, cognition and competences stored in the organization, and are active even at low levels of cognitive effort. Stable, routinized behaviors reduce the cognitive demands that such actions entail because they are based on the absence of or a reduction in active thinking (Cohen *et al.*, 1994).

Controlled processing. In contrast to automatic processing, controlled processing requires a high level of attention capacity and is controlled by decision makers. Automatic and controlled processing are not mutually exclusive. Automatic processing plays a central role when the number of strategic issues faced by decision makers increases (Weick *et al.*, 2006). Although strategic issues, in contrast to the vast majority of operational issues, cannot be tackled with a low level of attention and alertness, routines increase the number of automatic processes, thereby easing the handling of a high number of strategic activities. As a result of the routinization arising from experience, some actions in strategic decisions can be undertaken in a non-reflexive way. In turn, the limited attention capacity of the organization can be devoted to the problems that require controlled processing.

For example, Cisco views several practices as crucial to its due diligence process. "It is clear that the (due diligence) team knows what the major items of value are that require the most intensive due diligence effort. Once again we see that focus on a clearly defined set of objects is a key to success" (Paulson, 2001; p.166). The level of codification of the due diligence

process at Cisco is so high that the company knows in advance what it needs to learn about the target company. Cisco "does the standard due diligence checks to verify all of the things that must be verified. But underlying the due diligence process is the search for the answer to an overriding question: Will these people, their products, and their culture merge well with Cisco?" (Paulson, 2001; p.166). When Cisco begins due diligence on a potential target, it does not need to use attention capacity to decide which aspects should be analyzed. The company's due diligence checklist frees up a certain amount of decision makers' attention capacity, capacity that can be channeled to the key decision points.

Therefore, the role of routines is twofold. Routines play a central role not only because they free up part of an organization's attention capacity, but also because they are "engines of rationality". As in the case of Cisco, routines provide heuristics, rules of thumb and pieces of knowledge that are useful in directing the search process (Salvato, 2009). The codification of lessons learned in the past helps to guide attention towards those issues that matter more and have a greater marginal impact on the quality of decision making.

Routinization lessens the likelihood that attention capacity will be saturated. The use of routinized behaviors to respond to certain stimuli frees up the limited attention capacity of the organization, which can be used to solve other organizational issues that require controlled processing (Ocasio, 1997). Building on the computational view (Lant *et al.*, 2001), the availability of routines increases the number of organizational issues that can be simultaneously managed, all else equal. This generates the following hypothesis:

Hypothesis 1: The greater the stock of prior experience in similar strategic activities, the less negative the effect of organizational activity load will be on the performance of the focal strategic activity.

Past performance, superstition and activity load

Recent research on superstitious learning (Heimeriks, 2010; Rerup, 2009) has unveiled some of the mechanisms underlying its occurrence. However, there is still only a limited understanding of the impact of superstitious learning on decision processes in strategic tasks (Tenbrunsel *et al.*, 1996). This paper suggests that superstitious learning exacerbates the negative effects of activity load as the result of two processes: *flawed reasoning by analogy* and *illusion of control*.

Flawed reasoning by analogy. When decisions makers face a novel task, they think back to similar situations and apply what they learned from their previous experiences (Gavetti *et al.*, 2005). An example of flawed use of analogies can be found in the experience of Clive Thompson, former CEO of Rentokil. He was known as Mr. 20% because he succeeded in delivering annual profit increases of 20% every year from 1982 to 1990. This was achieved through 130 small add-on acquisitions, made in a fragmented market in which most companies were small and many were up for sale. Under pressure to maintain the company's growth at this high rate, Mr. Thompson started looking for larger deals. In 1992, Rentokil acquired Securigard, followed by BET in 1996, acquisitions that more than doubled the

company's size. These two acquisitions were extremely unsuccessful, share values fell by 50% and Mr. Thompson was asked to resign in 2002 (Finkelstein *et al.*, 2009). Mr. Thomson was misled by the success of his prior experiences in that he assumed that major acquisitions could be handled in a manner similar to the many small successful acquisitions made under his leadership. The use of analogies to make strategic decisions meant that Mr. Thomson underestimated the differences between the previous, small acquisitions and the new, big ones through erroneous processes of associative memory.

Reasoning by analogy is common in strategic decisions and it may aggravate the negative impact of activity load because of superstitious learning effects. Learning can be superstitious as a result of overconfidence in the organization's competencies (Zollo, 2009). Furthermore, organizations that suffer from superstitious learning tend to express a level of confidence in their judgments and decisions that is inaccurate (Oskamp, 1965). For example, judges believe their decision processes to be unbiased even though the accuracy of that judgment is low (Lichtenstein *et al.*, 1982). Successful past performance is a source of superstitious learning since it tends to increase the perception of unbiased judgmental processes even at low levels of accuracy, increasing the negative effects of overconfidence (Klayman *et al.*, 1999). Past success increases self-confidence, and leads firms to become more confident that they have the capabilities and the knowledge needed to understand strategic options in the same strategic domain. This leads organizations to systematically use a reasoning by analogy approach in their decision-making processes (Gavetti *et al.*, 2005).

Reasoning by analogy that results from successful past performance does not necessarily lead to poorer performance. However, setting strategies by analogy tends to be dysfunctional when

activity loads are high because busy organizations that operate near the limit of the attention capacity tend to have stronger cognitive simplification processes (Schwenk, 1984). Overconfidence, together with high attention saturation, biases information processing because it tends to involve erroneous mechanisms of associative memory, which facilitate the retrieval of information inconsistent with, or even harmful to, the focal strategic activity being considered (Duhaime *et al.*, 1985; Schwenk, 1984). In strategic decisions that are characterized by high uncertainty, heterogeneity and complexity, decision making by analogy tends to mislead the decision-making process.

The negative effects of past performance become more significant as the organization's attention capacity approaches the saturation limit and, therefore, as activity load levels rise. At high levels of activity load, the searches for information are reduced, and the organization searches for strategic solutions in its memory and past experience. Through a process of associative memory and reasoning by analogy, the organization selects the responses from its memory that appear to be most appropriate for the strategic task at hand (Klayman *et al.*, 1999). The organization's confidence in its past experience increases significantly if the strategic choices or decisions retrieved from memory had a positive effect on performance in the past.

Illusion of control. Past performance has a negative impact when the level of attention saturation is high not only because of flawed processes of associative memory but also because of the illusion of control. Organizations believe they have developed the right competences to manage a higher quantity of parallel projects and they tend to underestimate the risks arising from the management of simultaneous strategic tasks (Schwenk, 1984).

Given the illusion of control, decision makers may overestimate the extent to which the outcomes are under their personal control and they may assume that they can make the business succeed if problems arise (Duhaime et al., 1985).

The illusion of control tends to aggravate the negative effects of activity load because it has a negative impact on attention allocation processes. In the presence of high activity load, decision makers tend to focus on those aspects of the task that they have successfully controlled in the past, and they tend to underestimate the importance of factors beyond their control or factors not experienced in conjunction with past decisions (Laamanen *et al.*, 2009). This increases the probability that the organization will discard factors important to the decision process related to the focal task. Moreover, the illusion of control, which appears to be stronger in individuals who have experienced success (Duhaime *et al.*, 1985), biases the interpretation of failures, which are attributed to "chance" rather than to the decisions themselves . This generates the following hypothesis:

Hypothesis 2: The more successful the past performance in similar strategic activities, the more negative the effect of organizational activity load on the performance of the focal strategic activity.

RESEARCH DESIGN

Research setting

The private equity setting offers a suitable empirical context in which to test the effects of activity load in the context of strategic tasks (Kaplan *et al.*, 2009; Wood *et al.*, 2009). Private equity investments are characterized by relatively low frequency, high heterogeneity, high casual ambiguity and high economic relevance. Moreover, the private equity setting has specific characteristics that allow for objective measurements of activity load, experience and past performance in a manner that takes the firm's entire history into account.

In the private equity setting, it is possible to separately and objectively measure the performance of each investment (Phalippou *et al.*, 2009a). In a buyout, a company is acquired by a specialized investment firm, known as a private equity firm. In a typical buyout, a private equity firm buys an existing firm with the aim of reselling it at a profit. A private equity fund is raised and managed by investment professionals of a specific private equity firm (the general partner). Typically, a single private equity firm will manage a series of distinct private equity funds. Each private equity fund has a limited contractual lifetime (e.g., ten years) in which to exit investments. This characteristic of private equity funds makes selection biases less likely. As private equity funds have to sell all companies within their contractual lifetime, performance feedback is available for all investments, including those that performed poorly (Kaplan *et al.*, 2009).

Sampling, data collection and descriptive statistics

The database on private equity investments (companies acquired and sold) was created by collecting fundraising prospectuses (private placement memoranda, PPM) from a total of 256 unique PPMs from various investment firms operating in Europe and the US. The prospectuses covered a total of 7,267 investments realized between 1973 and 2005. This database appears to be the largest, most extensive database in the private equity scholarly field (Wood *et al.*, 2009).

90% of the investments included in the database had less than USD 97 million in equity (in 2006 USD). The median investment was USD 15 million. More than 22% of the investments were for less than USD 5 million. The data show that private equity funds lost of all the equity invested in 10% of their investments. Funds had negative returns for 26% of all investments. Therefore, we can say that few private equity investments lose money but when they do, they tend to lose everything. The average duration of an investment was 5.3 years.

This dataset has four unique features. First, it details performance on the level of a single investment. Second, it incorporates the firms' full investment track records. Third, this data is likely to be representative of the universe of private equity investments, as it comes from a number of limited partners, and includes both funds in which they decided to invest and funds in which they decided not to invest. Fourth, the database appears to be the largest dataset covering private equity investments worldwide.

MEASURES

Dependent variables

The advantage of focusing on the private equity sector is that it is possible to objectively and separately measure the performance of each investment. In the private equity sector, a fund invests a certain amount of money to acquire a company and, after a certain period of time, sells that company. The performance of each investment can, therefore, be measured using the internal rate of return (Kaplan *et al.*, 2005). IRR measures the gross return earned by investors from the acquisition of the company until it is sold. The IRR is calculated as an annualized, effective, compounded rate of return using monthly cash flows and annual valuations for each company. As the data includes significant outliers (e.g., one valuation in our sample is 154,900% the median), we winsorize the dependent variable (IRR) at the 95th percentile (i.e., 191%). The winsorized IRR is still 860% the median. There are three reasons for this choice. First, OLS has little resistance to outliers that could significantly change regression results, affecting the sign and the significance of the slope (Hamilton, 2009). Second, this is a standard procedure used to avoid problems resulting from the presence of significant outliers (Phalippou, 2009; Phalippou *et al.*, 2009a). Third, an independent variable, mean IRR, is used to measure past performance. Phalippou (2009) demonstrates that the average of simple IRRs is significantly positively biased. The use of winsorized IRRs avoids this bias.

Independent variables

Stock of prior experience. Prior experience is measured as the number of investments previously made and completely sold by the private equity firm prior to the starting date (month and year) of the focal investment (Reagans *et al.*, 2005). The cumulative number of investments already sold is used as an indicator of the number of routines and well-learned activities available to the firm in its management of the focal investment (Ucbasaran *et al.*, 2010; Wright *et al.*, 2009).

Past performance. The past performance measure captures the mean performance of the investments made by the private equity firm prior to the acquisition of the focal investment (Kaplan *et al.*, 2005). It is calculated by averaging the performance of all of the realized investments (i.e., acquired and already sold) prior to the focal investment, as well as the performance of all of the unrealized investments (i.e., acquired but not yet sold). This measure overcomes the limits of other measures (Kaplan *et al.*, 2005) that exclude unrealized investments from computations of past performance. The exclusion of unrealized investments from the computation of past performance tends to lead to an overestimation of past performance because profitable investments tend to be sold earlier than less-profitable investments. Prior studies have not included unrealized investments in the computation of this measure because performance measurements focused only on the fund level (Kaplan *et al.*, 2005). On the contrary, the measurement of performance at the investment level allows the inclusion of the unrealized deals in our measure of past performance. To compute past performance, we averaged the IRRs winsorized at the 95th percentile (i.e., 191%) to avoid the

possibility that the presence of outliers could lead to an overestimation of mean past performance (Phalippou, 2009; Phalippou *et al.*, 2009a).

Activity load. This measure captures the number of investments that the private equity firm handled concurrently with the focal investment (Ferris *et al.*, 2003; Fich *et al.*, 2006). This variable was constructed in two steps. For each month in the life of the focal investment, the number of ongoing investments was tallied. Next, the average of these variables across all months of the focal investment's life was computed. This measure captures the activity load faced by the group of decision makers during the management of the focal investment, and it indicates the number of parallel projects carried out simultaneously. The management of parallel investments represents a challenge for private equity funds, which must divide their limited managerial attention among several investments.

Control variables

In addition to the stock of prior experience, past performance and activity load, other factors may affect the performance of the focal investment. Based on a systematic review of prior empirical studies on buyouts (Barber *et al.*, 2007; Kaplan *et al.*, 2005; Kaplan *et al.*, 2009; Kreuter *et al.*, 2005; Phalippou *et al.*, 2009a) and corporate acquisitions (Kim *et al.*, 2009a), an extensive set of control variables was employed to rule out potentially confounding factors that could influence buyout performance.

The first set of controls aims to account for various characteristics of the acquiring private equity fund (Wright *et al.*, 2009). Older and larger funds often have more resources, management skills, reputation and legitimacy, which are helpful in executing a successful

buyout (Folta *et al.*, 2004; Janney *et al.*). For this reason, two variables are included in the model: *general partner age*, measured as the number of years since the foundation of the first private equity fund (Seppa *et al.*, 2001); and *private equity fund size*, measured as the equity raised by the fund that acquired the focal company (Laamanen *et al.*, 2008). Bigger funds have more resources and, therefore, find it easier to manage more parallel investments. In addition, *general partners fixed effects* is included, as a number of unobservable general partner characteristics should be controlled for when dealing with such constructs as experience, activity load and past performance.

The second set of controls accounts for various characteristics of the deal that could influence activity load. Activity load can be influenced by the *duration of the focal investment* because the activity load should be lower for those investments that are held in the portfolio for a longer period of time. The model also includes *investment size* (total equity paid for the investment – 2006 USD millions). Experienced private equity funds might tend to make bigger investments. In addition, the variable IPO controls for whether the exit from the company was realized through a public offer to the stock market (Catherine *et al.*, 2003). IPO exits require more attention because public offers necessitate the disclosure of information to the stock market based on complex documents (e.g., IPO prospectuses) and intense relationships (e.g., roadshows). IPOs might, therefore, intensify the negative effects of activity load.

The activity load of the private equity fund during the focal investment might be influenced by the quality of other investments in portfolio. Private equity funds that are not doing well cannot exit their investments. They therefore keep them longer and have more investments

running in parallel. To control for the impact of this tendency on the generation of activity load, we control for the *average duration of other investments held*.

The third set of control variables account for market conditions that might influence the performance of the focal investment. We control for the change in stock market valuations between the starting date and the exit date of the investment. *Market return* is defined as the average return of the S&P 500 index during the investment holding period. We also include *time-fixed effects* at the time of entry into the focal investment to capture a number of important drivers of performance. Recent studies indicate that the relative supply and demand of private equity capital at the time an investment is made are key determinants of the deal's performance. To capture competition among funds, a variable is used to cover the *size category* (i.e., top, mid or small market) relative to that year. In addition, *country and industry fixed effects* are used to control for country and industry unobserved heterogeneity, respectively. Furthermore, the general economic conditions that the private equity fund faces during the focal investment can be influenced by the year in which the fund is raised (Kaplan *et al.*, 2005); to control for this *vintage year fixed effects* are included.

Finally, one alternative explanation for the negative impact of activity load on investment performance calls into question a micro-foundational interpretation – the amount of activity load that a private equity fund can manage might be influenced by the number of decision makers that the private equity fund has at the time of the focal investment. The private equity fund might increase its ability to manage activity load by simply adding more people to the fund's management. For this reason, the model includes the number of *key employees* who have a managerial function at the time of the focal investment as a control variable. In

addition, a measure that captures the *individual activity load* is included. This measure is constructed by dividing organizational activity load by the number of decision makers (i.e., key employees). This variable measures the average number of simultaneous investments that each decision maker managed at the same time as the focal investment. This measure shifts the focus of attention from the organizational level of analysis to the individual level.

Model specification and results

The basic model specification used to test the hypotheses is the following:

$$IRR = \alpha_0 + \beta_1 \text{ organization activity load} + \beta_2 \text{ experience} + \beta_3 \text{ past performance} + \beta_4 \text{ organization activity load} * \text{experience} + \beta_5 \text{ organization activity load} * \text{past performance} + \text{controls} + \text{fixed effects} + \varepsilon$$

Experience, past performance and activity load enter the model multiple times as both direct effects and as interaction terms. Therefore, z-scores for these variables are used to mitigate multicollinearity. Z-scores are computed by subtracting the sample mean and dividing all by the sample's standard deviation. This coefficient measures the change in IRR resulting from an increase equal to one standard deviation. This does not affect the t-statistics but allows for a direct comparison of the economic magnitude of the variables. After these transformations, the maximum variance inflation factor (VIF) for all of the variables in the estimated models is substantially below 10, the rule-of-thumb cutoff for multicollinearity (Neter *et al.*, 1985).

A possible violation of the normal distribution assumption for the error terms in the OLS estimates stems from the multiple observations (acquisitions) for each private equity firm. We therefore introduce dummy variables to control for firm effects. Another possible violation of the OLS assumptions is the issue of independence of the residuals within each firm. We address this issue by re-running the analyses with the *cluster option* in STATA (results not shown). The results, however, are not significantly different.

– Insert Table 1 here –

– Insert Table 2 here –

– Insert Table 3 here –

The first and simplest indication of the role of activity load comes from its correlation with performance, which is negative and significant (Table 1). The correlation between experience and IRR is -0.02 – negative but not significant. Past performance is positively and significantly correlated with performance.

Table 2 presents the results of the OLS estimates from multiple regression analysis. Model 1 shows the baseline specification consisting of the control variables plus the fixed effects. Notably, IRR is positively and significantly related to market return. This means that companies owned by private equity perform in line with the stock market, which measures the economic climate during the holding period. Interestingly, investment size is negatively related to IRR, suggesting that big investments perform worse than small investments.

Model 2, 3 and 4 includes the direct effects of activity load, experience and past performance, respectively. In table 3, model 5 includes the interaction effect between activity load and experience, and model 6 includes the interaction effect between activity load and past performance. All models are significant at the 0.001 level. Hierarchical F-tests revealed that the direct effect models improve the explanatory power of the baseline specifications. Notably, the adjusted R-squared increases slowly compared with the baseline model (model 1). The baseline indication shows that market return, holding period, the duration of other investments and exits by IPOs have a major impact on the performance of an investment. This confirms findings of previous studies in finance (Phalippou *et al.*, 2009b).

Model 6 shows the full model, which offers evidence of a negative relationship between activity load and performance. Moreover, there is a positive interaction effect between experience and activity load, which confirms hypothesis 1. This means that experience helps to overcome the negative effect of activity load. In contrast, the interaction term for past performance and activity load is negatively related to performance, which confirms hypothesis 2. This shows that past performance tends to exacerbate the negative effects of activity load. Model 6 shows, however, that while experience positively moderates the relationship between activity load and performance, it also has a significant, negative, direct impact on performance. Notably, this is a result obtained after controlling for unobserved heterogeneity on the private equity firm level, which adds fixed effects.

Robustness checks

The robustness checks used in this study focus, in particular, on the issue of regression to the mean. The use of a censored measure of past performance should be sufficient to avoid the problem of regression to the mean and ensures that the variable captures superstitious learning effects (Phalippou, 2009; Phalippou *et al.*, 2009a). Nevertheless, additional analysis was deemed necessary to demonstrate the absence of this effect in the data.

One stringent condition used to confirm the presence of superstitious learning in these contexts is that the accumulation of experience enhances rather than reduces the negative association between past performance and the performance of the focal investment (Zollo, 2009). Learning will be superstitious not only when decision makers are systematically overconfident about their competences because of causal ambiguity but also when the negative impact of past performance increases with additional experience. The data shows that experience exacerbates the negative impact of past performance on the performance of the focal investment (model 9).

– Insert Table 4 here –

An even stronger test to check whether regression to the mean distorts the results is to exclude all observations that have a limited number of prior investments from the analysis. As past performance will regress to the mean after a number of observations (e.g., the second investment will be closer to the mean than the first), the exclusion from the analysis of the observations that only have a limited number of prior investments will exclude or

significantly reduce the presence of regression toward the mean. Therefore, model 6 was re-tested using only observations that have ten previous investments. This is a conservative cutoff value since the data show that buyouts performance in line with the mean from the sixth investment on. The findings remained stable (model 7).

Another issue is whether the negative impact of activity load derives from the firm reaching its capacity constraints or if it is instead related to the number of managers at the firm at the time of the focal investment. If the firm has activity capacity constraints that are partially independent from the number of managers, then the firm cannot avoid the negative impact of activity load by simply adding more managers. The alternative hypothesis is that the firm can expand its activity capacity simply adding new decision makers. According to this view, the amount of activity load that an organization can handle depends on the amount of people who have a managerial function and are actively involved in the decision process.

In order to test these two alternatives, information was collected about the number of managers at the time of each focal investment. This information was only available from 1995 to the present (the *Galante Private Equity Directory* was first published in 1996). Therefore, it was only possible to control for the number of managers in 3,113 focal investments, which represents 42% of the overall dataset. As shown in model 8, the number of managers is not significantly related to performance, and the sign and the significance of the other results do not change, although they are measured on a much smaller sample.

It is useful to analyze the relationship between the activity load faced by each decision maker and task performance. For this reason, the model was re-run using individual activity load as a predictor (model 11). As shown by this model, individual activity load is not significantly

related to task performance. Moreover, experience and past performance do not moderate the impact of individual activity load on task performance. These results seems to suggest that what really matters is the total activity load faced by the entire team of decision makers, and that the activity load on the individual level is not significantly related to performance.

Finally, the model was rerun with a measure of past performance that includes only realized investments and excludes unrealized investments (Kaplan *et al.*, 2005). This measure overestimates past performance because, as shown in the results indicating the negative impact of duration on investment performance, private equity firms tend to exit quicker those investments that perform better. Despite the difference between the two measures, the results remained stable (model 10).

DISCUSSION AND CONCLUSION

This paper examines the roles of experience and past success in determining the conditions under which bounded rationality (i.e., activity load) harms the performance of strategic tasks. It aims to contribute to existing literature in several ways. First, it offers a relatively simple but effective way of operationalizing bounded rationality in the context of organizational tasks of strategic relevance. Unfortunately, the theoretical construct of bounded rationality has not been supported by an empirical effort in existing literature, probably as a result of the perceived difficulties in its operationalization (Eppler *et al.*, 2004). This paper suggests tracking the strength of bounded rationality by focusing on the relevant, measurable effects of activity load on task performance.

In its attempt to study the concept of bounded rationality on the organizational level, this paper responds to Simon's call for the employment of an "aggregate level" when dealing with the concept of bounded rationality (Simon, 1991). Bounded rationality has profound consequences for the organization that go beyond anything that can be simply inferred by observing rationality in isolated individuals (March *et al.*, 1958; Simon, 1991). The data analyzed in this paper provides empirical support for this intuition, since individual activity load is not significantly related to performance, whereas organizational activity load is. In addition, organizational activity capacity cannot be simply conceived of as the sum of individual activity capacities, since the data shows that the private equity firm cannot avoid the negative impact of activity load by simply adding more managers (Garud *et al.*, 1999; Lant *et al.*, 2001; Sandelands *et al.*, 1987).

A second potential contribution of this work lies in the implications that the core findings might have for the development of the evolutionary theory of the firm. The data shows that both the quantity (the stock) and the quality (the past performance) of prior experience influence the strength of activity load, albeit in different directions. In particular, the data suggests that the accumulation of past experience reduces the negative influence of activity load. This shows that routinized behavior, which results from the accumulation of experience, economizes on the scarcity of attention resources, even in relation to organizational tasks with strategic relevance (Levinthal *et al.*, 2006; Ocasio, 1997). Furthermore, routinization has a beneficial effect on the quality of strategic decisions.

However, the role of experience in determining the strength of the activity load impact is not confined only to the stock of prior experience with a given task. Therefore, this study also analyzes the quality dimensions of experience associated with past performance. To this end, the data indicates that the higher the quality of past experience, the greater the prevalence of superstitious learning (Kim *et al.*, 2009b; Lampel *et al.*, 2009; Zollo, 2009), presumably because of the overconfidence effects of positive prior experiences. Interestingly, however, the degree of performance outcome ambiguity in this study was particularly low, which implies the more general applicability of superstitious learning phenomena beyond the case of high outcome ambiguity. In other words, the absence of outcome ambiguity is not sufficient for ensuring that superstitious learning can be avoided.

This could be viewed as a counterintuitive finding because past performance should help in predicting the quality of subsequent decisions, as such performance provides an objective evaluation of the quality of past decisions (Greve, 2003). Our findings seem to suggest,

however, that past performance facilitates the inappropriate application of prior experience to the focal task, presumably as a result of flawed reasoning by analogy (Gavetti *et al.*, 2005). In addition, there can be an overestimation of the organization's abilities to handle an increasing number of simultaneous activities (Lampel *et al.*, 2009), which is caused by an illusion of control (Schwenk, 1984).

The third, relatively unexpected, contribution stems from the juxtaposition of a negative direct effect and a positive indirect (moderating) effect of experience on task performance – which provides experience with a sort of Dr. Jekyll and Mr. Hyde role. If, on the one hand, experience accumulation and the consequent routinization processes can act as a powerful tool for reducing the negative effects of activity load, they can, on the other hand, actually impair learning through inertial (Leonard-Burton, 1992) or over-confidence effects. This finding might shed some new light on experiential learning processes: experience is both a restriction and an opportunity. In this respect, one possible contribution of this paper lies in its disentanglement of the negative and positive effects of experience, which shows not only that they coexist but also that they work in different directions.

Finally, the overall model proposed and the results of the empirical inquiry might provide a new lens for the study of portfolio management problems from a corporate strategy perspective (Goold *et al.*, 1993). The cognitive "weight" of carrying large numbers of acquired and semi-autonomous business units, still a widely diffused approach to corporate strategy in many large multi-business firms, has received relatively little theoretical or empirical attention, especially in conjunction with organizational learning processes (Westhead *et al.*, 2003).

Managerial Implications

The findings presented here could be of interest to practicing managers in a variety of ways. For private equity or conglomerate firm managers, the negative impact of the number of simultaneous investments on the return from the focal investment can be interpreted as indirect evidence of the importance of hands-on approaches to the management of acquisitions in general and to buyout investments in particular. In other words, value creation cannot be entrusted to pure trading (buy/sell) strategies, or to financial or tax advantage plays. Value creation requires a pro-active management approach to either enhance the acquired unit's stand-alone effectiveness or to capitalize on the synergistic benefits of the newly acquired units. If this holds true for private equity firms, the implications for strategic acquirers are even more profound.

Another implication for managers in acquiring firms – an implication that could have both strategic and financial aspects – relates to the perils of overconfidence stemming from success in past investments. The data shows that past IRRs are not good proxies for competence, and that they might actually generate negative impacts on future deals as result of overconfidence or superstitious learning effects.

At the same time, experience accumulation does not necessarily mean competence development. In the data analyzed, experience appears to act as a double-edged sword. On the one hand, it helps facilitate the establishment of routines, which allow decision makers to focus their attention on the most complex, novel challenges presented by the focal investment (Ocasio, 1997). On the other hand, routinization processes might be problematic for well-

known reasons, such as inertia and reduced willingness to change (Leonard-Barton, 1992), as well as less-obvious reasons related to the potential development of excessive confidence about one's own competences (Lampel *et al.*, 2009).

Finally, one potential remedy for the aberrant learning processes driven by excessive activity load, superstitious learning and the inertial effects of experience accumulation and routinization could be a focus on deliberate learning processes, such as knowledge articulation and codification. In other words, the "negative" side of organizational routines and the natural tendency to become overconfident about one's own competences in the presence of good performance feedback require a serious counter-balancing effort in the form of explicit management of learning processes. Implicit theories about what works and what does not in the management of acquisitive growth, and the development of routines to handle those complex, rare and heterogeneous challenges need to be frequently and effectively challenged by decision makers on the basis of objective evidence from recent experiences. On that basis, they need to be revised to take new insights into account.

Limitations and suggestions for future research

As with any empirical study, this study has its limitations. First, organizational learning processes are studied in a fairly narrow manner that relies on experience accumulation constructs and measures. This does not do justice to the potential role of other learning mechanisms, such as vicarious and deliberate learning processes, which might influence (for better or worse) the causal link between activity load and focal task performance. The introduction of the deliberate learning element in future research might be particularly useful

because of its potential positive effects on the reduction of causal ambiguity. In addition, some of the artifacts produced in knowledge codification processes might enhance the "carrying" capacity of groups of decision makers, which might enable firms to handle more activities simultaneously.

Another important dimension of the learning model that is lacking is the degree of experience heterogeneity. This is a potentially important element, since it might influence the impact of activity load on task performance in a variety of ways. On the one hand, homogeneity facilitates routinization and should, therefore, partially offset the negative implications of bounded rationality. At the same time, however, a heterogeneous stock of past experience might improve learning from past experiences because it provides better evidence for inference on the appropriateness of (implicit or explicit) causal linkages between management decisions and performance. The assessment of the net effect is a matter for empirical inquiry by future scholars.

The study also lacks direct measures of post-acquisition management interventions by private equity funds, which could substantiate the implications drawn from some of the results related to the "weight" of activity load. Future studies could ascertain whether it is indeed the degree of pro-activity in managing investments that creates the attention scarcity effect in the presence of bounded rationality.

Finally, there are alternative explanations for the magnitude of the bounded rationality effect that might need to be evaluated in future research. Firstly, the effect could be a function of organizational characteristics, such as knowledge-management systems and processes, the centralization of decision making, or the presence of (coercive or enabling) bureaucracy in

decision-making processes (Adler *et al.*, 1996). Secondly, it might be influenced by characteristics of investment decision processes, such as the number of decision makers and the degree of decisional autonomy for investment and management decisions. Third, several characteristics of the institutional and cultural context might come into play to allay or enhance the negative influence of bounded rationality.

This is clearly only a partial representation of the numerous questions that have been left unexplored by this study and this paper can only hope to shed some light on specific components of the phenomenon at hand. However, it is hoped that it will persuade future scholars to undertake studies of the cognitive limitations that strategic decision makers regularly face. In fact, bringing the decision makers' role back to forefront of the intellectual agenda might very well represent one of the most promising and relevant areas for future development of strategic management research.

Table 1 - Descriptive Statistics and Correlation Matrix

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	IRR	0.25	0.67													
2	Market Return (%)	0.11	0.10	0.19												
3	Investment Size (mil)	34.39	49.01	-0.03	-0.08											
4	Holding Period (months)	64.10	43.06	-0.17	0.06	0.01										
5	Fund Size (mil)	1270.29	1676.32	-0.04	-0.02	0.49	-0.04									
6	Fund Age (years)	6.76	5.31	-0.04	-0.14	0.31	-0.13	0.34								
7	Other Investments Duration (years)	4.67	0.98	-0.12	0.00	-0.02	0.31	0.00	0.08							
8	IPO	0.12	0.33	0.16	0.06	0.08	0.03	0.00	-0.02	0.00						
9	Activity Load	25.37	24.62	-0.10	0.04	-0.04	-0.06	0.43	0.18	0.12	-0.03					
10	Experience	17.52	30.09	-0.02	-0.10	0.18	-0.14	0.34	0.58	0.01	-0.06	0.48				
11	Past Performance (%)	0.17	0.25	0.12	0.16	-0.05	0.07	-0.07	-0.14	-0.04	0.00	-0.16	-0.16			
12	Individual Activity Load	2.56	2.81	-0.03	0.05	-0.13	0.13	-0.03	-0.14	0.01	0.04	0.19	-0.09	0.00		
13	Past Performance Realized (%)	0.42	0.43	0.00	0.01	-0.10	0.07	-0.11	-0.34	-0.01	0.02	-0.09	-0.27	0.32	0.06	
14	Number of Key Employees	7.65	14.24	-0.03	-0.15	0.18	-0.11	0.27	0.41	-0.03	-0.01	0.32	0.58	-0.15	-0.34	-0.18

Note: Correlations greater than 0.0462 are significant at $p < 0.01$, and those greater than 0.0352 are significant at $p < 0.05$

Table 2 - Results of the OLS regression: baseline model

	Model 1			Model 2			Model 3			Model 4		
Market Return (%)	1.163	***	(0.123)	1.150	***	(0.123)	1.150	***	(0.123)	1.194	***	(0.127)
Investment Size (mil)	-0.001	**	(0.000)	-0.001	**	(0.000)	-0.001	**	(0.000)	-0.001	**	(0.000)
Holding Period (months)	-0.004	***	(0.000)	-0.004	***	(0.000)	-0.004	***	(0.000)	-0.004	***	(0.000)
Fund Size (mil)	0.000		(0.000)	0.000		(0.000)	0.000		(0.000)	0.000		(0.000)
Fund Age (years)	-0.014		(0.027)	-0.008		(0.027)	-0.010		(0.027)	-0.021		(0.028)
Other Investments Duration (years)	-0.078	***	(0.015)	-0.075	***	(0.015)	-0.077	***	(0.015)	-0.084	***	(0.016)
IPO	0.390	***	(0.024)	0.388	***	(0.024)	0.388	***	(0.024)	0.394	***	(0.024)
Activity Load				-0.085	***	(0.022)	-0.084	***	(0.022)	-0.081	***	(0.023)
Experience							0.010		(0.016)	0.013		(0.016)
Past Performance (%)										-0.029	**	(0.011)
Fund Fixed Effects	YES			YES			YES			YES		
Industry Fixed Effects	YES			YES			YES			YES		
Acquisition Year Fixed Effects	YES			YES			YES			YES		
Fund Vintage Year Fixed Effects	YES			YES			YES			YES		
Fund Size Category Fixed Effects	YES			YES			YES			YES		
Model F	5.310	***		5.340	***		5.33	***		5.24	***	
Adjusted R-squared	0.2115			0.2131			0.2130			0.2142		
N	7268			7268			7268			6923		

Statistic significance: †p<0.10; *p<0.05; **p<0.01; ***p<0.001. Dependent variable: IRR of the buyout.

Table 3 - Results of the OLS regression: full model

	Model 5				Model 6				Model 7				Model 8			1
Market Return (%)	1.199	***	(0.127)		1.193	***	(0.126)		1.172	***	(0.145)		1.276	***	(0.180)	
Investment Size (mil)	-0.001	**	(0.000)		-0.001	**	(0.000)		0.000		(0.000)		0.000		(0.000)	
Holding Period (months)	-0.004	***	(0.000)		-0.004	***	(0.000)		-0.005	***	(0.000)		-0.007	***	(0.001)	
Fund Size (mil)	0.000		(0.000)		0.000		(0.000)		0.000		(0.000)		0.000		(0.000)	
Fund Age (years)	-0.012		(0.028)		-0.013		(0.028)		0.018		(0.033)		0.028		(0.043)	
Other Investments Duration (years)	-0.081	***	(0.016)		-0.076	***	(0.016)		-0.007		(0.022)		0.018		(0.035)	
IPO	0.394	***	(0.024)		0.390	***	(0.024)		0.401	***	(0.028)		0.379	***	(0.037)	
Activity Load	-0.125	***	(0.025)		-0.154	***	(0.026)		-0.160	***	(0.033)		-0.338	***	(0.072)	
Experience	-0.073	**	(0.025)		-0.065	**	(0.025)		-0.106	***	(0.031)		-0.185	***	(0.051)	
Past Performance (%)	-0.027	**	(0.011)		-0.085	***	(0.019)		-0.097	***	(0.030)		-0.152	***	(0.037)	
Activity Load*Experience	0.057	***	(0.013)		0.037	**	(0.014)		0.039	**	(0.016)		0.080	**	(0.033)	
Activity Load*Past Performance					-0.088	***	(0.024)		-0.089	**	(0.034)		-0.090	**	(0.049)	
Number of Key Employees													0.000		(0.002)	
Fund Fixed Effects	YES				YES				YES				YES			
Industry Fixed Effects	YES				YES				YES				YES			
Acquisition Year Fixed Effects	YES				YES				YES				YES			
Fund Vintage Year Fixed Effects	YES				YES				YES				YES			
Fund Size Category Fixed Effects	YES				YES				YES				YES			
Model F	5.29	***			5.32	***			5.01	***			4.29	***			
Adjusted R-squared	0.2165				0.2180				0.2181				0.2248				
N	6923				6923				5144				3113				

Statistic significance: †p<0.10; *p<0.05; **p<0.01; ***p<0.001. Dependent variable: IRR of the buyout.

Table 4 - Results of the OLS regression: robustness checks

	Model 9			Model 10			Model 11		
Market Return (%)	1.198	***	(0.127)	1.112	***	(0.141)	1.345	***	(0.180)
Investment Size (mil)	-0.001	**	(0.000)	-0.001	**	(0.000)	0.000		(0.000)
Holding Period (months)	-0.004	***	(0.000)	-0.006	***	(0.000)	-0.008	***	(0.001)
Fund Size (mil)	0.000		(0.000)	0.000	*	(0.000)	0.000		(0.000)
Fund Age (years)	-0.018		(0.028)	0.002		(0.031)	0.002		(0.043)
Other Investments Duration (years)	-0.083	***	(0.016)	-0.043	**	(0.020)	0.011		(0.035)
IPO	0.392	***	(0.024)	0.410	***	(0.027)	0.379	***	(0.037)
Activity Load	-0.004	***	(0.001)	-0.094	***	(0.033)			
Experience	-0.018		(0.021)	-0.098	***	(0.029)	-0.011		(0.036)
Past Performance (%)	-0.065	***	(0.019)				-0.104	***	(0.028)
Past Performance * Experience	-0.070	**	(0.030)						
Past Performance Realized (%)				-0.021		(0.013)			
Past Perf Realized * Activity Load				-0.080	**	(0.037)			
Experience * Activity Load				0.053	***	(0.015)			
Individual Activity Load							-0.021		(0.018)
Ind. Activity Load * Exp							0.034		(0.022)
Ind. Activity Load * Past Perf							0.012		(0.027)
Fund Fixed Effects	YES			YES			YES		
Industry Fixed Effects	YES			YES			YES		
Acquisition Year Fixed Effects	YES			YES			YES		
Fund Vintage Year Fixed effects	YES			YES			YES		
Fund Size Category Fixed Effects	YES			YES			YES		
Model F	5.24	***		5.19	***		4.21	***	
Adjusted R-squared	0.2148			0.2274			0.2195		
N	6923			5525			3113		

Statistic significance: †p<0.10; *p<0.05; **p<0.01; ***p<0.001. Dependent variable: IRR of the buyout.

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TOWARDS LEARNING-BY-INTERACTING: HOW TO OVERCOME THE FAILURES OF ORGANIZATIONAL AND INDIVIDUAL LEARNING-BY-DOING

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TOWARDS LEARNING-BY-INTERACTING: HOW TO OVERCOME THE FAILURES OF ORGANIZATIONAL AND INDIVIDUAL LEARNING-BY-DOING

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Abstract

Research in organizational learning has shown that performance typically increases as organizations gain production experience (i.e. learning-by-doing). However, the accumulation of experience might not be an effective learning mechanism in the context of complex strategic tasks. This paper studies learning-by-doing processes in the context of strategic tasks, taking into account both the individual and the organizational levels of analysis. Organizational experience has an impact on performance, but negative. This finding confirms that the negative effects generated by learning-by-doing might overcome the positive ones in the context of strategic events. In addition, this study shows that individual experience is not significantly related to performance. On the contrary, there is a U-shaped relationship between the amount of time that the decision makers have spent working together (i.e. learning-by-interacting) and performance. Theoretical propositions have been tested on a sample of 188 buyouts realized by 20 private equity firms.

Introduction

Research in organizational learning has shown that performance typically increases as organizations gain production experience (Dutton and Thomas 1985; Epple et al. 1991). The cumulative reduction in manufacturing costs that accrues from such experience represent "learning curves". Although there is considerable evidence in support of the positive effects of learning-curves, the theoretical contributions cannot be readily applied to any kind of organizational activity. An implicit assumption of the learning-by-doing literature is that organizational learning originates by the repetition of highly frequent, relatively homogenous, operating tasks (Argote 1999; Herriott et al. 1985; Yelle 1979; Zollo 2009). However, as March, Sproull and Tamuz (1991) note, some of the most important events in the life of an organization do not happen with the frequency and similarity implicitly assumed in the literature on learning-by-doing. In fact, relatively little work has been carried out on the learning that occurs with relatively infrequent, heterogeneous, strategic decisions, such as acquisitions, new product introductions or market entries.

There is still no evidence that what has been theoretically developed and empirically tested on the impact of learning-by-doing in operating tasks can be readily applied to explain the learning processes in tasks of strategic relevance. Mergers and acquisitions, along with other organizational phenomena such as joint ventures and reorganizations, constitute a formidable challenge for organizational learning mechanisms as we know them today (March et al. 1991). Though relatively little work has been carried out on the learning that occurs with strategic tasks few but promising studies have been realized in the last decade on the learning processes regarding some specific strategic decisions: acquisitions (Haleblian and Finkelstein

1999; Hayward 2002; Zollo and Singh 2004); partnerships (Anand and Khanna 2000; Kale and Singh 1999, 2007). Though those promising studies indicated the path to follow, the comprehension of the learning mechanisms in strategic tasks still represents an ongoing challenge for both scholars and practitioners.

I argue that the accumulation of experience, defined as the cumulative production history of the organization, might not be an effective learning mechanism in the context of infrequent and complex strategic decisions. Learning-by-doing could not be by itself sufficient to improve the quality of decision making in the context of strategic tasks. In this context, organizations have difficulty learning from infrequent and complex events because of their inability to interpret these events. Learning from strategic events might generally be more erratic than learning from prevalent events, like the operating tasks. In fact, although some strategic tasks offer clear lessons, they provide few opportunities for learners to evaluate alternative interpretations and weak incentives to plan the future (Starbuck 2009). The accumulation of experience could even hamper the learning process when organizations face strategic events, due to organizational inertia that is the flip side of learning-by-doing (Leonard-Barton 1992).

Learning-by-doing produces increasing returns to experience that leads an organization to persist in using a set of routines that may be far from optimal (Levitt and March 1988). If on one side prior experience is fundamental to assimilate new knowledge (Cohen and Levinthal 1990), on the other it shapes the problems that we address, the instrumentation that we use, and the solutions that we may find (Dutton and Thomas 1985). Experience contributes to form routines and capabilities that get congealed into a self-reinforcing system that locks

organizations and individuals into a trajectory that is difficult to dislodge (Garud and Rappa 1994). The implication for strategic tasks of such "cognitive stickiness" is most apparent when adherence to these trajectories renders decision makers blind to alternative approaches (Weick 1979). Despite the importance of strategic events for management and strategy scholars and the missing theoretical contributions to understand learning-by-doing in this context, surprisingly little effort has been made so far (Lampel et al. 2009; Zollo 2009).

There is a second point that needs to be addressed to better understand the learning processes in strategic events. The performance of strategic tasks can be influenced not only by organizational experience but also by individual experience, defined as the cumulative production history of any one individual (McCauley 1998). In fact, a long tradition of research in psychology that examines the effect of individual experience on task performance, has shown that the time individuals take to complete a task and the number of errors they make decreases at a decreasing rate as individuals gain experience with the task. The tasks used in these studies are frequent and operating tasks, such as typing or learning lists of words (Myerson et al. 1990; Thurston 1919). Though the theoretical contributions of these studies are of significant importance, nevertheless they cannot be readily applied to strategic decisions, like acquisitions or alliances. The execution of complex strategic tasks always requires the contribution of the entire organization and the involvement of different people (Reagans et al. 2005). The complexity of strategic events requires the common and simultaneous effort of the entire organization and the impact of the experience accumulated by each individual decision maker might be only marginally important or not significant at all. Notwithstanding the importance of these two levels of analysis to understand learning-by-

doing, the strategy field has hardly ever analyzed if and how individual experience can have an impact on the performance of strategic events.

There is a third point that needs to be addressed to better understand learning processes in strategic events. A factor that influences the performance of strategic events is the amount of experience shared by the decision makers who compose the organization. In fact, though studies on learning have proposed that routines are independent of the individual actors who execute them and are capable of surviving considerable turnover in individual actors (Levitt and March 1988; Zollo et al. 2002), we do not know so much about how people interaction influence the emergence of routines and capabilities. In fact, the formation of routines and capabilities does not happen all of a sudden, but requires time and a certain level of interaction among decision makers. Reagans et al. (2005) found that experience working together, defined as the cumulative production history of pairs of individuals, provides individuals to learn who knows what improving the coordination and the quality of the team work - measured as procedure completion time. Following this line of reasoning, I argue that experience working together can reduce significantly conflicting interpretations increasing the quality of decision makers' interaction. On one side, the time spent working together should support the emergence of a common view on how to face the strategic tasks at hand. However, this is only half of the story. The other half is about the fact that the time spent working together should support the development of relational-specific heuristics that enhance the effectiveness of the strategic decision at hand. I expect for those two reasons that the amount of time spent working together by the decision makers has a positive impact on the organizational effectiveness.

This paper intends to contribute to our current understanding of learning-by-doing and learning-by-interacting in the context of tasks of strategic relevance in several ways. First, this study shows that the negative effects of learning-by-doing in the context of strategic tasks tend to exceed the positive ones at the organizational level of analysis. Second, this study sheds some light on the role of individual experience in the context of tasks of strategic relevance showing that individual experience is not significantly correlated with performance. Third, I analyze if and how the experience working together at the team level (i.e. learning-by-interacting) has a positive impact on performance. Data show that there is a U-shaped relationship between experience working together and performance. The formation and the development of organizational capabilities do not happen all of a sudden, but require time. The interaction among decision makers turns to be positive only above a certain level of experience shared by the group of decision makers.

Learning-by-doing in strategic tasks

The literature on learning has contributed to explain the impact of experience on performance. In fact, performance typically increases as organizations gain experience, due to learning curves that make possible to reduce the costs for every unit produced (Epple et al. 1991; Reagans et al. 2005). Though this stream of literature has significantly contributed to the understanding of organizational learning in frequent, relatively homogenous and operating tasks, it cannot be readily applied to strategic events.

There are several theoretical reasons why the accumulation of experience, that should result in an improvement of performance, might be less effective than expected in strategic events. First, decisions regarding strategic events are less frequent than those associated with the daily operations of the firm. This makes it difficult for organizations and individuals to verify if the factors that are implicitly and/or explicitly considered as cause of performance have really affected the observed phenomenon (Lampel et al. 2009; Zollo 2009). In addition, the infrequency of strategic tasks does not allow decision makers to verify subsequently the accurateness of the ideas developed about causality. For this reason, it could happen that organizations form superstitious learning with the accumulation of experience (Zollo 2009).

Second, most strategic decisions, though they fall into the same general category, differ significantly from each other on critical dimensions, engendering significant barriers to learning processes. In addition, the decision process of tasks in similar strategic domains tend to be characterized by analogical thinking that consists of applying what has been learned in one context to another (Gavetti 2005; Gavetti et al. 2005). Reasoning-by-analogy might be applied wrongly in the context of strategic tasks, due to the difficulty to evaluate the similarity among the focal task and the previous ones.

Third, strategic decisions, compared with the operating ones, tend to be characterized by an higher complexity and an higher degree of interdependence among the different factors that affect decision quality. This tends to create causal ambiguity (Levitt and March 1988) that makes difficult to tease out which decision or action caused which outcome (Zollo 2009).

THEORETICAL DEVELOPMENT

Organizational learning-by-doing: the positive and the negative effects

An extensive literature documents that learning-by-doing (alternatively called experiential learning) has a positive impact on organizational performance (Barkema and Schijven 2008; Epple et al. 1991). In fact, as manufacturing organizations gain experience in producing a new product, their production cost and production time per unit decrease (Yelle 1979). Though following works have shown how non-simple learning-curve models can be used to investigate possible explanations of organizational learning (Epple et al. 1991), this stream of literature proposes a positive, even though not always linear relationship, between organizational experience and performance.

The foundational work of Levitt and March (1988) proposes that organizations learn by encoding inferences from history (i.e.: experience) into routines that guide behavior (Levitt and March 1988). Organizational experience - the cumulative production history of the organization - contributes to the formation of routines that make the learned lessons accessible to the organization and its members, though they have not themselves experienced the history. Routines are not stable, nor in space neither in time. Routines change over time as a result of the accumulation of new experience within the organization and of the emergence of marginal positive adjustments of the interpretations of history. Though estimates of learning rate vary substantially across industries, products and time, the literature on learning-by-doing has shown in different manufacturing settings that experience has a positive impact on performance.

The positive relationship between experience and performance has been tested in empirical contexts characterized by high frequency and high homogeneity, that is in operating tasks. However, learning-by-doing might generate also negative effects in the context of strategic tasks. I submit that the negative effects of experience show up above a certain threshold. Organizations with a long track record of experience keep persisting with an inferior procedure because they have problems in overcoming the competences they have developed earlier (Levitt and March 1988). Learning-by-doing produces increasing returns to experience that leads an organization to persist in using a set of routines that may be far from optimal. For this reason, organizations, that form competences and routines with the accumulation of experience, might be less ready to change them as the amount of experience increases (Tripsas and Gavetti 2000). Due to inertia, organizations tend to interpret the focal strategic event using the set of competences and routines that they already have though they are not appropriate for the focal one (Schreyögg and Kliesch-Eberl 2007).

Organizational inertia is the flip side of learning-by-doing (Leonard-Barton 1992). An organization experiences inertia whenever the set of routines that have been effective in the past and may still be wholly appropriate in some activities, become constrains in new or different activities. Competences are institutionalized and may lead to incumbent inertia in the face need for change. Then emerge the paradox that capabilities and routines developed from experience that have enhanced the development in the past, may inhibit it in the present and the future. The likelihood of using inappropriate competences to evaluate the focal activity becomes even higher when the heterogeneity of activities is high, as in strategic decisions.

The two conflicting streams of literature that have theorized a different impact of learning-by-doing in the context of operating tasks, might be complementary in the context of strategic tasks for the following reasons (Schreyögg and Kliesch-Eberl 2007). First, organizational experience is expected to have a positive relationships with performance, but the strength of these effects is expected to diminish over time. Second, learning-by-doing should not generate inertial effects at low level of experience accumulated. However, a negative relationship might develop and become stronger with experience accumulation. It is worth to mention that the strengths of the effects vary with the accumulation of experience. The positive effects of experience should be initially strong, but grow weaker; simultaneously, the expected negative effects of experience should be at first small (or non-significant), and become increasingly stronger. Because the expected magnitude of the forces changes with the accumulation of experience, their effects should not simply cancel each other out; rather, the combination of these forces should yield an inverted U-shaped relationship between experience and performance.

In summary, from a closer look at the role of experience emerges the paradox of organizational capabilities. The replication of successful capabilities has its dark side too. Organizational capabilities may easily invert from a strategic asset into a strategic burden (Burgelman 2002). The strengths of capability-based behavior and its recursive reproduction can add up to a barrier to adaptation and a burden with respect to flexibility and change (Arthur 1989). The critical factor is on the inability of organizations to change their familiar ways of doing when confronted with new developments (Helfat 1994). This paradoxical persistence in the face of a need for change is the byproduct of increasing returns in the early

stages of experience (Arthur 1989). Successful capabilities generate positive feedback loops, thereby emergently constituting self-reinforcing processes (David 1985). The accumulation of experience tends to narrow down the scope of alternative strategic options available to the firm and, in worst cases, a specific path becomes locked and any other alternative is excluded. This generates the following hypothesis:

Hyp. 1: The relationship between organizational experience and performance in strategic tasks will be inverted U-shaped.

Individual learning-by-doing: the positive and the negative effects

Despite all the research done to date on learning-by-doing, we still know relatively little about the role of individual experience, vis-à-vis the organizational one. The literature on organizational learning-by-doing has emphasized the role of organizational experience without offering a clear understanding of its relationship with individual experience. The tendency to underestimate the importance of individual experience in this stream of literature might be the direct consequence of the assumption that organizational capabilities are independent of the individual actors who execute them and are capable of surviving considerable turnover in individual actors (Levitt and March 1988; Zollo et al. 2002). Though this study does not question the veracity of this assumption, it underlies the potential impact of individual experience in the context of strategic tasks. Learning-by-doing processes, in fact, do not happen exclusively at the organizational level, but also at the individual level.

Research in cognitive psychology has shown that individual experience has a positive impact on task performance in highly frequent, relatively homogeneous, operating tasks (Newell and Rosenbloom 1993). In fact, this stream of research has shown that individuals take less time to complete a task as they accumulate experience with the task. Also a recent empirical work about individuals experience (Reagans et al. 2005) has shown that individuals, through experience, have the opportunity to accumulate knowledge about the focal task, know the different roles that they can perform in the team context and understand who knows what at the organizational level. The accumulation of experience at the individual level increases not only the stock of knowledge available but also makes easier the access to the knowledge accumulated by others in the organization. Overall, this stream of research has shown that learning-by-doing increases individual proficiency. For example, experience alleviates the impact of cognitive reductions produced by aging. Older typewriters work as effectively as their younger counterparts, despite lower speed, since they use more efficient work strategies developed thanks to their experience (Salthouse 1984).

The entire body of research on learning-by-doing at the individual level of analysis has focued its attention primarily on operational tasks (e.g.: typing, learning list of words…). I submit that the theoretical propositions developed for highly frequent, relatively homogenous, operating tasks, cannot be readily applied to the tasks of strategic relevance. Learning-by-doing processes at the individual level might generate also negative effects, in particular in tasks where problem solving, learning and speed are needed, like strategic decisions. Though the idea that individual experience generates also negative effects might appear counterintuitive at the first sight, related fields offer a clear evidence of this phenomena. For

example, physicians with more experience are generally believed to have accumulated knowledge and skills during years in practice and therefore to deliver high-quality care. However, a recent systematic review on the relationship between clinical experience and quality of health care has offered evidence that seventy-three percent of the realized studies on the topic found that there is a negative relationship between the number of years that a physician has been in practice and the quality of care that the physician provides. This percentage appears to be even more important if we consider that twenty-one percent of the realized studies did not find any significant relationship between clinical experience and the quality of health care offered (Niteesh 2005). The negative relationship between learning-by-doing and individual proficiency is not confined to the health care sector. For example, some studies have shown that younger researchers are more productive and have higher scientific impact than older ones (Gieryn 1981; Horner et al. 1986; Over 1988; Simonton 1984).

The positive effects of learning-by-doing tend to decrease as the amount of individual experience accumulated increases (McDaniel et al. 1988). Individual experience improves proficiency, but there does come a point in which further experience no longer has an effect. In addition, as individuals become more experienced, they undergo a so called *encapsulation* of know-how, implying that individuals' skills are attached to certain knowledge domains, and are increasingly less flexible and changeable (Clifford 1989). Strategic tasks require the ability of individuals to learn and adjust skills over time and by task to task, though the focal task at hand is similar to the ones experience in the past. More experienced individuals might be less able to reorient themselves to new task requirements and to solve novel problems due to the rigidity caused by high levels of experience (James E. Birren et al. 2006). In addition,

experience-induced negative effects may increase with the complexity of the task (Myerson et al. 1990), as the strategic ones. In summary, individual experience should generate positive effects up to a given point, and thereafter, the negative effects should overcome the positive ones. This generates the following hypothesis:

Hyp. 2: The relationship between individual experience and performance in strategic tasks will be inverted U-shaped.

Experience working together and the formation of organizational capabilities

Experience working together - defined as the time spent working together of pairs of individuals − provides individuals with the opportunity to learn who knows what, a more efficient division of labor and an increased willingness to share knowledge and information (Reagans et al. 2005). If experience working together is important in operating activities, it becomes even more important in strategic tasks (Beck and Plowman 2009; Lampel et al. 2009).

Experience working together facilitates the composition of divergent interpretations of strategic events (Beck and Plowman 2009). To understand how organizations learn thanks to the experience working together in the context of strategic events it is worth to analyze what the organization learned from strategic events, but also on what the organization learned through strategic events (Christianson et al. 2009). Experience working together has a positive impact on strategic tasks because it facilitates the recomposition of conflicting and divergent interpretations regarding the focal event (Hamel 1991). Therefore, experience working

together is important in strategic events because it can have a beneficial effect not only increasing the competence levels (Nelson and Winter 1982) but also facilitating organizational interpretation, that is the process of assigning meaning to events (Daft and Weick 1984). Organizations interpret events and form a shared sense-making that guides organizational actions, adaptation and performance. Individual members form their own interpretations that converge among organizational members because of unit members' daily interactions (Pelled et al. 1999).

Experience working together facilitates the formation of shared interpretations of strategic events, reducing ambiguity and increasing organizational ability to deal with such events in the future (Beck and Plowman 2009). However, organizations do not form interpretations of strategic events all at once. In the early stage of the experience working together the different individuals of the organization do not know so well each other. The convergence in the interpretation of the strategic events happens only in later stages, when people know each other better therefore allowing a synthesis of disparate views (Beck and Plowman 2009).

The convergence in the interpretation of the strategic events happens only in later stages because experience working together contributes to transform novices in experts. The seminal work by Haleblian and Finkelstein (1999) showed that the main difference between experts and novices is that while novices primarily represent problems with obvious or surface-level information, the representations of experts include both surface and underlying features. The more decision makers perceive differences between dissimilar events, the lower the likelihood of making inappropriate generalization errors. Haleblian and Finkelstein (1999) find that in a firm's acquisition sequence, after the first acquisition that performs at a baseline level,

subsequent acquisitions perform less well than the first acquisition. This happens because firms that are still novices inappropriately generalize making the following acquisitions perform less well than the first. Nevertheless, as the firm gains acquisition experience the tendency to inappropriately generalize should diminish, while the ability to appropriately generalize should increase. Firms should develop from a novice to an expert thanks to the accumulation of experience, lowering the likelihood of inappropriate discrimination. Therefore, the initial negative relationship between acquisition experience and performance may correct itself with the accumulation of acquisition experience, resulting in a U-shaped relationship (Haleblian and Finkelstein 1999). This generates the following hypothesis:

Hypothesis 3: The relationship between experience working together and performance will be U-shaped in strategic events.

RESEARCH DESIGN AND MEASURES

The private equity sector as an empirical context

To explore these issues empirically, I focus on the study of acquisitions done by private equity funds. A private equity investment fund is a vehicle for enabling pooled investments by a number of investors in equity securities of companies (Kaplan and Stromberg 2009). These are generally private companies whose shares are not quoted on a stock exchange. The private equity fund is composed by several managers who are collectively responsible for the fundamental choices of the acquired company. Nevertheless, each company is assigned to a single manager who is responsible for the day-by-day management.

The private equity sector is a suitable empirical setting for this study due to a number of reasons related to the characteristics of the industry. First, acquisitions are relatively low-frequency tasks, even for highly experienced acquirers and are characterized by high-complexity levels in both perceived and actual terms. These two characteristics of the private equity industry make this empirical setting a suitable context in which to text experiential learning processes in the context of strategic tasks. Second, it is possible to measure the performance of each single investment that can also be attributed to each partner of the private equity fund. For this reason, it is possible to measure not only the overall performance at the organizational level, but also the performance of each single acquisition.

The private equity industry represents a cleaned empirical setting in which it is possible to disentangle the contribution to performance given by individuals and organizations. This is of fundamental importance to this study because also recent research on the organizational and

individual impact on performance (Reagans et al. 2005) have used proxy of performance (i.e.: procedure completion time) that does represent a shortcut to measure the dependent variable. This paper, to the best of our knowledge, represents the first attempt to measure the organizational and individual performance using a direct measure of performance.

Sample and database

Information about the organizational level were collected through the fundraising prospectus (i.e.: private placement memoranda, PPM) from a total of 20 private equity firms operating in Europe. These firms have completed 188 investments, between 1989 and 2005. Data about individual experience were collected through the CVs of individual private equity fund partners. The private equity partners' CVs contain detailed information on their individual track record, including the investments that were realized in previous professional experiences. Data about the time in which the partner joined the private equity firm have been collected through the CVs, PPMs and *Galante Private Equity Directory*.

Measures

Dependent variable

The advantage of focusing on the private equity sector is that it is possible to objectively and separately measure the performance of each investment. In the private equity sector, a fund invests a certain amount of money to acquire a company and, after a certain period of time, exits from the investment, obtaining a performance feedback. For this reason, the performance of each investment can be measured using the Internal Rate of Return (Kaplan

and Schoar 2005). IRR measures the gross return earned by investors from the acquisition of the company until it is sold. The IRR is calculated as an annualized, effective, compounded rate of return using monthly cash flows and annual valuations for each company. As the data includes significant outliers (e.g., one valuation in our sample is 154,900% the median), we winsorize the dependent variable (IRR) at the 95th percentile (i.e., 191%). The winsorized IRR is still 860% the median. There are two reasons for this choice. First, OLS has little resistance to outliers that could significantly change regression results, affecting the sign and the significance of the slope (Hamilton 2009). Second, this is a standard procedure used to avoid problems resulting from the presence of significant outliers (Phalippou 2009; Phalippou and Gottschalg 2009).

Explanatory variables

Organizational experience. Prior experience is measured as the number of investments previously made by the private equity firm prior to the starting date (month and year) of the focal investment (Reagans et al. 2005). The cumulative number of investments is used as a proxy of the number of routines and well-learned activities available to the firm in the management of the focal investment (Ucbasaran et al. 2010; Wright et al. 2009b).

Individual experience is computed as the number of companies for which the manager had a direct and formal responsibility before the focal investment. This variable takes into account also the number of buyouts that were realized by the partner before joining the private equity firm.

Experience working together is computed for each pair of managers on the investment committee of the private equity firm. The variable returns the average value of time (expressed in years) that any two partners in the investment committee spent together in the private equity firm and defines this time as their common experience. The variable is a ratio and is calculated in two steps. In the first step the sum of all common experiences was calculated by extracting the overlaps of time spent in the team for every combination of two partners. In the second step, this sum was divided by the number of occurrences of these overlaps.

Controls variables

In addition to the three independent variables proposed, other factors might affect the performance of the focal investment. Based on a systematic review of prior empirical studies on buyouts (Barber and Goold 2007; Kaplan and Schoar 2005; Kaplan and Stromberg 2009; Kim and Finkelstein 2009; Kreuter et al. 2005; Phalippou and Gottschalg 2009) an extensive set of control variables was employed to rule out potentially confounding factors that might influence buyout performance.

The first set of controls aims to account for various characteristics of the deal and of the acquiring private equity firm at the time of the investment. Buyout performance can be influenced by the duration of the focal investment - *holding period* - and by the amount of equity invested in the company - *fund investment*. In addition, we control for the *ownership share* acquired and the number of *co-investors* in the deal. These two variables take into account the amount of control that the private equity firm can exercise in the acquired

company (Jensen 1986; Wright et al. 2009a). The extent to which the private equity firm can leverage its own experience in the invested companies is positively correlated with ownership share and negatively correlated with the number of co-investors in the company. Buyout performance might also be influenced by the *partners/employees ratio*, that is the mean number of employees on which each private equity partner can rely on at the time of the focal investment. The performance of the focal buyout is influenced also by the replacement of the top management team - *TMT replacement*. We also include *time-fixed effects* at the time of entry into the focal investment to capture a number of unobserved drivers of performance.

The second set of controls aims to account for various characteristics of the private equity firm partner who is in charge of the investment. This paper, taking into account at the same time both the organizational and the individual learning-by-doing, controls for individual characteristics of the private equity partner (Abell et al. 2008; Cohen 1991). The model includes the *partner age*, since previous studies on age and task performance have shown that there might be a negative relationship (James E. Birren et al. 2006), as well as the average history with the team – *seniority*. In addition, the type of education might be linked to higher returns (Hitt et al. 2001). We control for this effect creating a dummy that takes the value of 1 when the partner has a *master degree* and/or an *MBA*.

At the individual level of analysis, the buyout performance might be also influenced by the professional background of the partner. The professional background of the partner significantly contributes to the formation of the set of skills possessed. To take into account the different type of skills that the partner has developed due to his own prior experience, we control for the number of years spent in a *managerial*, *finance* and *private equity* function,

before joining the private equity firm. The variable *management experience* includes the years spent for instance in the following activities: CEO, COO, management consulting, strategy consulting, entrepreneur, founder of a start-up, executive position in administrative and public sector, executive position in NPO. The variable on *finance experience* includes for instance positions in the following activities: CFO, M&A boutique, investment bank, accounting, banking, private banking and audit. The *private equity experience* variable includes only the positions that where specifically in an investment fund.

Model specification and findings

Since our sample contains individuals and organizations, we considered using a hierarchical linear model (HLM) (Hofmann and Gavin 1998). HLM is appropriate whenever the units of analysis are nested within higher units of analysis and dynamics at the higher level influence outcomes at the lower level. Nevertheless, HLM is not appropriate in this empirical setting because individuals are not nested in distinct teams over time. In this study, experience working together is computed taking into account the composition of the team at the time of the investment and therefore teams have overlapping membership. This represents a violation of the key assumption of HLM. As an alternative method, we considered OLS. The data of this study include 188 buyouts realized by 20 private equity firms from 1989 to 2005. Pooling repeated observations on the same firm violates the assumption of independence required for ordinary least squares regression, resulting in serial correlation of the model's residuals. Given the type of data we have, a random effects model is generally preferred (Greene, 2003).

We estimated random-effects generalized least squares (GLS) models, which correct for serial correlation of disturbances. Our data have unbalanced panels and uneven temporal spacing, which could result in poor estimation of autocorrelation coefficients. Hence, we used the Swamy-Arora method for unbalanced panels derived by Baltagi and Chang (1994), which provides a precise small-sample adjustment. The Hausman specification test was performed to compare the estimators of the within-group fixed-effects model and the random-effects model, and the results indicated that there was no systematic difference in the estimated coefficients between the two models ($\chi2 = 8.14$), suggesting that the random-effects model is appropriate for the data (Hausman, 1978).

Table 1 reports descriptive statistics and a correlation matrix for the variables used in the study. Table 2 reports the random-effects GLS estimates that predict buyout performance. Model 1 included only control variables; Model 2 added the organizational experience independent variable; model 3 added the individual experience independent variable; model 4 added the experience working together independent variable. The goodness of fit of the models was strong (e.g., R2 of Model 4 = 0.49), and the addition of each set of variables significantly improved the model fit.

Hypothesis 1 predicted that organizational experience has an invested U-shaped impact on buyout performance. As Models 2 indicates, the coefficient for organizational experience was linear, negative and significant, contradicting our hypothesis 1. Hypothesis 2 predicted that individual experience has an inverted U-shaped impact on buyout performance. Data do not confirm this hypothesis, showing in model 3 that the coefficient of individual experience was insignificant. Hypothesis 3 predicted that experience working together has a U-shaped impact

on buyout performance. Model 4 indicates that the coefficient for experience working together is negative, while the squared term was positive. We find support for hypothesis 3.

Taken together, these findings suggest that while organizational experience hurts performance and individual experience does not produce the theorized positive effects proposed by the learning-by-doing literature, the amount of time spent working together by the decision makers produce the virtuous effects above a certain threshold of experience shared. Learning-by-interacting with other decision makers seems to be the way in which the organization might overcome the failures of individual and organizational learning-by-doing that show up in strategic tasks.

The results for some of the control variables are worth mentioning. Holding period (i.e. investment duration) is negatively related to performance. The number of co-investors is positively correlated to performance, implying that the positive effects of additional co-investors overcome the negative ones, deriving for instance by higher conflicts (Gottschalg and Zollo 2007). Buyouts in which the top management team is replaced perform better than the deals in which the TMT is not changed. The only variable significant at the individual level of analysis is the one that captures post-degree education (Master and/or MBA).

< Table 1 >

< Table 2 >

Discussion and conclusion

This paper examines the role of individual and organizational experience in determining buyouts performance. It aims to contribute to existing literature in several ways. First, the topic of organizational learning-by-doing has gained a lot of attention (Barkema and Schijven 2008). This stream of literature tends to consider experience effects as always positive, thus failing to acknowledge that experience may be detrimental when transferred to a setting - like the strategic one - where previous lessons might not apply and where experience might generate decisional inertia (Schreyögg and Kliesch-Eberl 2007). In addition, the learning-by-doing literature tends to equate experience with learning (Zollo and Winter 2002). This paper shows not only that experience does not automatically imply learning, but also that the negative effects of experience tend to exceed the positive ones at any level of experience accumulated.

At the organizational level of analysis, data contradict our hypothesized inverted U-shaped relationship between organizational experience and performance showing that the negative effects of learning-by-doing tend to overcome the positive ones at any level of experience. Experience tends to worsen private equity firms investment selection capability, reducing over time the ability to identify good investment opportunities. This finding seems to suggest that when private equity firms enter into the industry they have already all the repertoires of competences necessary to pick-up and select good investments. The negative relationship between experience and performance seems to suggest that the investment selection capability is not nurtured and improved by experience. On the contrary, experience negatively impacts

on the quality of the investment selection capability, indicating that it causes declining spirals in organizational capabilities that ultimately hurt organization performance.

Second, this paper responds to the call for more research dealing with multiple levels of analysis to understand the role of experience in strategic tasks. The importance of individual learning-by-doing is at once obvious and subtle – obvious because all organizations are composed of individuals; subtle because organizations are composed by individuals that have different levels of experience and therefore differently impact on organizational effectiveness. Although organizational capabilities are independent of the individual actors who execute them and are capable of surviving considerable turnover in individual actors (Levitt and March 1988; Zollo et al. 2002), we cannot simplistically assume that individual skills have not any impact on the quality of decision making in the context of strategic tasks.

The finding that individual experience does not have any direct impact on buyouts performance contrasts with the idea that human factors are key drivers in value creation processes and determine success and failure (McCauley 1998). Individual experience, that is an antecedent to the formation of managerial skills, does not per se increase the quality of decision making in the context of tasks of strategic relevance. This finding is even more surprising considered the specificity of the empirical context used in this paper - the private equity industry. Individual experience of the private equity partners is considered an important predictor of buyouts performance. In particular, the partner's track record in charge of the investment is considered to be an important predictor of the future performance (Rogers et al. 2002). Partners with a longer track record are expected to be more skilled to create value in the companies they directly invest in. The emphasis that this empirical setting puts on the

importance of individual skills possessed by the partners makes even stronger the finding that individual experience is not significantly related to organizational performance.

Third, this paper, showing that learning-by-doing processes in strategic tasks tend to be ineffective at the individual level and even counterproductive at the organizational one, indicates that experience is not per se a source of learning. Data show not only that experience accumulation in strategic tasks does not produce the virtuous effects theorized by the learning-by-doing literature (Reagans et al. 2005), but also that it tends to generate inertial forces that hurt performance. However, two complementary findings of this paper - the U-shaped impact of experience working together and the direct negative impact of the stock of prior experience - indicate that organizations do not learn from experience, but learn through experience (Pelled et al. 1999). Organizations learn through the continuous interaction of their decision-makers, rather than simply by the lessons learned away from experience (Christianson et al. 2009). Organizations learn through the interaction of their decision-makers because organizational knowledge is not simply created out of the accumulation of information obtained by experience, rather by the connection of the different pieces of information and data accumulated through experience (Grant 1996).

In addition, data suggest that experience working together has a negative impact in the early stage. In a private equity's decision sequence, after the first investment that performs at a baseline level, subsequent investments perform less well than the first acquisition, up to a point in which the initial negative relationship correct itself. This indicates that the group of decision makers develops from a novice to an expert only after a certain level of shared experience (Haleblian and Finkelstein 1999; Hamel 1991). The finding that experience

working together hurts in the early stage (i.e.: the U-shaped relationship) suggest not only that learning through experience does not happen all of a sudden, but also that its negative effects might overcome the positive ones in the early stage.

Experience working together is important in strategic events because it increases the organizational competence levels (Nelson and Winter 1982). The formation of competences, that happens due to the continuous decisions makers' daily interaction, might produce even negative returns in the early stage. At low levels of experience working together the organization stucks in the middle: new capabilities have not emerged yet and the old ones have been partially transformed and/or destroyed. The formation of new capabilities, obtained through the interaction of decision makers, alter the resource base of the firm (Eisenhardt and Martin 2000) recombining and integrating the old capabilities with the new skills brought in the organization by new decision maker. This process of learning-by-interacting and creation of capabilities might produce suboptimal solution at low level of experience shared. Only above a certain level of time spent working together the positive effects of the new formed capabilities emerge.

The U-shaped relationship between experience working together and performance shows the existence of capabilities life cycles (Helfat 1994; Helfat and Peteraf 2003): the effort to form new organizational capabilities to replace the old ones produces negative returns in the early phase, but increasing returns as time goes by. For this reason, whenever a new member is introduced in a new team, the quality of the decision making declines resulting in lower performance. Only after a sufficient amount of time spent working together the introduction

of a new team member produces its positive effects. This result indirectly shows that high turnover rates might be harmful for the quality of organization learning.

Finally, in its attempt to study learning processes at different levels of analysis this paper sheds some light on the micro-foundations of capabilities (Abell et al. 2008). Individual experience has profound consequences for organizational learning that go beyond anything that can be simply inferred by observing its direct impact on organizational performance. Whereas individual experience does not directly contributes to increase organizational effectiveness, the time spent working together by the decision makers increases the quality of organizational decisions. This finding indirectly indicates that although more experienced individuals do not bring automatically to better performance, they might have a positive impact on the quality of learning at the organizational level.

Limitations and suggestions for future research

As with any empirical study, this study has its limitations. First, an important dimension that is lacking is the degree of similarity between the focal investment and the previous ones. Past experience, both at the individual and at the organizational level, might increase organizational effectiveness not through learning-by-doing processes, but only when the task at hand is strictly related to the previous experience. The similarity between the focal and past experience might offer a better evidence for inference and appropriateness of implicit and explicit causal linkages between decisions and performance. Second, both organizational and

individual learning processes are studied in a fairly narrow manner that relies on experience accumulation constructs and measures. This does not do justice to the potential role of other learning mechanisms, such as vicarious and deliberate learning processes, which might influence (for better or worse) the effectiveness of learning-by-doing. Third, although we find that experience working together plays a positive role, we do not know under what conditions individual experience contributes to increase the effectiveness of this process.

Finally, the role of experiential learning processes in strategic tasks might need to be evaluated in future research. Individuals are constantly taking actions and learning from their experience, but not all individual learning-by-doing has consequences on organizational learning. The analysis of organizational learning requires a new set of both theoretical and empirical tools to understand the complexity of the interrelationship among decision makers and between the organizational and the individual level of analysis. Future studies should analyze the puzzling effect of organizational and individual learning-by-doing processes in the context of strategic tasks.

This is clearly only a partial representation of the numerous questions that have been left unexplored by this study and this paper can only hope to shed some light on specific components of the phenomenon at hand. However, it is hoped that it will persuade future scholars to undertake studies of the role of experiential learning processes in the context of strategic tasks.

Table 1 Descriptive Statistics and Correlation Matrix

	Variables	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1.	IRR	0.47	0.53	1.00															
2.	Holding period	3.58	1.74	-0.47	1.00														
3.	Ownership share	0.48	0.32	0.08	0.02	1.00													
4.	Fund Investment (€ Millions)	34.05	62.86	-0.13	0.02	0.37	1.00												
5.	Number of Co-investors	1.02	1.34	0.12	-0.07	-0.57	-0.26	1.00											
6.	Change in TMT	0.19	0.39	0.08	0.22	0.09	-0.13	-0.10	1.00										
7.	Partner Age	39.34	6.70	0.05	-0.29	0.13	0.29	-0.04	-0.07	1.00									
8.	Organizational Exp. (#)	11.10	13.73	-0.23	0.06	-0.24	-0.17	-0.04	0.08	-0.03	1.00								
9.	Individual Exp. (#)	7.08	5.95	-0.19	0.06	0.09	0.52	-0.20	0.00	0.16	0.23	1.00							
10.	Exp. Working Together (years)	4.41	3.02	-0.11	0.03	-0.05	0.15	0.09	-0.12	0.05	0.11	-0.11	1.00						
11.	Partners/Employees Ratio	0.29	0.17	-0.07	-0.01	-0.33	-0.29	0.29	0.05	0.12	0.20	-0.22	0.50	1.00					
12.	Master or MBA	0.76	0.43	0.04	0.11	-0.31	-0.35	0.23	0.02	-0.45	0.21	-0.13	-0.04	0.01	1.00				
13.	Exp. in management (years)	2.89	3.74	0.14	-0.07	0.00	0.00	0.12	0.09	0.30	-0.22	-0.13	-0.11	-0.18	-0.12	1.00			
14.	Exp. in Finance (years)	5.68	6.13	0.09	-0.26	0.13	0.00	-0.21	-0.05	0.60	-0.15	-0.04	-0.03	0.24	-0.41	-0.06	1.00		
15.	Exp. in Private Equity (years)	1.86	2.59	-0.04	0.00	-0.03	0.15	-0.01	-0.10	0.17	-0.18	0.41	-0.26	-0.21	-0.01	0.25	0.15	1.00	
16.	Seniority	5.32	3.42	0.03	-0.20	-0.17	0.09	0.22	-0.06	0.38	0.23	0.03	0.25	0.19	0.00	-0.10	-0.16	-0.16	1.00

Note: Correlations greater than 0.1873 are significant at p < 0.01, and those greater than 0.1477 are significant at p < 0.05

Table 2 Random effects estimation on buyout internal rate of return (N = 188)

Variable	Model 1			Model 2			Model 3			Model 4		
Buyout Characteristics												
Holding Period	-0.1350	***	(0.023)	-0.1277	***	(0.023)	-0.1274	***	(0.023)	-0.1166	***	(0.023)
Ownership Share	0.3162	*	(0.135)	0.2174		(0.143)	0.2214		(0.145)	0.2539	†	(0.144)
Fund investment	0.0000		(0.000)	0.0000		(0.000)	0.0000		(0.000)	0.0000		(0.000)
Number of co-investors	0.1025	**	(0.036)	0.0926	**	(0.036)	0.0938	**	(0.036)	0.0889	**	(0.036)
Partners/Employees Ratio	-0.3061		(0.244)	-0.2880		(0.243)	-0.2810		(0.245)	-0.0657		(0.298)
Change in TMT	0.2087	*	(0.099)	0.2480	**	(0.100)	0.2455	**	(0.101)	0.2305	*	(0.100)
Individual Characteristics												
Partner Age	-0.0109		(0.012)	-0.0042		(0.012)	-0.0049		(0.012)	-0.0069		(0.012)
Master or MBA	0.1444		(0.096)	0.1679	†	(0.096)	0.1723	†	(0.097)	0.1568	†	(0.097)
Exp. In Man. (years)	0.0086		(0.013)	0.0015		(0.013)	0.0027		(0.014)	0.0055		(0.014)
Exp. In Finance (years)	0.0160		(0.011)	0.0110		(0.011)	0.0118		(0.012)	0.0154		(0.012)
Exp. In PE Equity (years)	-0.0027		(0.015)	-0.0075		(0.015)	-0.0099		(0.018)	-0.0194		(0.018)
Seniority	0.0027		(0.016)	-0.0009		(0.016)	-0.0001		(0.017)	0.0051		(0.017)
Independent Variables												
Org. Exp.				-0.0058	*	(0.003)	-0.0061	*	(0.003)	-0.0064	*	(0.003)
Ind. Exp.							0.0023		(0.009)	0.0033		(0.009)
Exp. Working Together										-0.1045	**	(0.046)
Exp. Working Together Squared										0.0085	**	(0.004)
R2	0.4707			0.4824			0.4826			0.4994		
Wald X2	141.38	***		147.26	***		146.46	***		154.62	***	

Note: ∗∗ p < 0.01; ∗ p < 0.05; †p < 0.1; All significance tests are two-tailed. The values in parenthesis are standard errors.

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"Strategic entrepreneurship and capabilities development processes:

an empirical investigation in divisional buyouts"

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"Strategic entrepreneurship and capabilities development processes:

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ABSTRACT

This study investigates the key value creation levers in divisional buyouts, where the presence of the private equity funds should reduce agency problems and spur a strategic entrepreneurship orientation. The analysis is conducted on an unique sample of 1364 buyouts. The impact of the six different strategic approaches is measured and then compared between the divisional and the standalone subsamples. Data show that divisional buyouts have a superior probability of top-performing, in terms of gross IRR generated, when growth oriented and refocusing based strategies are undertaken, whereas standalone buyouts are more likely to end with a top IRR when a restructuring strategy is implemented. The analysis also produced evidence of a relatively poor impact of revitalization strategies in divisional buyouts compared to standalone deals.

INTRODUCTION

Starting from the pioneer work by Michael Jensen in his seminal paper "The Ecliplse of the public corporation" (1989) in which he stated the prediction that the LBO would became the dominant corporate organisation form, researchers and scholars have addressed the theme of buyout associations and the determinants of the performance of their acquisitions under several perspectives. Historically, buyout deals have mainly referred to high-leveraged acquisitions of publicly traded companies with restructuring intentions. This was the picture of the industry in the first decade of life of this industry - late 1970s and 1980s, (Berg and Gottschalg, 2005; Strömberg, 2007) when this kind of deals were basically high-leveraged public-to-private transactions of mature companies in the US market. However during the following decades the private equity concept broadened its scope including interventions in different life cycle stages of companies (venture capital, start-up financing, management buyout or buyin, tournaround).

For what concerns the value creation levers in buyout, at the beginning creating value in private equity was primarily about doing deals and exploiting leverage. Subsequently the focus shifted first to catching the multiple expansion wave and then to earnings boost. Today the percentage of value created through operational improvements in the owned companies is less and less the result of debt and/or financial arbitrage, but it is increasingly a result of operational improvement and profitable growth (BCG & IESE survey, 2008).

< Exhibit 1 >

The involvement of private equity firms in the overall activities of portfolio companies has risen continuously over the past decades. The role of private equity has shifted progressively from that of traditional financial intermediary with simply capital providing functions and subsequent monitoring and control, to a more extensive – and in some way intrusive – role with high level of involvement in strategic decisions and companies management (i.e.: so called hands on approach).

The purpose of this paper is to empirically investigate to what extent the potential of this increasingly intrusive approach can create value. More specifically this work will concentrate on the impact of different types of strategic initiatives undertaken by buyout firms during the holding period of acquired companies. The analysis focuses on the cluster of divisional buyouts since the most recent contributions in the literature highlight several determinants for growth potential in divested divisions compared to standalone businesses and because this particular buyout cluster has not already been object of an empirical analysis concerning post-buyout value creation levers. Specifically the purpose of this research is to investigate whether or not divisional buyouts present different key success factors compared to other buyout types.

The underlying research question is the following one: do divisional buyout present different characteristics and then additional value creation opportunities for buyout funds respect to other type of target companies? This question is addressed by testing the impact of six

different strategic approaches (internal growth, external growth, downsizing, restructuring, refocusing and revitalization)[1] on an unique 1364 buyout deals working sample[2].

This paper is articulated as follows. In the first section is presented a general theoretical overview on buyouts and their classification according to different criteria, focusing out attention on agency theory and strategic management from a resource-based-view perspective. Six hypothesis are then developed. Finally, an empirical study is presented. In the last section, the paper concludes with a discussion of the implications of these results.

THEORETICAL FRAMEWORK

A buyout can be defined as the purchase of a controlling stake in a company (or a division) from its owners, for a limited time, usually financed through a combination of equity and debt with strong involvement of specialized financial investment companies, the so called buyout associations (Berg, 2005). Within the broader investment category of private equity, buyouts represent the later stage investment, in contrast to venture capital investments that represents the early stage (Wright & Robbie, 1998). In fact buyouts are the principal focus of private

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[1] For further details about the meaning and the measuring process of each strategic approach please refer to chapter 4.

[2] For further details about the characteristics of the working sample please refer to chapter 3.

equity investments, in which investors and a management team pool their own money (usually together with debt finance) to buy shares in the target company from its current owners, to create a new independent entity. In contrast with early stage venture capital investment, buyouts are equity purchases of companies that are already self-sustaining but have room for growth and management improvement (Meuleman, Amess, Wright & Scholes, 2009).

According both to academics and practitioners buyouts come in a variety of forms. Berg (2005) proposes a classification based on two possible dimensions. The first is based on the type of acquired entity, distinguishing between the buyout of a standalone firm and the buyout of a part of a larger entity such as a division of conglomerates or entire subsidiaries of a firm. A further distinction within the first category concerns if the firm is public or private. Regarding the second dimension proposed by Berg we have management buyouts (MBOs) that consist in the purchase of a company by the incumbent top management (or part of it) backed by the private equity fund who provides the financial support. There are some particular cases in which also other management and employees can be involved in firm's ownership, the so called management-employee buy-out. This doesn't happen very often, usually when, for example, it is necessary to tie specific human capital to employees, or when the company is geographically spread making the direct management troublesome, or in the cases in which the transfer of ownership is constrained by the acceptance agreement with trade unions (Wright, 2007).

Management buyins (MBIs), on the contrary, are those type of deals in which an external management team funded by outside investors takes over the control of a given target

company (Loos, 2006). Nevertheless a combination of internal and external management is not unusual and is best described as buyin-management-buyout (BIMBOs), or LBIMBO respectively if the debt financing is involved (Wright & Robbie, 1996). In leveraged buyouts (LBOs), indeed, the emphasis is concentrated on the high amount of external debt used to finance this kind of operations; the ideal LBO candidate is characterized by strong, non cyclical and stable cash flow coupled with significant unused borrowing capacity (Loos, 2006). Institutional buyouts (IBOs) are transactions in which the buyout firm initiates the transaction proactively without backing a dedicated management team (Wright & Robbie 1996; Berg, 2005).

In practice, an unambiguous differentiation of the various types of buyouts is hardly possible, because transactions tend to combine elements of multiple types (Fendel & Groh, 2002). So, according to Berg (2005) "buyout" is the broadest term possible to refer to the type of deals that are the object of this work.

< Exhibit 2 >

Agency theory

Agency theory has been the predominant theoretical lens used to study buyouts, with emphasis on controlling and incentivizing managers' behavior to improve performance (Jensen, 1993). Agency theory argues that there is an inherent conflict within the firm, arising

from diverging goals of the company's owners and their professional managers (Jensen & Meckling, 1976).

The first systematic contribution in this field was given by Jensen and Meckling (1976); according to them an agency relationship acts as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal. The principal can limit divergences from his interest by establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit the aberrant activities of the agent. In addition in some situations it will pay the agent to expend resources (bonding costs) to guarantee that he will not take certain actions which would harm the principal or to ensure that the principal will be compensated if he does take such actions.

In the event of a buyout, several of the determinants of agency cost change considerably (Jensen, 1986). Consequently, buyouts are expected to have a significant impact on the firm's agency costs (Kaplan, 1989). In his recent work Loos (2006) points out three main important changes in agency cost subsequent a buyout operation: the use and the intensity of the leverage, control instruments that the new owners have over the management of the company and management incentive systems.

According to Jensen (1986) many of the benefits in going private and leveraged buyout (LBO) transactions seem to be due to the control function of debt and always according to

Jensen (1986) leveraged buyout transactions create a new organizational form that competes successfully with the open corporate form because of advantages in controlling the agency costs of free cash flow. Debt creation, without retention of the proceeds of the issue, enables managers to effectively bond their promise to pay out future cash flows.

Thus debt reduces the agency costs of free cash flow by reducing the cash flow available for managers to spend at their discretion. These control effects of debt are a potential determinant of capital structure. Issuing large amounts of debt to buy back stock also sets up the required organizational incentives to motivate managers and to help them overcome normal organizational resistance to retrenchment which the payout of free cash flow often requires (Jensen, 1986; Jensen, 1989).

The second main aspect concerning agency costs in buyouts according to Loos (2006) are the monitoring and control power and capabilities that professional investors from buyout associations have with respect to acquired companies such as the right of determining the composition of the whole management team or the presence of some GPs in the board of directors.

Under this perspective the agency cost approach has largely focused upon reducing the problems of over-diversification and over-investment that result from weakly monitored management. (Wright, Hoskisson, Busenitz & Dial, 2001)

Third aspect consists in management incentives systems, with a particular focus on their participation in the company ownership: agency theory advocates contend that performance improvements observed following a buyout are the result of management's increased

ownership stake in the firm (Jensen, 1989). Increased managerial ownership means that the interests of owners and managers are more likely to coincide. So, it follows that more congruent goals and interests lead to better long-term control of the firm's costs because managerial behavior will be more supportive of the owners' interests (Jensen & Meckling, 1976).

So, to summarize, agency theory perspective applied to buyouts argues that it is the organizational form created by the buyout itself that engenders the managerial incentive to create shareholder wealth (Bruton, Keels & Scifres, 2002). Wright et. al. (2001) state that a theme that pervades the agency literature is that stricter governance and a more efficient incentive scheme can effectively mitigate the downside problems that plague mature firms.

That a firm's performance improves when it is taken private in a buyout is often said to demonstrate support for agency theory. These performance improvements are attributed to greater goal congruence between owners and management (Thompson & Wright, 1991) as well as greater incentive to create shareholder wealth as management's ownership stake increases (Holthausen & Larcker, 1996).

This theoretical approach is supported by several empirical test such as the contribution of Phan and Hill (1995) in which they demonstrate that increased management ownership stake (assumed to be an indicator of agency costs reduction) has a positive and significant impact on performance.

Strategic entrepreneurship

Agency theory has been for a long time the predominant lens used to understand and asses value creation in buyouts, but a fundamental limitation is that it fails to address the entrepreneurial or upside potential of buyouts (Wright, Hoskisson, Busenitz & Dial 2001).

Agency theory focuses on buyouts as a governance and control device to increase profitability, organizational efficiency, and gives limited attention to growth issues. Several contributions in the literature addressed this problem arguing that the complementarity between agency and strategic entrepreneurship perspectives with respect to buyouts provides richer insights than would be gained from using only one perspective (Meuleman et. al. 2009).

A strategic entrepreneurship view of buyouts incorporates upside incentives for value creation associated with growth as well as efficiency gains (Meuleman et. al. 2009). Besides being efficiency enhancing, buyouts may also be a vehicle for strategic innovation and renewal that fosters upside entrepreneurial growth opportunities (Wright et. al. 2001).

A strategic entrepreneurship perspective, grounded in the resource-base view of the firm, provides complementary insights to the agency perspectives (Makadok, 2003). In his work Makadok (2003) points out the complementarity between agency and resource-based

perspectives, in particular he suggests that strong governance and strong resources in the form of human capital may be especially important in generating performance.

Also Wright et. al. (2001) underline the need to widen the conceptual base beyond agency cost and financial explanations to include managerial perspectives of entrepreneurship in order to asses buyouts' value creation. So, the recognition that buyouts are a common vehicle for entrepreneurial initiative and renewal develops a growth-oriented perspective (Wright et al. 2001). The same authors propose some macro-categories of entrepreneurial initiatives that can be recognized as signals of fostering entrepreneurial opportunities in buyouts, such as innovation or business revitalization. Wright et. al. (2001) found support to their thesis in the variety of buyout types that have been developed starting from the late 1980s: they noticed that while LBOs of publicly traded companies actually account for only a minority in the US and are rare in other countries there are many other types of buyout, including divisional buyouts, MBOs, MBIs, privatization programs and buyout of failed firms. So they assume that these different types of buyouts have emerged because they are an efficient and effective means of needed organizational change (Wright et. al. 2001).

Thus, under this perspective, according to Gottshalg (2002), Makadok (2003) and Loos (2006), it becomes crucial to understand the ability and the success factors of buyout associations in the combination of resources between the buyout firm and portfolio companies. This since, as a consequence of absence of any horizontal synergies through resource sharing among the portfolio companies the only way to generate rents through resource redeployment is a vertical exchange between the LBO firm and each individual portfolio company (Loos, 2006).

In the literature so far the most considered resource that buyout firms can share with portfolio companies is its human capital, more specifically the knowledge and the expertise of its professionals (Loos, 2006); the most used indicator of investigation for this phenomenon is top management replacement. A recent contribution provided by Braun and Latham (2009) found empirical support also on the positive impact on post-buyout value creation of the board dimension and the presence of external directors.

Since the expertise and the social capital of the members of the top management team constitute the most valuable resource of the company according to Barney (1986) the extent of executive departures is negatively related to post-acquisition performance changes (Cannella & Hambrick, 1993); and since this variable might be also considered a proxy for a more general construct of firm-wide replacement of resources, such as brand names, distribution channels, and physical assets, (Zollo & Singh, 2004) striking the right balance between achieving the necessary level of organizational integration and minimizing the disruptions to the acquired firm's resources and competences is a fundamental challenge that affects the success of the entire acquisition (Zollo & Singh, 2004).

Capabilities development processes

Like in general acquisition literature, also for what concerns buyouts the issue of change management and integration processes has recently came up as a crucial research

mainstream, because buyout associations' organizational form of unrelated multibusiness[3] firms shares many important features with conglomerates (Baker & Montgomery, 1994). Starting from this statement Gottschalg and Meier (2005) argue that the 'vertical' integration between the private equity firm and the portfolio company acquired through the buyout corresponds to the relationship that occurs between a business unit and the headquarters in a conglomerate setting.

As Zollo (2009) suggests when strategic decisions are considered, the learning by doing phenomenon might reveal features, and thus produce outcomes, that are different in important ways; so in the buyout context, where value creation activities step in it become crucial to understand if and to what extend private equity funds possess the capabilities required to perform the so called hands-on-approach.

The first thing to point out is that the learning curve phenomenon linking the accumulation of experience to increasing performance levels do not seem to readily apply when strategic decisions such as acquisitions are taken into consideration (Hayward, 2002; Zollo & Singh, 2004), so the quality of the learning process might be particularly poor in the context of strategic decisions (Zollo, 2009) such as buyout deals. So learning does not necessarily benefit firms; especially acquisition experience is of course useful, but not a sufficient condition for acquirer learning (Hayward, 2002).

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[3] Exception to this argument would be the frequently observed buy-an-build strategy, in which the buyout firm acquires a target as a platform company and adds further related businesses to "build" a larger industry player by subsequent mergers (Loos, 2006).

The main determinants of this phenomenon according to Zollo and Winter (2002) are the complexity of the task that determines causal ambiguity and the frequency with which these tasks occur; these two elements impact on the acquisition performance through a mechanism that Zollo (2009) in his recent work defines "superstitious learning[4]", that identifies the major gap between what managers believe and what they actually know how to do (Zollo, 2009). In other words the overconfidence problem. The same author argues that the magnitude of this phenomenon might be connected to the frequency and the precision of the performance feedback.

In this context, the study of dynamic capabilities, the organizational capacity to change operations and adapt them to new environmental requirements (Zollo & Winter, 2002) allows for investigation on processes and determinants that lie at the heart of the organization's ability to enact change in a systematic and fruitful way. It is clear that the importance of such capabilities for a private equity funds those job substantially consists of repeated acquisitions.

While according to Datta (1991) the primary objective in post-acquisition integration of operations is to make a more effective use of existing capabilities. For private equity funds this view have to be extended: it is widely recognized among the literature that in buyout situations the role of the acquirer fund – thus of General Partners that are going to manage the deal – is twofold. On one side there is the incentivizing and monitoring role that has traditionally been attributed to buyout funds, but funds also play an important role as advisors

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[4] The precise definition of superstitious learning provided by Zollo (2009) is the following: "… the situation in which the rate of development of the confidence in one's own competences, consequent to the accumulation of experience, is larger than the rate of development of actual competence, connected to the same amount of experience accumulation.

and resource providers for the acquired companies, especially under the human capital point of view (Wright, 2007 & Meuleman et. al. 2009).

Hence there may be important synergies between strong governance and strong competence (Makadok, 2003) and then, prior to buyout, managers may be both unable or unwilling to utilize their knowledge and skills and private equity firms may provide them complementary resources and capabilities they require (Meuleman et. al. 2009).   As a consequence, the ability of private equity firms to implement otherwise selection, monitoring and advisory services through learning (Barney, Wright & Ketchen, 2001) becomes under this perspective a driver of sustainable competitive advantage building. This let come back again on the crucial role that the capacity to adapt, extend and reconfigure capabilities is an important dynamic capability (Teece, Pisano & Shuen, 1997) that allows firms including and especially "M&A professionals" such private equity funds to compete more effectively.

HYPOTHESES DEVELOPMENT

Value creation in buyouts results from various sources (Loos, 2006); the more complete classification of the range of drivers that have an impact on the total value created by buyouts come from Berg and Gottshalg's (2005) work.

They introduce a first main distinction between two basic classes of value generation (Gottshalg et. al. 2004; Berg & Gottschalg, 2005). The first is linked to changes in the valuation of the business and financial arbitrage for example an expansion of the valuation multiple. This type of value generation is not due to specific interventions of the fund on the portfolio company, but it is more related to changes in market conditions or information asymmetry so Berg and Gottschalg (2005) define this component of the buyout's overall performance "value capturing".

The second type of value generation is directly linked to a fundamental change in the financial performance of the target organization (Berg & Gottshalg, 2003) and is defined by the authors as "value creation". This component relates exclusively to the interventions performed by the private equity fund during the holding period (the so called 'hands-on-approach) and according to previous research the majority of value generation (about two thirds) is being realized during the holding period of the buyout company (value creation effect) and the remainder (about one third) is realized by the actual transaction and its

circumstances/configuration (value capturing effect) (Loos, 2006)[5]. Berg and Gottshalg (2005) propose also a classification of the levers that impact on value creation (exhibit 3). This classification in very useful since it builds up a framework that includes all the features of the complex structure of the buyout value generation process. Moreover it allows to draw a clear picture of main area of investigation about buyout performance.

< Exhibit 3 >

As Berg and Gottshalg (2005) point out the majority of research on buyout value generation has been conducted in the late 1980s and the early 1990s, a period characterized by highly leveraged going-private transactions (mainly in the US) and thus most of the empirical testing is based on this type of case. The subsequent development of other types of buyout such as divisional buyouts, family buyouts, secondary buyouts have been neglected in previous research (Meuleman et. al. 2009), at least under the empirical point of view.

Wright et. al. (1991) report evidence from divisional managers that frequently stated that buyouts provides support for pursuing their tasks more effectively through greater independence, in fact divisional buyouts can arise both when incentive and rewards systems of the parent company that has revealed not suitable for fully exploitation of existing

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[5] Loos (2006) proposes this estimate basing on data presented by P.L. Anslinger and T.E. Copeland in '*Growth through acquisitions: A fresh look'*, The McKinsey Quarterly, No. 2, 1996 and by P.A. Butler in '*The Alchemy of LBOs'*, The McKinsey Quarterly, No. 2, 2001.

resources and capabilities (Wright et. al. 1991), both in case of underinvestment by the parent firm, especially where the division may be peripheral to a parent's strategy (Meuleman et. al. 2009). Thus, as the same authors argue, divisional buyout potential lies in the constriction by parental control systems that penalizes capacities and potential embodied in the firm and in the incumbent management team, that, on the other hand, may lack the experience to identify and exploit opportunities effectively. So as Meuleman et. al. (2009) argue, divisional buyout often act a stronger mechanism to "unlock" previously constrained organizational structures than other types of buyout.

Therefore, as a consequence of this intrinsic potential of non autonomous target, it is expectable for divisional buyouts to have a superior performance on average respect to already autonomous companies.

H.1. Divisional buyouts show higher returns, in terms of IRR, respect to buyouts of a standalone target.

As already outlined, different types of buyouts offer different opportunities regarding efficiency changes and growth activities (Wright et. al. 2001): for what concerns specifically divisional buyouts, building from the same authors' ideas, this type of buyout should be considered more than a tool to facilitate gains from mere cost efficiency and value capture

from job destruction, instead divisional buyout are mainly an instrument to stimulate strategic change that enables significant growth opportunities.

Since it is generally accepted among the literature that the access to buyout funds' resources and capabilities is particularly important for organizations under a parental control in order to create value especially through growth, it is logical to expect such kind of strategies to be the most important value creation driver for divisional buyouts.

> *H.2. In divisional buyouts 'growth oriented' strategic initiatives have a positive and superior impact, in terms of IRR respect the other strategic approaches.*

Extending this reasoning to the organizational level, buyouts often take place because the infrastructure of a diversified firm is too limited to exploit the entrepreneurial opportunities that emerge (Wright et. al. 2001). This statement founds confirms by the same author within a study on UK MBOs from diversified conglomerates in which emerges that buyouts were mostly initiated by managers who perceived opportunities to undertake entrepreneurial actions when head office constraints were removed (Wright et. al. 2001).

In this sense the opportunity set for divisional buyouts tends to be broader than that for whole firms buyout (Wright et. al. 2001) since it is argued that divisional buyouts are particularly effective vehicles to create value through the expansion of managerial discretion with the aim to take advantage from entrepreneurial initiatives such as innovation.

H.3. In divisional buyouts revitalization oriented strategies have a positive and superior impact on IRR respect to restructuring and refocusing ones.

As already mentioned divisional buyouts are supposed to present relevant value creation opportunities derived by the exploitation of their unexpressed and previously constricted by parental control, resources and capabilities. Building on this framework another significant component that stands at the origin of value creation for buyouts of divisions is the enhancement of competences and resources of the acquired entity. In a buyout context this refocusing effect is likely to be exploited in two directions: the first is by the redeployment of existing resources with consequent refocusing on the core assets and capabilities. The second, indeed, is related to management attention and incentive refocusing through incentive alignment and monitoring systems implementation.

H.4. In divisional buyouts refocusing strategies have a positive and superior impact on IRR respect to restructuring ones.

Consequently in divisional buyout, in contrast with the other types of buyout, the remaining typical strategic approaches should play a minor role respect of the predominant effect of growth and business revitalization. Hence the main strategic driver for whole buyouts:

restructuring[6] is expected to have an inferior impact for divisional buyouts respect to the three already mentioned.

> *H.5. In divisional buyouts restructuring strategies have a positive but inferior impact on deal performance, in terms of IRR, respect to growth, revitalization and refocusing strategies.*

Finally all initiatives that reduce company's perimeter are expected to be one with the minor impact on divisional buyouts since in this situations, as already pointed out,

> *H.6. In divisional buyouts downsizing strategies have a positive but minor effect respect to all other strategic approaches on deal performance, in terms of IRR.*

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[6] In this study restructuring activities have been intended following the categories suggested by Muscarella and Vetsuypens (1990) in their dedicated research in which they refer to corporate restructuring with all actions aimed to redeployment of resources, operational and financial efficiencies and personnel changes.

RESEARCH DESIGN

Data source and potential biases

All the information contained in the used dataset were extracted from Private Placement Memoranda (PPMs) and Transaction Summaries (TS) provided by general partners of funds.

PPMs are preliminary offering documents that General Partners (GPs) use in order to convince Limited Partners (LPs) to invest in their funds (Groh & Gottschalg, 2008). In PPMs General Partners provide selective quantitative and qualitative information about their investment track record of buyout investments (both realized and unrealized ones) to potential investors during the fundraising phase of a new fund. The fact that PPMs are substantially marketing instruments leads to the expectation that buyout transaction, and especially the role of GPs, will be systematically presented in an overly positive fashion (Loos, 2006) representing a potential bias of the information provided; nevertheless it is important to keep in mind that there are industry standard guidelines for financial information reporting and, moreover, all private equity funds operate under the monitoring of highly reputable auditing firms.

With respect to the depth of the information provided, it can be stated that the data is highly heterogeneous as each GP chooses his level of transparency and disclosure of sensitive information (Loos, 2006)[7].

A TS is a periodical report (usually quarterly) that GPs usually provide to the LPs in order to keep them aware about the investments' status of the fund they invested in. They are usually much more synthetic than PPMs since they provide only key financial information on the status of the fund's investments without qualitative features, but they have the advantage to contain all the track record of the fund they refer to.

Data collection and codification into a standardized database from the vast and heterogeneous information base of PPMs an TS was achieved through a six month lasting screening and codification process made by a team of eight students, among whom the author.

This study's sample may suffer for two types of biases. The first is named selection bias: since the deals presented in PPMs and TS are chosen by the GPs for fundraising purposes it is reasonable to think that this sample skewed towards top-performing buyouts, moreover it is logical to assume that only buyout funds who have relatively successfully managed their previous fund, would be in a position to raise money for a subsequent one (Loos, 2006). Hence worst- performing buyout associations, since they may either not attempt or succeed in raising new funds, are likely to be excluded from this sample. This issue leads to the

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[7] The General Partners differentiate their level of initial disclosure to Limited Partners. Generally, only in case a Limited Partner shows serious interest in the fund investment opportunity and initiates further due diligence, the General Partner will submit an extended due diligence package to the Limited Partners, which supplements the PPM with far-reaching background information on each transaction undertaken, financial information, etc. (Loos, 2006).

second potential bias, known as survivorship bias that consists in the exclusion from the data source of the non-surviving funds: the ones that reasonably have had the worst returns.

Even if these biases can create significant concerns with the reliability of results Fung and Hsieh (2000) argue that, if these biases exists, they are present in all studies of fund's performance, so the results, even if biased, are comparable with the previous contributions. In addition, and most important, they state that it is not possible to estimate the effect of selection and survivorship biases without having the complete track record data of the whole private equity funds industry. Thus Fung and Hsieh (2000) conclude that, also regarding the accounting disclosure standards and the importance of reputation and credibility in this business, selection and survivorship biases have very small effect, if they exist at all.

Sample description

The dataset used as a sample for this study counts for 1364 deals both realized and partially realized[8] from 327 funds managed by 247 General Partners. The sample includes deals from 63 country spread worldwide as follows: 33% USA and UK, 36% Europe, 11% Asia and Middle East, 20% rest of the world, giving this study a fair global coverage.

As under the geographical point of view also under the industry perspective the chosen sample have a complete coverage. The investments analyzed range from 1982 to the first quarter of 2009 whereas 90% of the deals are concentrated in the 1990-2006 period.

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[8] Partially realized deal were included in the sample only if they have generated a significant cash flow up to the last valuation date available in PPMs or TS since this is the condition to attribute an IRR to the deal.

The average holding period of the working sample is 3,83 years with median 2,83: this is consistent with both Strömberg (2007) and Phalippou and Gottshalg (2009) findings of an average holding period of 4 years (4,2 years in Phalippou and Gottshalg sample versus 4,6 years in Strömberg one) with a median of approximately one year less than the mean. The so-called 'quick-flips', deals lasted less than 2 years, are confirmed to be an exception rather than the rule since they count only for 2% of the working sample. This data is significantly lower than the one provided by the two already cited studies (15% and 12% respectively from Phalippou and Gottsghalg & Strömberg).

Out of the 1364 deal sample, 919 are buyouts of standalone entities, while 445 consist of acquisitions of divisions of conglomerates or single business units that were already part of a larger entity; this last subsample represents the core investigation field of this study and it is the one that from now on will be referred to as divisional buyouts.

Analysis

The analysis was conducted in multiple phases described below.

In the first phase a factor analysis was performed on the independent variables in order to reduce them to their principal components; this statistical technique allowed to obtain a new set of predictors suitable for the analysis.

After a preliminary average return comparison between groups, the new factors obtained from the previous step were used as predictors on the whole sample with the adding of a number of controls.

In the last phase the same process was replicated only in the divisional subsample in order to better isolate the interaction effect between the predictors' components from the complete sample and the one from the subsample and compare their impact only for the specific focus of this paper: divisional buyouts. The obtained findings are compared with the ones obtained through a parallel analysis undertaken on the complementary subsample: standalone buyouts.

As already mentioned, the analysis was carried out using a multiple regression model and allowed to determine the probability of having a top performing deal (in terms of IRR) associated to the implementation or not of different categories of strategic initiatives expressed by predictors. Specifically this model allows to test the impact on the performance of strategic initiatives aimed to growth, both internal and external, downsizing, restructuring, refocusing or revitalization. In depth details about predictors construction and their meaning will be provided in the following paragraphs.

Moreover a series of control variables were included in all the regression models in order to isolate the influence of variables that are not the explicit focus of this paper and that are described, as the previous ones, in this section.

MEASURES

The purpose of this work is to investigate the impact on gross Internal Rate of Return of six different strategic approach categories used as predictors in a linear model; the consistence of predictors influence has been tested with the addition of meaningful control variables.

All variables included in different phases of this study are presented below.

Dependent variable

Gross IRR (Internal Rate of Return) is the compounded return of cash proceeds that LPs receive during fund's life; it is used as one of the two main measures of private equity returns (Fraser-Sampson, 2007) coupled with a number of cash multiple (e.g. DPI, RVPI, TVPI, etc.)[9] with the significant advantage that IRR respect to cash multiples also takes into consideration the duration of the investment.

However the best performance measure is the Net IRR (net of interests and fees). This study uses Gross IRR as dependent variable because in the data sources the breakdown of different type of fees (entry fees, management fees, ect.) and interests (carried interest) is very often not provided. Nevertheless a study by Gompers and Lerner (1999) on GPs compensation shows that the remuneration structure of private equity funds follows the so called 2/20 rule

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[9] DPI (Distributed-to-pay-in) is the ratio of money distributed (paid out) by the fund to money paid-in (drawndown); RVPI (Residual Value To Pay-In) is The ratio of the current value of all remaining investments within a fund to the total amount of capital paid in to date; TVPI (Total Value To Pay-In) is The ratio of the current value of remaining investments within a fund plus the total value of all distributions to date to the total amount of capital paid into the fund to date. (Fraser-Sampson, 2007)

that stands for 2% management fee plus 20% of carried interest on fund final performance[10].

Thus, Gross and Net IRR have an homogeneous degree of correlation among the whole

industry, so Gross IRR can be used as an affordable proxy of performance as well.

Several critics addressed the possible biases that can affect IRR such as the risk of

manipulation by the alteration of the investment length; this is likely – even if hard to do

systematically – in case of unrealized deals and rather difficult for realized ones, since it's

demonstrated that the exit timing is affected by both endogenous and exogenous factors such

as industry and market conditions.

Much more relevant in assessing the potential biases of IRR is one strong assumption implicit

in its calculation: IRR is the annual yield of discounted cash flows occurred during the

holding period, this implicitly assumes that cash proceeds have been reinvested at the IRR

over the entire investment period (Gottschalg & Phalippou, 2007) event if that, considering

the average private equity returns, is unlikely because of the re-investments assumption

implicit in its calculation, IRR exaggerates performance (Phalippou, 2008). The issue raised

by Gottschalg and Phalippou is relevant, anyway this skewness of IRRs, as the same authors

notice, is potentially misleading in the comparison of different fund managers, less

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[10] Gompers and Lerner (1999) provide estimates on compensation for 419 partnership agreements in the U.S. In their sample they found annual management fees ranging from 1,5% and 3% (negatively linked to GPs track record) on the committed and/or invested capital and 20% (industry standard) of carried interest on funds final overperformance of an average hurdle rate of 8-12%. (See also Loos, 2006).

problematic in assessing the impact of different strategic initiatives on performance at deal level[11].

The average gross IRR for the 1364 deals of the working sample is 90,75% (st. deviation 163,7) with a 49,4% mean that spotlights a strong right asymmetric distribution confirmed by the positive and high kurtosis of 56.59. Gross IRR ranges from a minimum of -100% (for deals that ended with bankruptcy procedures) to a maximum of 2337%; keeping in mind that the gross IRR of the median 50% of the considered transactions ranges from 26% to 95%.

Negative performance deals consist of a very small minority that counts for only 2,8% of the total sample. Further concerns derive from the high value of curtosis statistics (56,59) that shows the non-normal distribution of the dependent variable that has consequently requested a two steps transformation in order to fulfill the distribution hypothesis underlying multiple regression models.

In the first step gross IRR was transformed in an ordinal discrete variable based on deciles. This to solve the non-normal distribution problem and then in order to make the variable continuous, the result of step one was transformed in natural logarithm plus one.

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[11] The same authors in a further study propose a correction to the IRR formula under the opposite assumption of zero re-investment rate. They call this corrected measure M-IRR (modified IRR) = duration of the investment^1/cash multiple. They also tested the reliability of this formula and found a strong correlation (more than 80%) between IRRs and M-IRRs.

In this study this correction was not adopted for two main reasons: the first is because the data requested for the calculation of M-IRR were not available for a relevant part of the dataset, thus the adoption of M-IRR would have led to an excessive reduction of the working sample (with consequent impacts on findings' significance); the second is because the purpose of this study is not a measure of performance either at deal nor at fund level, but a comparison between the effects of different strategic approaches on the final deal performance, so, for this purpose, gross IRR is a suitable indicator.

So the newly created dependent variable is LNdecIRR = LN(IRR_decile + 1).

Independent variables

The database contains a dedicated section about all interventions made by GPs during the holding period classified by the general and widely adopted framework of primary and secondary activities of Porter's (1985) value chain. Therefore, it was possible to bring back each strategic intervention occurred to six macro categories created from the taxonomy of buyouts provided by Wright et al. (2000 & 2001) in order to catch the underlying generic purposes beyond single initiative. This grants to measure the 'strategic direction' that the GP followed in managing every single portfolio company he acquired. Consequently this aggregation process[12] produced the measurement of the strategic intention to create value from internal or external growth, downsizing, restructuring, refocusing or revitalization strategies; these six variables became the predictor of this study and are described as follows.

Internal growth is a dummy variable that expresses the intervention of strategic initiatives carried on by fund's managers aimed to target company/division expansion through internal resources development and exploitation. This variable refers to expansions in almost all areas, from supply chain, to production and distribution chain. Moreover it embeds improvements under the commercial point of view.

Internal growth strategies were undertaken in 48,6% of the examined deals (664 out of 1364).

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[12] The table with the complete list of activities undertaken by fund's managers and their belonging to each of the six categories is attached in Appendix A.

External growth is a dummy variable that expresses all growth strategies that alter the perimeter of the firm; it includes acquisitions as well as external alliances and joint ventures. Generally in private equity literature – in case of mergers or acquisitions –this kind of strategy is known as 'buy-and-build' since it consists in an initial buyout that become the platform for further acquisitions.

External growth initiatives were reported in 41,4% of the total sample (565 out of 1364).

Downsizing is a dummy variable that captures the strategic initiatives that determine a reduction of the activities and/or the perimeter of the company; this variable catches the intention to create value through the exploitation both of all sellable assets and the increase use of outsource activities and/or services. It goes without saying that this is a less intrusive strategic approach, since it involves very low (or even none) GP's hands-on.

Downsizing intention were detected in 18,4% of the working sample (251 out of 1364).

Restructuring is a dummy variable that comprehend interventions mainly referred to operational and/or financial efficiency; generally speaking, actions that lead to a performance improvement without need of growth in sales, market share, etc. Among these there are interventions concerning the reorganization of processes ranging from procurement, to production and distribution, as well as changes at organizational levels and also in human resources (such as layoffs), and cost cutting oriented strategies. As already mentioned, were brought back to this strategic category also financial optimization actions such as working capital reductions.

Restructuring activities were undertaken in 45,3% of the analyzed deals (618 out 1364).

Refocusing is a dummy variable that includes strategic initiatives characterized mainly by redeployment of firm resources and interest alignment improvements. Specifically the underlying aim of the interventions belonging to this category is twofold: on one side there are all the actions finalized to a better exploitation of company's resources and capabilities: the main interpretation lens as suggested by Wright et. al. (2001) is the attempt to unlock the already existing, unexpressed potential. Among these, for example, there are focus on marketing, R&D, etc. Complementary, this variable also includes the implementation of actions that can be brought back to lowering the agency costs intentions, such as management incentive plans, reporting and budgeting systems and so on.

Refocusing strategies were fostered in 32,9% of the sample (499 out of 1364).

Revitalization is a dummy variable that expresses all the strategic initiatives characterized by restoring entrepreneurship intentions and mentoring activities as well as all the actions undertaken to renew competitive advantage and firms capability such as, first of all, promoting innovation. This variables embeds the most radical and intrusive interventions: signals concerning major changes in company's business model, for example new products/services or new markets as well as primary strategic shifts such as a new company name or brand and a new R&D approach.

Revitalization goals were pursued in 65,1% of the considered deals (888 out of 1364).

It is quite obvious but it is worth saying that each deal can present more than one strategic direction, and actually this is the case of the large majority of the sample (80%), while there is only a small fraction of deals for whom the GP has not undertaken any initiative (6%).

Organizational structure this is a slope dummy variable that assumes value 0 when the buyout target is a standalone company, and value 1 when the buyout target is a division of conglomerate, a business unit of a multibusiness firm and, in general, when the acquired entity is non autonomous. This variable was created in order to isolate the effect of each of the six previously described independent variables in the subsample of divisional buyouts.

As already mentioned the divisional buyout sample counts for 32,6% of the total deal analyzed (445 out of 1364).

Controls

In order to improve the overall significance of the analysis and check for eventual further effects on the dependent variable not expressed by the above described predictors 28 control variables were included in the regression models.   These additional variables were selected because both of their meaning as well as because they are not correlated and are described as follows.

Holding period[13] is a continuous control variable corresponding to the overall duration of the investment and it is measured in fractions of year.   For partially realized deals the holding

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[13] For descriptive statistics of this variable please refer to par. 3.2.

period was calculated using as ending date the last available investment evaluation date on which the IRR was calculated. This was the first included control since empirical contributions in this field up to now (Loos, 2006; Strömberg 2007 & 2009 just to quote the most recent ones) have always verified the negative correlation between investments' duration and its return.

Public is a dummy control variable that indicates whether the seller or the sold entity is listed or not at the time of the deal closing. This control was introduced in order to be specifically tested on the divisional buyout subsample to eventually catch the influence on this type of deals of the so called 'conglomerate-discount effect' (Burch & Nanda, 2003).

Strategic ownership is a dummy control variable that indicates if the acquired company was previously owned by a strategic or a financial owner.

Transaction size is a continuous variable that measures the total amount of capital and debt committed to the deal; this control is a proxy measure for the overall economic value of the deal and was inserted in the model in order to check for eventual economies of scale. The average transaction size of the working sample is about €13 millions with a significant right skewness (24,186) and it is not normally distributed (Curtosis 585,285), thus this variable was transformed with its natural logarithm. The newly created variable is LN_TRSIZE = LN(Transaction size + 1).

Closing year is a dummy variables created in order to detect and isolate the fixed effect of investment's timing for the working sample's extension. Thus this control consists of a set of 24 dummies, one for each year of the considerate sample (1982-2009), with the exception of

1983-1985 included since no deals closed in those years were present in the working sample and 2009 since it was considerate the base year and so treated as the missing category.

This control was included in the analysis since several contributions (Loos, 2006; Phalippou & Zollo, 2005) point out the significant influence of the economic cycle on private equity returns. The considerate date for each deal was the closing year.

< Table 1 >

MODELS

Factor analysis

The preliminary analysis has shown a strong and significant relationship (F-statistic of linear regression of more than 9 significant at 99% confidence level) between the dependent variable (deal Gross Internal Rate of Return) and the predictors, but lower significance at single variable level. In this cases, where the model specification is meaningful, but single coefficients are not, theory suggests that is very likely for predictors to be affected by multicollinearity.

One technique to avoid this problem suggest by Marcellino (2006: 52-53) is to perform factor analysis on the predictors. This statistical tool belongs to the data reduction techniques and allows to substitute predictors that suffer from multicollinearity problems, but have shown strong and significant relationship with the dependent variable, with new ones derived from their linear combination.

The newly created variables are independent from each other and are expression of the original predictors (or linear combinations of them); the attribution of each factor to the predictors was made according to the hierarchy of total variance expressed by each component as illustrated in the last part of this paragraph.

Even if this technique has the drawback of potential arising of ambiguities in coefficient's interpretation, it has been judged suitable for this study because the number of independent

variables is sufficiently high to perform a data reduction without losing the possibility to univocally match each factor with the original variables. Furthermore the adopted criteria for factor selection and interpretation were intentionally set in a more conservative fashion than the ones commonly adopted in social sciences[14].

Specifically the number of factors extracted was set so that the total variance explained by the rotated factors is higher than 90%, while the suggested limit is usually 60%. Moreover the factor load threshold for the attribution to the original variable was set to 75% of the total effect, while in standard studies this value can be set also at 50%. Thus, the acceptance parameters for factor analysis were all increased by 50% in order to obtain more robust and univocally interpretable results.

Given these considerations, factor analysis was ran and the result is that new, suitable predictors were created and they are described in the following tables.

< Table 2 >

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[14] Moreover the factor analysis was performed following the rule of thumb setting the eigenvalues of the matrix superior than one and using the rotation option Varimatrix with Kaiser normalization.

For coherence and in order to allow the second phase of the study to be done, the same process has been applied also to the six independent variables referred only to the subsample of divisional buyouts and, subsequently, to the standalone buyouts one.

Results, summarized in tables 3 and 4, are similar to those obtained with the complete sample: the total effect explained from the factors is 88% for both subsamples (only 2% less respect to the previous step). At the same time the load factors are always higher than the previously fixed threshold for the meaning attribution of 75% (in 9 cases out of 10 the load factors are even higher than 80%).

< Table 3 >

Therefore the produced factors have shown to abundantly fulfill the requirements to be included in the regression models as new predictors.

< Table 4 >

The complete SPSS output tables for the factor analysis are attached in appendix B.

Model specification

The chosen statistical method has been ordinary least-squares (OLS) multivariate regression and model's specifications used to test the hypothesis of this study are presented below.

<u>Model I</u> shows the equation used on the whole working sample.

$$IRR = \beta_0 + \beta_1 DIV + \beta_2 DOWNSIZE + \beta_3 REFOC + \beta_4 INT\_GR + \beta_5 GROWTH\_DIV$$
$$+ \beta_6 RESTR + \beta_7 EXT\_GR + \beta_8 REVIT + Controls + \varepsilon$$

<u>Model II</u>, indeed, shows the equation used for specific test on the divisional buyout subsample.

$$IRR = \beta_0 + \beta_1 GROWTH + \beta_2 REVIT + \beta_3 DOWNSIZE + \beta_4 REFOC + \beta_5 REVIT + Controls$$
$$+ \varepsilon$$

<u>Model III</u>, for instance, represents the equation for the standalone buyouts subsample analysis.

$$IRR = \beta_0 + \beta_1 RESTR_{REVIT} + \beta_2 INT\_GR + \beta_3 DOWNSIZE + \beta_4 REFOC + \beta_5 EXT\_GR$$
$$+ Controls + \varepsilon$$

RESULTS

In order to validate or not the research hypothesis formulated in chapter 2 several tests at different analysis levels were ran: the investigation moves from a first group's comparison

between the average gross IRRs first of divisional buyouts versus standalone ones followed by a further parallel analysis between subgroups based on the isolation of each single original independent variable (the strategic approach). After that, in order to investigate both the effect of each strategic approach and the interactions among them, a linear regression model was ran on the whole sample with the inclusion of the controls.

Finally, to gain more precise insights on the specific focus of this paper – divisional buyouts – a parallel process was undertaken only for the divisional subsample those results were compared with what emerged also from parallel analysis on the standalone subsample. After that some robustness tests were performed on the used models in order to further validate the obtained results.

GROUP COMPARISON

Table 5 reports the average IRR comparison between divisional versus standalone buyouts. The difference in the performance is about 35% in favor of divisional buyouts. The difference resulted significant at 99% confidence level (2-tailed) with a high F-statistic value of 21,54.

In case of comparison of two non homogenous sized samples it is very likely that the significance of the mean difference is threatened by the non equality of the two groups variance. in order to check for this problem the Levene Test for Equality of variances was

performed and the result shows the robustness of the previous finding both in case of equal variances assumed, both in the opposite case, without losing any degree of significance.

< Table 5 >

< Table 6 >

Moreover table 6 summarizes the same test performed on the two independent groups of divisional versus standalone buyout with the further selection criteria of the type of strategic approach followed for each deal. So, specifically it has been tested whether or not there is a significant IRR difference between divisional and standalone buyouts given the undertaken strategic approach.   The aim was to gain preliminary insights about the presence of higher/lower performance spread between divisional and standalone buyouts determined by one or more of the identified strategies.

The subgroup with the highest gross IRR difference between divisional and standalone buyouts is that in which refocusing strategies were implemented.   This group presents not only the major performance spread (+49% in favor of divisional buyouts) but also it is the only group with both mean difference and variance equality significant at 99% confidence level (2-tailed).

For instance for internal and external growth groups the mean IRR difference in favor of divisional buyouts (+31% and +30% respectively) is statistically significant at 95% confidence level each, with also a 95% confidence level of significance under the Levene assumption of equal variances.

For downsizing, indeed, the difference is not significant both under the equal variances assumption or not.

Finally the lowest gross IRR difference between divisional and standalone groups lies for restructuring and revitalization oriented deals (respectively +22% and +23% in favor of divisional buyouts), whereas for restructuring group the mean IRR difference is significant at 90% level confidence (2-tailed) also under the variance equality assumption, on the contrary, in revitalization group the Levene test is not significant making the mean IRR difference less affordable, even if significant at 95% confidence (2-tailed) level.

Thus, the general superior average IRR of divisional buyouts respect to standalone ones seems to be mainly attributable to refocusing strategic approaches, followed by growth strategies (both internal and external). On the contrary, restructuring and revitalization effect have a minor and less robust impact on the performance differential and, finally, downsizing seems to have a not significant impact.

Multiple regression on the complete sample

To go more in depth with the analysis of the impact of different strategic approaches a multiple regression model was ran, those results are presented in table 7.

< Table 7 >

The whole model is statistically viable since it explains more than one third of the total variance of the dependent variable (R^2 0,357: adjusted 0,334) and presents a F-statistics of 6,870 significant at 99% confidence level, meaning that the general approximation of the modeled phenomenon is rather affordable and the significance of the relationship between the chosen predictors and the deal performance in terms of IRR is strong.

Also at single variable level results are appreciable: 6 out of 8 predictors are significant as well as 3 out of 4 controls plus a number of dummy year controls.

In accordance with previous contributions in this field, the negative influence of the investment duration is verified: for each additional year of the holding period the probability of having a top performing deal decreases by 28,7%. This finding is significant at 99% confidence level (F-statistic of -9,763). For what concerns other controls, both the purchase from a listed and/or strategic seller has a negative impact on deal's performance in terms of a reduction of 4,6% and 4,7% respectively of the probability of outperforming. This effect is less meaningful than the previous one since both of these variables are significant at 90% confidence level (T-statistics of -1,805 and -1,775). On the other hand deal's transaction size effect is not significantly different from zero.

For what concerns vintage year[15] controls they are generally not significant as expected, except for years from 1999 to 2001 and from 2005 to 2007 suggesting an abnormal (in this case) positive effect on private equity returns for deals closed during these periods.

The first evidence that emerges from model I is that growth oriented strategies (both internal and external) in divisional buyouts are the ones with the highest probability (9%) of ending with a top-decile IRR.   This relationship is significant at slightly superior than 99% confidence level (2,547 T-statistic).

The second strategic approach in terms of impact on performance is restructuring that, if pursued, confers to the deal a 7% probability of a top-decile return.   This is also the most meaningful relationship since it is significant at 99% confidence level with T-statistic of 2,648.

On the other way internal growth based strategies determine a 5,4% probability of top performing deals, with a F-statistic of 2,506, thus significant at 95% confidence level.

The impact of refocusing, revitalization and external growth based strategies is almost similar both in probability of outperformance that stands around 4,5% each and significance, since all three of these variables are significant at 90% confidence level.

Finally downsizing strategies and general belonging to the divisional subsample are found to be not significant. This last finding may appear in contrast with those emerged in the first phase of analysis (group comparison), but since in this model the specification of the

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[15] Vintage year is defined as they year at which corresponds the first cash flow (both positive and negative) of the deal (Fraser-Sampson, 2007)

dependent variable is very detailed (model's coefficients express the probability to the deal to have a top-decile IRR given the implementation of the strategic approach which the related variable refers), this result is not inconsistent at all with the previous ones.

Multiple regression on subsamples

Table 8 shows the results of the multiple regression on the divisional buyout subsample. As the previous one this model fits well: independent variables explain 35% of the total variation of the deal return (R^2 0,354 and R^2-adjusted 0,333) and this relationship is highly meaningful with F-statistics of 7,352 showing an overall model significance at 99% confidence level.

Again, as in model I, all predictors are significant except for the one representing downsizing strategies. The same for what concerns controls: the investment duration, the purchase from a listed and/or strategic seller has a negative impact on deal performance, while transaction size seems to have no significantly different from zero effect. It is worth to notice that, in divisional buyouts subsample, the significance of strategic seller variable increases from 90% to 95% confidence level, suggesting a strongest importance of the type of seller in case of division/business units divestiture.

At this level of analysis it is possible to investigate the specific key success factors for a divisional buyout. The highest and even most significant variable in this model is that which represents growth oriented strategies, both internal and external. The implementation of this

kind of approach determines a probability for divisional buyouts to end up with a top-decile IRR of 9,8% (significant at 99% confidence level with T- statistics of 2,856).

< Table 8 >

Second in order of importance is the impact on IRR of refocusing aimed strategies: the probability for a divisional buyout to outperform in this case is 7,1%, significant at 99% confidence with 2,707 value of T-statistic.

Restructuring strategies in divisional buyout determine a 5,6% probability to have a top-decile IRR, in this case significant at 95% confidence level (T-statistic 2,104) and finally the minor impact on the probability to outperform in this subsample is represented by revitalization strategies (4,6% significant at 90% confidence level).

Finally in order to gain a homogeneous comparison, a further regression, with parallel criteria and variables, was performed only on the complementary subsample (results are presented in table 9) the standalone buyout one. The general results from this model are consistent with those obtained up to this point with the primary analysis: 35% R^2, 99% overall model significance, negative impact of chosen controls with no significance of one of them. All these characteristics allow us to compare the impact of the same strategic approaches in these two different organizational contexts: divisional versus standalone target companies.

What emerges from the comparison of model II and model III is that divisional buyouts have 83% (9,8% versus 5,4%[16]) higher probability to end up with a top-decile IRR in case of growth oriented strategies respect to standalone deals and 27% (7,1% versus 5,6%) higher in case of implementation of a refocusing based approach. On the other hand, in case of restructuring oriented approaches standalone buyouts have a higher probability of 36% (7,6% versus 5,6%) to outperform respect to divisional ones. For revitalization strategies the difference in favor to standalone buyouts is even higher: 65% (7,6% versus 4,6%).

< Table 9 >

Robustness tests

In order to check for possible problems that may arise when using multiple regression models, two tests were performed.

Even though the most important advantage of factor analysis (undertaken on the predictors) is to generate orthogonal variables, avoiding potential multicollinearity problems, the analysis of Variance Inflation Factors (VIFs) for each variable included in the models has been carried out in order to double check the presence of multicollinearity issues both between predictors and controls and among controls themselves. VIFs of every variable, both predictors and

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[16] Since in the divisional subsample the effect of internal and external growth strategies is not isolated in the present analysis the comparison was made by using the arithmetic average of the two types of growth strategies coefficients from the standalone subsample.

control ones, are abundantly inferior than 10, that is considered, according to a general rule of thumb[17] for this kind of analysis, the threshold for the arising of severe multicollinearity issues.

The second test was performed to detect possible problems with the distribution of the residuals: the appropriate technique for such analysis is the Durbin-Watson test that request the test-statistic to be as close as possible to 2. In model I the Durbin-Watson statistic is 1,831, while in model II is even slightly better with a value of 1,861 showing that both of the models do not suffer from heteroschedasticy problems. Similar result from model III, where the Durbin-Watson statistic is 1,828.

Hence the results from these test confirm the robustness of the adopted models and provide further support for the validity of the analysis and its related findings.

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[17] Moreover VIFs of all predictors and of controls excluded one third of year controls are also lower than the most conservative threshold of 4.

DISCUSSION

This research has produced interesting and meaningful results about key success factors for divisional buyouts. The first evidence that clearly emerges since phase one of the analysis is that a relevant differential in returns between the buyout of an already autonomous compa and a part of a larger entity such a business unit or a division of a conglomerate do exist as qualitatively argued by several scholars contributions (e.g. Wright et. al. 2001; Meuleman et. al. 2009) and proposed in hypothesis 1. Furthermore the results from the regression model allow to shed light on the impact that different types of strategies undertaken by buyout funds in managing acquired companies with a particular focus on divisional buyouts.

Both model I and model II give strong and consistent proof that divisional buyouts do have effectively relevant and superior potential for upside growth and develop of strategic entrepreneurship (Wright et. al. 2001; Meuleman et. al. 2009). Specifically it was found that the highest probability of having a top performing deal in case of divisional buyout is associated with growth oriented strategies (both internal and external). This finding is consistent with theoretical predictions proposed in hypothesis 2, meaning that the most powerful lever that a buyout fund can exploit when approaching a purchase of a non autonomous entity is to boost its growth. This value creation strategy reveals to be particularly effective for divisional buyouts as it represents the expression of the unlocked potential for upside growth previously constrained by parental control. This suggests that buyout funds can be very effective in exploiting the upside potential of divisions by giving them the correct mix of autonomy.

Another strategic approach highly significant for divisional buyouts is the refocusing oriented one, while revitalization strategies are not only less significant, but also are less effective in terms of final deal return compared not only to refocusing but also to restructuring. This leads to very interesting insights that partially contrast with the existing theories. The fact that refocusing oriented initiatives have shown to be the second most effective and significant strategic approach for divisional buyouts highlights once again the importance of the unexpressed potential of divisions part of a larger entity approached by buyout funds, those returns are likely to be higher in case of exploitation and redeployment of already existing resources also for what concerns managerial resources basically through new incentives and rewards systems.

On the contrary the minor impact than expected registered for revitalization based strategies can have its explanation within the intrinsic features of this kind of approach: revitalization embeds a number of strategic initiatives that are generally more risky and require a longer amount of time to be effectively implemented and start benefit from them. Thus the variance of results deriving from innovation, renewal and radical organizational changes should be wider than the one associated to more conservative and less intrusive ones. Additionally the deeper is the strategic change, the longer it takes to be successfully completed, therefore revitalization based strategies in buyout context can face the limitation of the relatively short time horizon of the fund compared to the time that this kind of interventions require to be accomplished. For this reason, this result might be produced by the fact that revitalization strategies are less effective than refocusing ones to create value from divisions, but that they are less compatible with buyout's time horizons.

Hence the conducted analysis confirms hypothesis 4 and rejects hypothesis number 3.

Finally restructuring, intended as efficiency pursuing, that in model III has confirmed to be the major value creating driver for standalone targets, has shown as the forth - in terms of impact - strategic approach for divisional buyouts as hypothesized. This is a further confirmation that non autonomous entities in a buyout context generally benefit more from the exploitation of their unexpressed potential, than from optimization efforts respect to other types of buyouts. This result leads to the acceptance of hypothesis 5.

For what concerns the effects of downsizing strategies, they were found no significantly different from zero in all the tested models with the consequent impossibility to make any definitive conclusion about hypothesis 6. This can be due to the ambiguous effect of the increased management focalization that a reduction of company's perimeter determines and one peculiar aspect of this kind of strategic approach that consists in divestitures for what, more than hands-on skills, financial arbitrage ability to "buy-low, sell-high" is required.

Furthermore and not surprisingly this study is consistent with the existing literature that consider investment's duration as an important determinant (negatively related with performance) of a buyout success: that's particularly true also because the industry standard measure for performance, Internal Rate of Return, for banal calculation structure, rewards early exits. Also the influence of the general economic cycle on buyout's return has been verified, since the years with significant impact on IRR in the adopted model are those from 1999 to 2001 included and from 2005 to 2007 corresponding to two most recent private

equity boom according to Strömberg (2007 & 2009). Additionally the missing significant evidence of economies of scale is consistent with the general M&A literature.

Much more interesting is, indeed, the negative impact of a strategic ownership previous to the buyout that can be attributed to a general minor room for improvement that occurs when a division is sold by a company that has considered it as close to its core and thus it is supposed to have received more attentions and investments from the strategic former parent company than in the case of a financial owner. Furthermore consistently with Loos' (2006) conclusions, financial owners are supposed to be tougher counterparts in transaction negotiation, hence limiting funds' opportunities to benefit from a significant multiple expansion effect through the negotiation of a convenient purchase price.

Finally no evidence of positive impact of company purchase from a listed seller was found. This is particularly surprising specially for divisional buyouts that are expect to benefit from the so called "conglomerate discount" that should have lowered the purchase price in such cases. Otherwise this effect may be attributed to disclosure duties and stock market price implications for publicly listed sellers that make more difficult for bidders buyout funds to obtain particularly favorable price conditions or a favorable utilization of particular financial instruments of private equity industry such as seller notes or PIKs[18] etc.

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[18] A seller note is a deferred price agreement that keeps the previous owner of a company as a debt holder, while PIKs stands for Pay-in-Kind and are a form of seller subordinated debt. All these kind of instruments are designed in order to keep the previous owner committed to the company also after the buyout.

CONCLUSIONS

This paper aimed at exploring the determinants of a specific type of buyout performance: the so-called divisional buyout.

The analysis was carried out at deal level: the investigation unit was formed by 1364 portfolio companies during the holding period of the buyout fund. This was possible by the access, through a Bocconi's proprietary database, to confidential data from several General Partners PPMs. This kind of data source has only recently started to be used in academic research (Gottschalg, Loos & Zollo, 2004; Phalippou & Zollo, 2005; Loos, 2006; Gottschalg & Phalippou 2007; Phalipppou & Gottschalg, 2009) and, to the best of my knowledge, it has been used to asses mainly performance issues at fund level or at industry level and never to investigate the key success factors of a specific buyout type. Some deal-level contributions are present among the management literature (Meuleman, Amess, Wright & Scholes, 2009 for example), but their focus is always rather narrow both under the time extension and the geographical coverage aspects[19].

For what concerns specifically divisional buyouts, previous research has always addressed the issue of the different performance determinants respect to other buyout types only with qualitative approaches: to the best of my knowledge an empirical study of post-buyout key success factors with specific focus on non autonomous entities has never been conducted.

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[19] Meuleman, Amess, Wright & Scholes (2009) for example consider a sample of 238 deals carried out only in UK and limited at the 1993-2003 period.

This study has provided interesting findings: first it demonstrated the effective superior return potential for buyout funds of non autonomous entities respect to standalone ones. This happens mainly thanks to the exploitation of the locked potential for upside growth. From this point of view buyout funds have shown to be very effective in unlocking and developing previously constrained realities. Moreover from the analysis emerged that, when dealing with divisional buyouts, strategies aimed at improving and enhancing the already existing resources and capabilities are much more effective – in terms of deal's final performance – than those that pursue radical changes.

From the comparative analysis of divisional buyout's key success factors it is possible to gain also a relevant general lesson: it is becoming more and more crucial for buyout associations to detect effectively different value creation opportunities associated with different organizational forms of the target companies, since this "scouting capability" represents in some way the prerogative for the right strategy choice to be implemented on the acquired company.

Additionally it emerged that all strategies, with no difference between growth oriented and restructuring based ones, require always to be coupled with an internal reorganization of the already existing resources and capabilities in order to provide effective support to the chosen strategic path.

Limitations and extension for further research

This paper feces several limitations. The first concerns the issue about the validity of IRR as a measure of value creation. As previously mentioned, because of its calculation formula, Internal Rate of Return tends to emphasize rapid deals, but not necessary early cash flows are synonymous of value creation especially when complex processes are involved such as post-acquisition integration or innovation. A less time dependent and/or purely financially driven measure for assessing value creation may for sure represent an interesting field for further investigation on these topics.

Moreover, this study uses gross IRR as dependent variable measure, which obviously causes an approximation in excess of the effective deal's performance. Further research may involve attempts to reconstruct - as better as possible - the net return, preferably starting from deal level cash flows, if available.

Another limitation concerning variable measurement is due to the data available in the examined PPMs. In fact it was possible only to distinguish whether a specific strategic initiative was undertaken or not, since in PPMs generally GPs provide only qualitative information on these topics. As a consequence it was not feasible to obtain more precise information about the examined interventions: for example, details about the amount invested for each initiative or the precise timing of implementation within the holding period are for sure possible investigation field that can be used to extend the results of this study.

Nevertheless with the analysis techniques adopted this study was unable to clearly separate the effect of the two different types of growth strategies for divisional buyouts: internal and external ones. This is without any doubt a limitation since these two growth patterns present

different features and implications, for example concerning the company perimeter and the integration capabilities. Thus a possible extension for the present research involves a further specification about this issue.

Possible extensions for this research may also take into account a number of effects that were not explicitly included within the present analysis, such as management substitution rate and aspects concerning the tailoring features of post-acquisition integration: for example the velocity of change and the degree of integration with eventual other portfolio companies as well as the degree of autonomy given to the acquired firm. Moreover the analysis can be extended by including controls for industry and country of the acquired company as well as for the eventual systematic above average performance of some GPs. Nevertheless also the impact of the amount and the type (strategic or financial) of eventual co-investment can represent an interesting additional dimension to test.

Theoretical and managerial implications

From the present work's findings it is also possible to gain some interesting implications both under the academic and the managerial point of view.

An interesting implication under the theoretical perspective derives from the general evidence emerged from the analysis: the example given by divisional buyouts suggests that the value creation levers vary significantly among different buyout types (family buyout, secondary buyout, etc…). Regarding this peculiarity of strategic key success factors among different

buyout's type it may be interesting to develop an investigation at deal level for each buyout cluster in order to gain specific insights of key success factors for different buyout types. Such a starting point for further empirical investigation is suitable in case of a large dataset is available, so that it could be possible to create statistically significant subsamples; alternatively it is possible to catch deal type distinction with the creation of ad hoc control variables for each buyout cluster.

Evidences from the analysis suggest that General Partners should focus on growth strategies for the business in managing non autonomous portfolio companies instead of spending efforts in cost cutting alternatives. Additionally the effective implementation of new incentives schemes coupled with internal resources reorganization are always essential for successful deal's accomplishment. Hence when facing the alternative to either downsize or expand acquired companies, the latter choice seems to be strongly recommended for buyout funds: even though quick cost cutting measures – such as layoffs – are without any doubt value adding too, General Partners should avoid major "asset stripping".

This paper provides also some relevant implications under another managerial perspective: the already mentioned difference in value creation key success factors depending on the characteristics of buyout's target can lead, first, to an additional variable that has to be taken into account by fund's managers during the target selection process. Secondly the registered effect of specific strategic approaches rises an issue about General Partners expertise: it may be useful to integrate industry and/or process specific competences – not purely financial – in GPs human capital in order to be able to exploit better the potential that lies under the different organizational characteristics of every type of buyout. Building on these ideas it

becomes a primary concern for buyout funds to evaluate the possibility of deliberately direct their learning processes and its consequent capability development both directly, through recruitment, and indirectly, through knowledge codification and articulation of processes (e.g. manuals) as Zollo (2009) suggests.

According to the demonstrated requirement of matching between competences and skills – acquired by buyout funds with past acquisitions – and both value creation drivers and post-acquisition strategic approach, it may be useful for General Partners to consider their stock of capabilities as a primary criteria in subsequent fund's orientation.

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APPENDIX A

Post-acquisition events' aggregation criteria. Based on Wright et.al. 2000 and 2001.

1) INTERNAL GROWTH

   Improved market position   Geographic expansion
   Expansion of facilities   Growth in sales
   Expansion distribution chain

2) EXTERNAL GROWTH

   Add-on acquisitions
   Joint ventures
   Alliances

3) DOWNSIZING

   Divestitures   Reduction supply chain
   Increased use of outsourcing   Reduction distribution chain

4) RESTRUCTURING → operational efficiency

   Reorganization supply chain   Organizational restructuring
   Relocation of facilities   Layoffs
   Consolidation of facilities   Cost Cutting
   Reorganization distribution   Working capital reduction
   chain

5) REFOCUSING → redeployment of resources and interest alignment

   Change in sales   Focus on R&D
   Focus on marketing   New incentive plans
   New reporting system   New IT system
   New Budgeting System

6) REVITALISATION → restoring entrepreneurial spirit and promote innovation

   New marketing approach   Replacements in management
   New company/brand names   team
   New pricing strategy   New processes
   New products   Margin increased
   New sectors
   New segments
   New services
   New R&D strategy
   GP managers intervention

APPENDIX B

SPSS complete output tables for predictors' factor analysis for model I model II and model III.

Rotated Component Matrix[a]

	Component							
	1	2	3	4	5	6	7	8
INT_GR	-,010	,016	,037	,962	,018	,030	,125	,088
EXT_GR	-,047	,050	,019	,099	,147	,036	,960	,040
DOWNSIZE	-,110	,917	,081	,040	,023	,128	,032	,062
RESTR	,093	,084	,102	,032	,012	,956	,038	,093
REFOC	,068	,018	,957	,032	,002	,097	,017	,102
REVIT	,078	,040	,091	,081	-,012	,079	,041	,973
divIntgr	,422	,057	,030	,563	,610	,027	-,120	-,013
divExtgr	,281	,136	,016	-,015	,798	,062	,422	-,025
divDownSize	,357	,837	-,063	-,008	,125	-,014	,046	-,010
divRestr	,735	,107	-,026	,024	,104	,531	,022	-,052
divRefoc	,745	,034	,568	,048	,069	-,007	,016	-,040
divRevit	,764	,134	-,002	,044	,205	,016	-,073	,327

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Rotated Component Matrix[a,b]

	Component				
	1	2	3	4	5
INT_GR	,708	,152	-,274	-,046	-,030
EXT_GR	,815	-,193	,192	,108	,052
DOWNSIZE	,073	,123	,927	,040	-,029
RESTR	,055	,090	,042	,986	,088
REFOC	,023	,116	-,027	,088	,984
REVIT	-,006	,989	,151	,103	,129

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

b. Only cases for which ORGSTR = 1 are used in the analysis phase.

Rotated Component Matrix[a,b]

	Components				
	1	2	3	4	5
INT_GR	,025	,908	,104	,018	,138
EXT_GR	,046	,123	,014	,038	,975
DOWNSIZE	,090	,093	,950	,055	,011
RESTR	,784	-,203	,200	,041	,151
REFOC	,108	,029	,056	,989	,039
REVIT	,728	,112	-,158	,149	-,094

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

b. Only cases for which ORGSTR = 0 are used in the analysis phase.

Exhibit. 1 - Composition of value creation drivers through decades
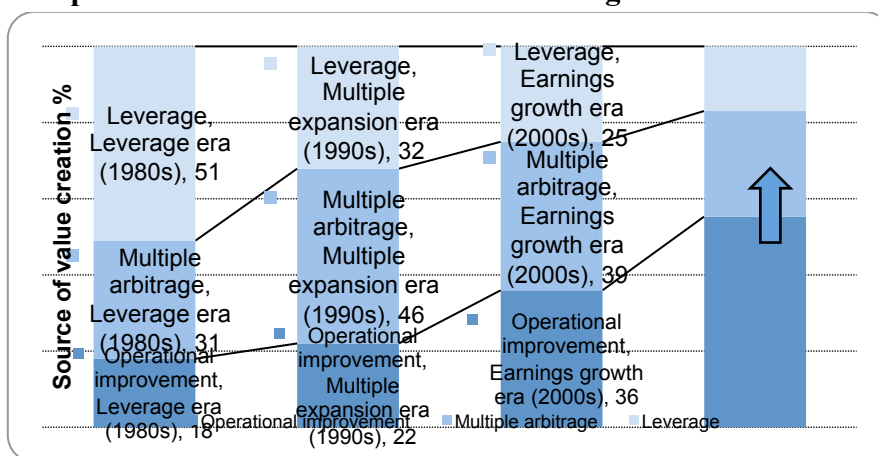
Source: BCG-IESE estimate[20] (2008).

Exhibit. 2 – Buyout classification
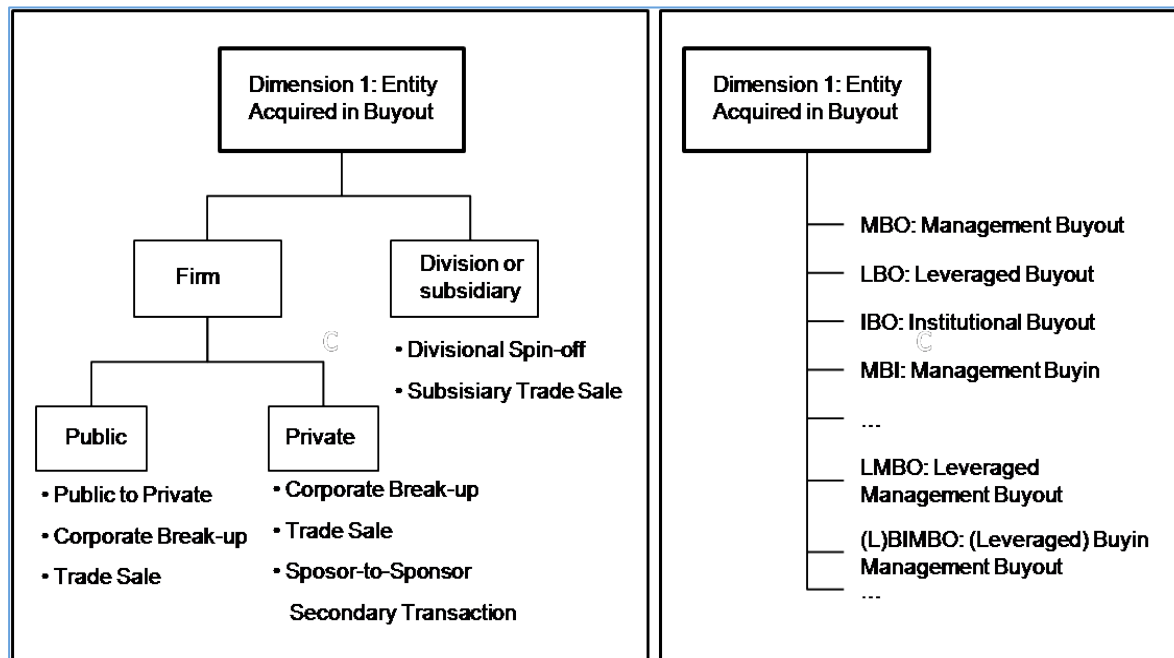
Source: Adapted from Berg (2005)

Exhibit 3 – Value creation levers in buyouts

VALUE CREATION LEVERS	INTERVENTIONS
Financial engeneering	Optimizing the capital structure Reducing corporate tax
Increasing operational effectiveness	Cost cutting and margin improvements Reducing capital requirements Removing managerial inefficiencies
Increasing strategic distinctiveness	Corporate refocusing
Reduction of agency cost	Reducing agency cost of FCF Improving incentive alignment Improving monitoring and controlling
Mentoring	Restoring entrepreneurial spirit Advising and enabling

Table 1 – Variables.

Variable type	Description	Label
DEPENDENT	Gross Internal Rate of Return	LNdecIRR
PREDICTOR	Internal Growth	INT_GR
	External Growth	EXT_GR
	Dowsizing	DOWNSIZE
	Restructuring	RESTR
	Refocusing	REFOC
	Revitalization	REVIT
	Selection variable for divisional subsample	ORGSTR
CONTROL	Investment duration (year fraction)	HOLDPER
	Listed seller	PUBLIC
	Strategic seller	STRATOWN
	Total transaction size	LN_TRSIZE
	Closing year	Y(*xxxx*[21])

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[21] Closing year of the deal. Four digits.

Table 2 - Factors for the whole sample.

Factor	Factor attribution	Load factor	New label
1	Divisional subsample belonging	98%	DIVIS
2	Downsizing	75%	DOWNSIZE
3	Refocusing	84%	REFOC
4	Internal Growth	80%	INT_GR
5	Growth in divisional	76%	GROWTH_DIV
6	Restructuring	75%	RESTR
7	External Growth	78%	EXT_GR
8	Revitalization	84%	REVIT

Table 3 - Factors for the divisional subsample.

Factor	Factor attribution	Load factor	New label
1	Growth (external and internal)	91%	GROWTH
2	Refocusing	90%	REFOC
3	Restructuring	83%	RESTR
4	Revitalization	84%	REVIT
5	Downsize	82%	DOWNSIZE

Table 4 - Factors for the standalone subsample.

Factor	Factor attribution	Load factor	New label
1	Restructuring + Revitalization	85%	RESTR_REVIT
2	Internal growth	86%	INT_GR
3	Downsizing	82%	DOWNSIZE
4	Refocusing	77%	REFOC
5	External growth	80%	EXT_GR

Table 5 – Independent T-Test on average gross IRR between subsamples.

	N	IRR Mean	Mean difference	Levene's Test for Equality of Variances		T-Test for Equality of Means	
				F	**Sig.**	**T**	**Sig. (2-tailed)**
Divisional	445	114,29	34,68	21,540	,000	3,685	,000
Standalone	919	79,44					

Table 6 – Independent T-Test for average gross IRR between subgroups.

		N	IRR Mean (%)	Mean diff.	Levene's Test for Equality of Variances		T-Test for Equality of Means	
					F	**Sig.**	**T**	**Sig. (2-tailed)**
Internal growth	*Divisional*	218	114,34	30,67	4,487	,035	2,065	,039
	Standalone	426	83,67					
External growth	*Divisional*	117	106,03	29,74	5,920	,015	2,210	,034
	Standalone	388	76,29					
Downsizing	*Divisional*	100	113,51	24,63	1,507	,221	,940	,348
	Standalone	151	88,88					
Restructuring	*Divisional*	239	103,60	22,05	2,673	,095	1,673	,095
	Standalone	379	81,55					
Refocusing	*Divisional*	266	124,57	48,86	34,233	,000	4,033	,000
	Standalone	598	75,71					
Revitalization	*Divisional*	202	98,80	23,24	2,518	,113	2,010	,045
	Standalone	327	75,58					

Table 7 - Model I. Multiple regression on the whole sample.

	Coefficients	Standardized coefficients	T-Statistics	Sig.
Dependent variable				
LNdecIRR				
Independent variables				
DIVIS	,010	,017	,660	,509
DWSNZ	,019	,033	1,286	,199
REFOC	,026	,044	1,703	,089
INT_GR	,031	,053	2,056	,040
GROWTH_DIV	,058	,086	2,547	,011
RESTR	,040	,068	2,648	,008
EXT_GR	,025	,043	1,665	,096
REVIT	,026	,045	1,758	,790
Controls				
HOLDPER	-,830	-,287	-9,763	,000
PUBLIC	-,115	-,046	-1,805	,071
STRATOWN	-,074	-,047	-1,775	,076
LN_TRSIZE	,015	,033	1,287	,198
Y1982	,288	,013	,471	,638
Y1986	,253	,017	,532	,595
Y1987	-,247	-,016	-,524	,600
Y1988	,197	,026	,595	,552
Y1989	-,343	-,050	-1,076	,282
Y1990	-,358	-,074	-1,215	,225
Y1991	-,261	-,048	-,866	,387
Y1992	-,017	-,360	-,589	,556
Y1993	-,129	-,035	-,453	,651
Y1994	-,111	-,027	-,387	,699
Y1995	,239	,070	,852	,394
Y1996	,273	,102	,993	,321
Y1997	,388	,169	1,419	,156
Y1998	,362	,139	1,317	,188
Y1999	,587	,293	2,158	,031
Y2000	,689	,342	2,533	,011
Y2001	,434	,204	1,809	,071
Y2002	-,321	-,159	-1,189	,235
Y2003	-,295	-,148	-1,095	,274
Y2004	-,396	-,201	-1,471	,141
Y2005	,503	,223	1,859	,063
Y2006	,626	,219	2,283	,023
Y2007	,560	,103	1,878	,061

Y2008	-,288	-,019	-,612	,541
R^2	**,357**			
Adjusted R^2	**,334**			
F-Statistics	**6,870**			
Sig.	**,000**			

Table 8 – Model II. Multiple regression on divisional subsample.

	Coefficients	Standardized coefficients	T-Statistics	Sig.
Independent variables				
GROWTH	,063	,093	2,856	,004
REVIT	,027	,045	1,768	,077
DOWNSIZE	,012	,018	,700	,484
REFOC	,041	,069	2,707	,007
RESTR	,032	,054	2,104	,036
Controls				
HOLDPER	-,083	-,287	-9,778	,000
PUBLIC	-,115	-,046	-1,803	,072
STRATOWN	,092	-,059	-2,296	,022
LN_TRSIZE	,016	,035	1,362	,173
Y1982	,232	,011	,379	,705
Y1986	,279	,018	,588	,556
Y1987	-,271	-,018	-,576	,565
Y1988	,218	,028	,657	,511
Y1989	-,358	-,052	-1,124	,261
Y1990	-,382	-,078	-1,295	,196
Y1991	-,273	-,050	-,908	,364
Y1992	-,198	-,041	-,675	,500
Y1993	-,158	-,043	-,556	,578
Y1994	-,139	-,034	-,485	,628
Y1995	,270	,080	-,965	,335
Y1996	,292	,109	1,061	,289
Y1997	,423	,184	1,551	,121
Y1998	,389	,149	1,415	,157
Y1999	,621	,310	2,286	,022
Y2000	,718	,357	2,644	,008
Y2001	,461	,217	1,922	,055
Y2002	-,355	-,176	-1,319	,187
Y2003	-,330	-,166	-1,227	,220
Y2004	-,429	-,217	-1,595	,111
Y2005	,537	,238	1,985	,047
Y2006	,668	,234	2,438	,015
Y2007	,595	,109	2,000	,046
Y2008	-,304	-,020	-,646	,518
R^2	**,354**			
Adjusted R^2	**,333**			
F-Statistics	**7,352**			
Sig.	**,000**			

Table 9 – Model III. Multiple regression results on standalone subsample.

	Coefficients	Standardized coefficients	T-Statistics	Sig.
Independent variables				
RESTR+REVIT	,043	,074	2,882	,004
INT_GR	,027	,045	1,776	,076
DOWNSIZE	,019	,034	1,331	,183
REFOC	,032	,055	2,139	,032
EXT_GR	,035	,059	2,319	,021
Controls				
HOLDPER	-,083	-,287	-9,802	,000
PUBLIC	-,113	-,046	-1,780	,075
STRATOWN	-,093	-,059	-2,301	,022
LN_TRSIZE	,016	,035	1,326	,185
Y1982	,236	,011	,385	,700
Y1986	,284	,019	,585	,550
Y1987	-,254	-,017	-,540	,589
Y1988	,222	,029	,670	,503
Y1989	-,360	-,052	-1,129	,259
Y1990	-,379	-,078	-1,286	,199
Y1991	-,270	-,050	-,898	,369
Y1992	-,198	-,041	-,672	,502
Y1993	-,151	-,041	-,531	,595
Y1994	-,138	-,033	-,482	,630
Y1995	,269	,079	,959	,338
Y1996	,293	,110	1,066	,286
Y1997	,442	,184	1,547	,122
Y1998	,387	,149	1,408	,159
Y1999	,618	,309	2,277	,023
Y2000	,719	,357	2,643	,008
Y2001	-,456	-,215	-1,902	,057
Y2002	-,350	-,174	-1,300	,194
Y2003	-,327	-,164	-1,215	,225
Y2004	-,428	-,217	-1,591	,112
Y2005	,536	,237	1,982	,048
Y2006	,666	,233	2,432	,015
Y2007	,599	,110	2,012	,044
Y2008	-,317	-,021	-,674	,500
R^2	**,354**			
Adjusted R^2	**,333**			
F-Statistics	**7,320**			
Sig.	**,000**			