Private Equity Fund Investing

Investment Strategies, Entry Order and Performance

Anna Söderblom

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In memory of my mother Inga Söderblom

Preface

This report is a result of a research project carried out at the Center for Entrepreneurship and Business Creation at the Stockholm School of Economics.

This volume is submitted as a doctor's thesis at Stockholm School of Economics. As usual, the author has been entirely free to conduct and present her research in her own ways as an expression of her own ideas.

SSE is grateful for the financial support provided by the Lundberg Foundation and Stockholm School of Entrepreneurship that has made it possible to fulfill the project.

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Abstract

Private equity investing (PE) has experienced a rapid growth on a global scale over the past several decades and has become a significant industry. But while scholars have devoted considerable effort to studying the area of risk capital investing into businesses, research about private equity as an asset class is surprisingly scarce. The aim of the dissertation is to address this gap by enhancing the understanding of PE fund investing in general, and specifically about how heterogeneity in investor-specific characteristics and entry order strategies may impact performance.

Outside of the PE literature, the major theoretical framework for the dissertation has been derived from the entry order streams of research. By cross-fertilizing theories about first mover advantages (FMA) with ideas stemming from the imitation literature, a developed research model and thereby a richer set of tools to theoretically explain entry order behaviors and outcomes in environments less prevalent for existing FMA research has been developed.

The strategy pursued to achieve the dissertation's objectives was to apply both inductive and deductive research approaches. In order to provide a rich and comprehensive understanding of private equity as an asset class, a qualitative study was undertaken based on in-depth interviews with institutional PE fund investors. In addition, in order to facilitate a thorough investigation of the links between organizational characteristics, entry order and performance, a quantitative study was also carried out. Hypotheses were tested through the statistical analysis of unique data covering all PE funds raised in Sweden between 1983 and 2003, collected within the frame for this dissertation.

Based on a comprehensive set of interviews with PE fund investors, in-depth insights about variances in motives for investing in the asset class, ways of working, and investment strategies were acquired. One of the more interesting findings from this study is that there seem to be two significantly divergent investment strategies that lead to satisfactory performances when investing in PE funds: (i) to be a devoted, highly skilled and independent investor, or (ii) to copy the behaviors and decisions of other investors who are perceived as having high skills and thus have attained prominence in the market. This, in turn, suggests that organization-specific characteristics determine which strategy will be the optimal choice for a certain investor.

Amongst several novel results, the hypothesis-testing study indicated that the level of environmental uncertainty has a clear impact on which organization-specific factors explain entry order, as well as which factors impact the ability of an organization to take advantage of a chosen entry order. Furthermore, the study pointed at

organizational reputation as an especially valuable asset in situations of uncertainty. While a good reputation does not directly lead to superior performance, it may be used in exchange for favorable entry order positions.

Acknowledgements

The decision to at some point in my life defend a doctoral dissertation goes way back – and finally, I am here. While the topic, to be honest, has changed quite dramatically throughout the years, the idea of researching the field of private equity investing has its roots from a clear practical concern I faced back in 2005: Who actually makes money in this business – and how? Despite several challenges and obstacles that I have stumbled across in this process, it has been a privilege and a great pleasure to do research about a topic that is of genuine interest to me. Writing a thesis is more lonely work than I ever anticipated. Having said that, it would not have been possible to complete this dissertation without support from a number of persons to whom I owe a huge debt of gratitude. Three people have been the most important during this process.

First, I owe thanks to my mother, Inga Söderblom, who has been my guiding star throughout my life in everything – not least in the decision to embark on the academic research path. Most importantly, she instilled in me the belief that you could do anything you set your mind to do.

Second, thanks to my main supervisor Professor Carin Holmquist, who by far has been the most academically influential person during this process. Carin's seniority and extensive experience from research, with an impressive ability to identify weaknesses and ambiguities on both a general and a detailed level, has been of vital importance for the completion of this thesis. With genuine professionalism, Carin has constantly helped me get back on track when I have been lost and close to giving up. I am forever grateful for having had Carin as my supervisor.

Third, thanks to my brother, Sven Söderblom. With his extensive experience in the field of PE fund investing, Sven has been a direct source of knowledge and insight that were of invaluable importance to the thesis. Furthermore, he has supported me in innumerable other ways. This includes enabling interviews with international PE fund investors, seemingly interminable rounds of reading and commenting on draft thesis manuscripts, serving as an endless source of ideas and suggestions, and, not least, encouraging me to keep going in both good and bad times. I owe you forever for this, Nenne.

I would also like to extend my gratitude to the other two members of my supervising committee. Professor Per Strömberg has provided priceless expertise about the field of private equity and financing. Professor Howard Aldrich, with his superior knowledge has given me very useful comments related to institutional theory and prominence. Thanks to both of you for your much-appreciated guidance and feedback on my work.

A few others also deserve special mention. For support during the final stages of work, I want especially to thank Professor Leif Lindmark. Leif's prompt and detailed comments on my draft thesis have been truly invaluable, not least when he generously suggested strategies to unravel what seemed to be difficult passages in the thesis. Furthermore, Stefan Jonsson, in the role of opponent in my final seminar, provided excellent feedback built on an impressive and thorough job. I am also indebted to Richard Sandberg for his valuable comments on statistical and methodological matters. Many thanks go to Mikael Samuelsson for reading and providing valuable feedback on several versions of the draft thesis manuscripts. I will always be grateful to Karin Hellerstedt for generously providing me with practical advice and support when I desperately needed both. Pär Mårtensson has provided me with excellent feedback on the draft thesis – but also, on a more general level, has become a highly respected colleague with whom I really look forward to working in the future. Erik Wetter is a dear friend with whom I have had numerous fascinating discussions throughout the years; many thanks go to Erik for providing ideas, encouragement and good company. Further, I am very grateful for the friendship and collaboration in both research and teaching with Ciara Sutton; I really look forward to our future cooperative efforts.

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The dissertation was crucially dependent on the people willing to participate in the data collection process. I am particularly grateful to the approximately 70 partners and investment professionals working at private equity firms or in institutional organizations who have taken the time to participate in this study. Without their willingness to share their experiences and insights, this thesis would never have come true.

Last but not least, I am immensely fortunate to have a fantastic family. Above all, thanks to my husband, Hasse, who has been the steady rock in my life for more than twenty years. And of course, to my wonderful children, Erik, Petter and Nils. I love you all.

Stockholm, May 2011

Anna Söderblom

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CHAPTER 1

Introduction

This first chapter describes the empirical setting of the dissertation, introduces the theories which will be drawn upon, and presents the principal research aims and areas. Furthermore, brief descriptions of the methods used and the intended contributions of the research are presented. Finally, the overall organization of the dissertation is outlined.

1.1 Private equity investing

Over the last several decades, private equity (PE) investing has evolved extensively to become a significant industry compared to the small niche market it used to be. Today, it is considered to play a crucial role in the economy, by boosting innovation and growth in promising startups or expanding firms, as well as by fostering the restructuring of mature companies (e.g., Davila *et al.*, 2003; Cressy *et al.*, 2007).

Private equity can somewhat simplified be defined as any type of equity investment into a business not quoted on a stock market[1]. The investment may be used to develop new products and technologies, to expand working capital, to make acquisitions, to strengthen a company's balance sheet, or to buy out other shareholders. The formal PE market is usually split into two main sub-segments: buyout (BO) capital and venture capital (VC), as depicted in Figure 1.1[2]. A buyout is a transaction in which a business, business unit or company is acquired from other shareholders, typically applied to mature companies. A company that carries out buyout deals, manages and develops the entity after a buyout transaction has been made, and finally exits the investment is referred to as a buyout firm. In contrast, venture capital firms invest

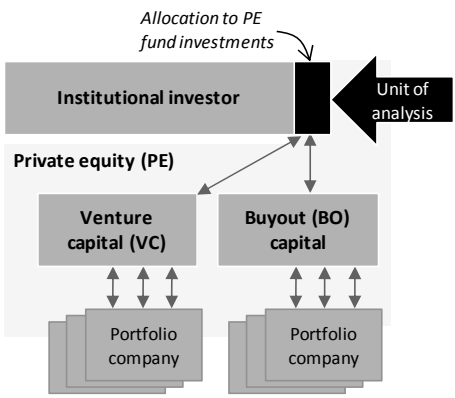

Figure 1.1. Schematic overview of the PE investment market

[1] See Chapter 2 for a more detailed and comprehensive definition of 'private equity'.

[2] Informal PE investing made by so-called 'business angels' are outside of the scope of this dissertation. See footnote in Section 2.1.1 for a more detailed discussion about these types of investors.

capital into early-stage companies with large growth potential or in firms that are in the expansion phase. Both types of PE investors are active owners, suggesting that they will not only bring capital but also relevant knowledge, business networks and certification to their investments. Other similarities between VC and BO investors are that they primarily invest third-party capital and have formal organizational structures for their investment activities. There are several types of PE firms, but the vast majority of them invest capital through fixed-life funds where portfolios of companies are built, developed and finally exited. Once one such fund has been closed, these PE firms need to raise new funds in order to stay in business.

Providing risk capital for business development is, however, just one side of the private equity coin. On the other side, this activity constitutes an investment class for professional institutional investors as a component of the alternative investment universe. By investing in funds managed by PE firms, institutional investors bring capital to the industry without taking any responsibility for the operations of funds or their portfolio companies (Sahlman, 1990). Examples of such PE fund investors are investment companies, banks, families and foundations, endowments, insurance companies, private and public pension funds, government agencies, and corporate investors. The majority of institutional investors allocate most of their capital to traditional assets such as publicly traded stocks, bonds, short-term money market instruments, and similar securities. Over time, however, many financial organizations have increased the proportion of PE funds in their portfolios; in this manner, institutional investing has become the single largest source of capital to the PE industry (EVCA/PWC/Thompson Financial). But while scholars have devoted significant efforts to studying the area of risk capital investing into businesses, private equity as an asset class is probably one of the least understood segments of today's financial markets.

The theoretical rationale for investing in an alternative asset class such as private equity is to improve the risk and reward characteristics of an investment portfolio, with the expectation that the asset will offer a higher absolute return whilst improving portfolio diversification (Markowitz, 1952; Bodie *et al.*, 2005). In comparison with investing in more traditional securities such as public stocks or bonds, however, investing in PE funds is considered a complex task. This is due to their long-term and illiquid nature, as well as the noticeable lack of transparent and publically available information pertaining to PE funds (Tuck, 2003). Moreover, there are material variations in performance across PE funds, implying that while PE investing may generate excellent returns, investors could also face large losses (Kaplan and Schoar, 2005; Phalippou and Gottschalg, 2009). Hence, a PE fund investor needs to have the ability (or luck) to select funds with the potential to deliver attractive returns. However, deeper insights about which investment strategies have proven successful, and, more specifically, about how these strategies may differ across various investor types, seem to be missing

from the literature. This is somewhat surprising given the large amounts of capital that private as well as public institutions devote to this particular asset class each year, as a broader understanding about performance determinants could improve investor returns.

In the development of strategies for PE fund investing, there are obviously a number of areas to consider, including geographical focus, industrial focus, phase focus, allocation levels, as well as governance and control of investments. Another, more general, strategic question of central importance within the strategy literature concerns the time of entry into a new market or context (Porter, 1980). First movers may enjoy significant advantages – or disadvantages – depending on organization-specific features, as well as on the macro-environmental situation (Lieberman and Montgomery, 1988). Being the first to enter a hitherto unexplored area is in general associated with greater risks, and especially in the case of high uncertainty (Lieberman and Montgomery, 1988; Lieberman and Asaba, 2006). In such situations, organizations (and individuals) may be inclined to await resolution of uncertainty, and thereafter to make decisions based on knowledge that has been gleaned from observations of others' behaviors and performances (DiMaggio and Powell, 1983; Bikhchandani *et al.*, 1992). On the other hand, failing to make an early move can also be risky, not least when this course of action results in missed opportunities. Moreover, a favorable entry order strategy for one organization may not be the optimal choice for another, depending on firm-specific capabilities and resources (Lieberman and Montgomery, 1998).

The vital importance of entry order also within the PE fund investment sector may be illustrated by the following quote from an employee working at a Swedish financial institution, explaining his organization's willingness to invest in the first fund set up by a newly established PE firm:

> *"We could do first-time fund investments but only if the team members have considerable previous private equity experience and have worked together before. The advantage of a first-time fund is that the incentive to succeed is so high – they need to be successful or otherwise they will never get a second chance. In addition, if the* [PE firm] *does achieve superior returns, other* [PE fund investors] *run the risk of not getting a seat in the next fund."*
>
> (Investor in private equity funds, spring 2008)

This dissertation seeks to enhance the understanding of PE fund investing in general and performance determinants specifically, with a particular focus on entry order strategies. Given this specific focus, it is fitting to look for theoretical explanations and guidelines in the streams of research that have focused on entry order.

1.2 Entry order theories

Entry order has received a significant amount of interest from scholars working in a broad range of disciplines, including economics, marketing, strategic management, institutional sociology, and population ecology, to mention but a few. Two streams of research, however, tend to dominate the field: the first mover advantage (FMA) literature rooted in strategic management and economics, and the imitation literature stemming primarily from institutional theory and from economic research about herding behaviors.

Lieberman and Montgomery (1988) present the most frequently cited description of how first mover advantages may appear and evolve. According to these researchers, an environmental change creates an opportunity for a first mover advantage to emerge. Organizations will assess the various forms of uncertainty associated with a new market and weigh potential advantages against the risks of early entry. If the firm considers that substantial pioneering benefits exist, it has an incentive to attempt to enter early. These advantages can, however, only be materialized if the organization possesses the capabilities needed to make a first move and to capitalize on this opportunity. Fueled largely by the resource-based view of the firm (Wernerfelt, 1984; Barney, 1991), a significant amount of FMA research is oriented around which, and how, firm-specific assets capture benefits from early entry. Subsequent research within this stream does also, to some extent, investigate possible second mover advantages (Lieberman and Montgomery, 1998; Finney *et al.*, 2008; Yoo *et al.*, 2009). But despite the fact that the empirical FMA literature is voluminous, no conclusive evidence for either first or late mover advantages exists. Instead, researchers have presented conflicting results, where some identify pioneering as the superior entry strategy (Makadok, 1998; Robinson and Min, 2002), while others argue that later entrants in general are more successful (Golder and Tellis, 1993; Suarez and Landzolla, 2005).

One common explanation for these contradictory results refers to environmental differences, stressing that not only organizational capabilities but also the contextual setting will affect whether or not first, or for that matter second, mover advantages will emerge (Lieberman and Montgomery, 1988; Kerin *et al.*, 1992; Schoenecker and Cooper, 1998; Suarez and Lanzolla, 2007). That is, firms possessing the capabilities and skills needed to build first mover advantages in one particular segment may not have the attributes needed to develop similar pioneering benefits in another market and hence may be better off as second movers in those contexts.

A vast majority of the FMA research has been focused on product introductions within mature industrial and consumer packaged goods markets. In other words, borrowing from the terminology presented by Lieberman and Asaba (2006), in rather stable environments where high levels of rivalry is expected (for exceptions, see e.g., Carow *et al.*, 2004; McNamara *et al.*, 2008; Barnes *et al.*, 2009). This has led some to

question whether conventional theoretical explanations behind first and second mover advantages are fully applicable to radically different types of contexts, such as service industries and environments characterized by high uncertainty and low rivalry. A suggested route for expanding the FMA theory further is to cross-fertilize it with ideas arriving from other entry order research streams, where the imitation literature appears as the primary choice (Lieberman and Asaba, 2006; Ethiraj and Zhu, 2008).

Although having widely disparate theoretical roots, institutional theory and the economic herding literature have at least one major area of interest in common: that of imitators and imitative behaviors. Imitating clearly is also a form of entry order decision-making, although the body of imitation literature typically adopts other perspectives on the phenomenon compared with the case for FMA-based research[3]. First, the imitation literature naturally orients around the imitator, i.e., the entity following others into new areas. Second, while FMA scholars primarily have been engaged in analyzing the outcomes from pioneering, the imitation literature is typically preoccupied with investigating factors that influence organizations to follow others (e.g., DiMaggio and Powell, 1983; Banerjee, 1992; Haunschild and Miner, 1997). Third, contrary to the FMA literature the imitation research has first and foremost analyzed entry order occurring in contexts characterized by high levels of uncertainty (Lieberman and Asaba, 2006). In such environments, organizations are found to be particularly prone to follow the decisions and behaviors of prominent parties in a social group. The line of thinking holds that when the quality of something or someone is difficult to assess due to ambiguity and uncertainty, evaluations are influenced by the social standing and trustworthiness of the entities associated with it (Podolny, 1994). Thereby, the imitation literature has advanced so-called 'social approval assets' as especially important in situations of high uncertainty (Barney, 1991; Suchman, 1995; Fombrun, 1996; Deephouse, 2000; Jensen, 2008). Of these, reputation holds a salient position.

The concept of reputation involves external expectations placed on an organization's capabilities to deliver value along some key performance dimensions, as determined by the general perceptions of previous efforts (Fombrun, 1996; Rindova *et al.*, 2005; King and Whetten, 2008). This suggests that an organization that acts superior, or achieves superior performance, in relation to its peers is likely, as it becomes known to a wider audience, to be considered a high-reputation entity. Furthermore, an organization with a favorable reputation is expected to be in a position where it can capitalize on its prominence and thereby enjoy various advantages (Rao, 1994; Fombrun, 1996). Hence, a strong reputation is viewed as an important asset, one that is further en-

[3] A late entrant may be defined differently from an imitator, where institutional theory typically emphasizes the mimicking behavior of imitators. In this thesis, though, the concept of imitation is used more broadly to describe the action of following others into new markets or contexts. For more detailed definitions of pioneers and followers, see Section 3.2.

hanced by its socially complex and difficult to imitate nature. Given that an organization possessing a good reputation has strong incentives not to damage its prominent position, affiliations with such organizations also send positive signals about the recipient firm or entity (Stuart *et al.*, 1999). In other words, reputation is a demonstrably important asset that may be used directly or indirectly for various favors, especially in situations of uncertainty. Thereby, the organizational capabilities and resources that are used in traditional FMA research to identify successful first or second moves, e.g., experience and large pools of financial and human capital (Mitchell, 1989; Schoenecker and Cooper, 1998), may need to be complemented with a social approval type of asset, such as reputation, in order to better explain how a specific entry order advantage may appear and develop within contextual settings characterized by rather high levels of uncertainty.

This introduction to the two major research streams concerned with entry order shows that although both focus on the same basic phenomenon, the streams have developed in parallel and have largely been devoted to different research topics (see Table 1.1).

Table 1.1. Overview of general focus within the FMA vs. the imitation literature

	FMA LITERATURE	IMITATION LITERATURE
Theoretical background	Strategic management, economics	Institutional theory, economic theory of herd behavior
Predominant entity in focus	First movers/Pioneers	Imitators/Late movers
Predominant research question	Consequences of pioneering	Factors influencing imitation
Predominant industrial setting for empirical studies	Industrial and consumer packaged goods	Various industries and contexts
Predominant contextual setting for empirical studies	Stable, mature, high rivalry	Uncertain, ambiguous, low rivalry
Mainly empirically or theoretically driven research	Empirically	Theoretically

The FMA literature has primarily been focused on first movers and the consequences of pioneering. The empirical body of research is large, but it has a clear focus on mature packaged goods industries, i.e., rather stable and competitive segments. In contrast, the imitation research has been oriented around followers and has concentrated on investigating the causes behind imitation in situations of high uncertainty. And while the imitation literature is considered rich in terms of theory but short on evidence, the opposite is true for the FMA literature (Ethiraj and Zhu, 2008).

To summarize, neither of the two major entry order theory streams seems to be sufficient to alone explain entry order and subsequent performance effects in a financial services industry such as private equity fund investing. Instead, cross-fertilization

between the two and further development of theory are needed. Hence, another goal for this dissertation is to contribute to the continuous development of the entry order theories with additional theoretical insights and novel empirical tests.

1.3 Research aim and research areas

Based on the conclusions arrived at in the previous sections, the overall aim for this dissertation may be formulated as:

> *To enhance the understanding of PE fund investing in general, and, more specifically, to explore how heterogeneity in organization-specific characteristics and entry order strategies may impact investment performance.*

This aim can be divided into four major research areas. The overall research area concerns the asset class of private equity, with the purpose of providing a broader understanding of PE fund investing in general. Within this area, the dissertation is particularly concerned with performance determinants where various factors that may affect returns from PE fund investing are analyzed. Furthermore, out of these investigated performance determinants, investment strategies in general and entry order strategies specifically, are of central importance. Figure 1.2 provides an illustration of these research areas.

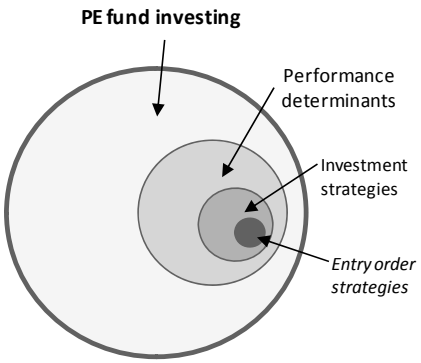

Figure 1.2. Overview of research areas in focus for the dissertation

Given the specific aim of investigating entry order strategies and subsequent performance related to PE fund investing, it is expected that the dissertation will contribute to the continuing extension of theories about entry order in three major ways. First, the dissertation will seek to combine ideas from two major research streams focusing on entry order, i.e., the FMA and the imitation literatures, as suggested by Lieberman and Asaba (2006). As such, the expectation is to develop a richer set of tools with which to theoretically explain causes behind entry order behaviors and outcomes that also apply in environments less commonly addressed in current FMA research (in this case, a financial services industry setting characterized by varying degrees of uncertainty). Second, since reputation has been put forward as a key organizational asset, especially in situations of uncertainty, this specific construct will be included and tested within the framework of the current research. Third, in order to stretch the theories even further, novel definitions of first and second movers are advanced. That is, investors who are willing to invest in first-time funds set up by

recently founded PE firms are in this research referred to as 'first movers,' while investors who primarily invest in more mature funds are categorized into 'second movers.'

1.4 Research approach and methods

Given the limited understanding of private equity as an asset class, an explorative research approach appeared to be a natural choice. Hence, a qualitative study was carried out. The study is based on in-depth interviews with investment professionals responsible for PE fund investing activities at 36 institutional organizations in Sweden and in the UK. The purpose for this study was to: (i) in general, provide a rich and encompassing understanding about PE fund investing, and (ii) more specifically, to investigate heterogeneity across institutional investors in terms of perceptions of this particular asset class, with a special focus on investment strategies. In addition, the results emerging from the qualitative study served as a source for the hypothesis development and interpretation of results in the quantitative study discussed next.

Since the dissertation specifically seeks to investigate order of entry behaviors and performance consequences, a deductive research approach was deemed to be appropriate. Hence, a quantitative study was also conducted within the framework of this dissertation. In this study, conceptual structures and hypotheses were developed on the basis of an extensive review of entry order theories and empirical studies. In addition, existing PE research and results emerging from the qualitative study were incorporated in the hypothesis constructions. In total, 16 hypotheses were developed. Thereafter, research steps including the operationalization of key constructs, the collection of data and, finally, empirical testing, were carried out.

Gaining access to comprehensive and reliable data about PE fund investing in general, and to information about returns on a more specific level, are considered to be some of the more challenging tasks when testing hypotheses involving performance measurements for this particular industry (see e.g., Kaplan and Strömberg, 2009; Cumming and Walz, 2010). Hence, the decision was made not to use existing secondary sources, but instead to utilize my personal network in the Swedish PE industry to get data. The information was collected from 28 personal, highly structured, interviews with senior managers in Swedish PE firms. These primary data were thereafter complemented with information from several secondary sources, such as the Preqin, Capital IQ, and Orbis databases. All data were stored in a Microsoft Access database. In total, the database contains unique and comprehensive information about 334 institutional investors that have invested in 72 Sweden-based PE funds in the period 1983 to 2003. The hypotheses were tested using logistic and multiple linear regressions in the STATA software.

This collected data were also used for three other analyses: (i) to describe the rise and development of the Swedish PE market, (ii) to achieve a high-level overview of performance heterogeneity across PE fund investor types, and (iii) for testing PE fund performance determinants. These studies contributed to the overall aim for the dissertation to provide a broader understanding of PE equity as an asset class.

All in all, this dissertation builds on one qualitative study, one major quantitative hypothesis-testing study and three minor quantitative studies as described above.

1.5 Intended contributions

This dissertation is expected to contribute to both theory and practice in the field. The research adds to the existing knowledge in three ways. First, it contributes to the strand of PE research by providing a deeper understanding of the major capital providers to the industry, namely, institutional PE fund investors. Particularly, it increases the understanding of performance determinants for PE fund investing, with a special focus on entry order strategies. By utilizing my personal network, I managed to collect and build a unique database of PE fund investments and attributed performance data. Hence, the dissertation also responds to the call to test PE performance-related hypotheses using a dataset other than those available from public sources (which are considered to possess serious shortcomings). Second, by integrating ideas from two central research streams about entry order, each of which has fundamentally different theoretical roots, the expectation is that the theoretical explanations accounting for heterogeneity in entry behaviors and performance will be richer and applicable to broader contexts. In addition, by applying and testing developed theories about entry order in a novel way, the theories are expanded further. Third, the dissertation has implications for practitioners, as well. Most significantly, it is expected that these findings will provide asset managers with an enhanced understanding of performance determinants for PE fund investing, and, more specifically, of the connections between organizational characteristics and entry order behaviors on the one hand and expected returns on the other. For more details on the expected contributions of the dissertation, see Chapter 10.

1.6 Central concepts and terminology

This dissertation contains four theoretical constructs that are of special importance in the processes of theory development, hypothesis testing, and the analysis of results, as well as for the final conclusions and discussions. They are: (i) first movers or pioneers, (ii) late movers, followers or imitators, (iii) uncertainty, and (iv) reputation. Chapter 3 provides detailed definitions of these theoretical concepts, while they are operationalized to facilitate empirical research in Chapter 7.

As with most industries, the PE market makes use of a number of context-specific terms. Before a deeper understanding of the industry in focus may be developed, these terms need to be outlined and defined. A discussion of some of the more important PE concepts and terms used in the present research is provided in Chapter 2. A glossary of common private equity terminology is available in Appendix 1.

1.7 Organization of the dissertation

Table 1.2 provides a specific outline of the contents of each chapter in this dissertation. The overall structure for the thesis is illustrated in Figure 1.3, where the arrows indicate how the chapters are linked to each other.

Table 1.2. Specification of dissertation contents

CHAPTER	CONTENTS
Chapter 1: *Introduction*	Describes the empirical setting for the dissertation, introduces the theories that will be drawn upon, and presents research aims and areas. Furthermore, brief descriptions about methods used and intended contributions are presented.
Chapter 2: *Private equity: Empirical and theoretical frameworks*	Contains two major parts. First, it provides an overview of the PE investment field from a general but especially from a fund investor perspective. The fundamentals of PE are outlined, including terminology, historical background, key players and special characteristics. Second, the chapter presents a PE literature review with a special focus on studies about fund investing, performance determinants and investor heterogeneity.
Chapter 3: *Entry order theories and a developed theoretical model*	Reviews and develops theory that is central for a deeper understanding of entry order behaviors and effects. Relevant theoretical perspectives are presented, whereof the most important arrive from the FMA and the imitation literatures. A developed theoretical model of factors influencing entry order patterns and outcomes is presented.
Chapter 4: *Research strategy*	Presents the research strategy including research approach, chosen research methods and overall design. Describes how data collection and analysis processes have been carried out for the empirical studies. Considerations of research quality are discussed.
Chapter 5: *Analyses of the Swedish PE market, performance heterogeneity across investors and fund performance determinants*	Provides three distinct analyses of PE fund investing: first, an overview of the types of institutional organizations that have invested in Swedish PE funds over the years, and how the activity levels among investor types have varied over time; second, a high-level presentation of performance heterogeneity across PE fund investor types; and third, PE fund performance determinants are elaborated upon. All three analyses make use of the data collected within the framework of the hypothesis-testing study.
Chapter 6: *Analysis of PE fund investors and their investment strategies*	Presents results and analyses derived from the 36 in-depth interviews with PE fund investors. The analysis seeks to provide a deep understanding of how differences in organizational characteristics may affect institutional investors' motives for investing in private equity, ways of working, satisfaction with investment performance, and respective choices of investment strategies.

Table 1.2. Specification of dissertation contents, continued

CHAPTER	CONTENTS
Chapter 7: *Specification of the research model concerning entry order and performance*	The theoretical model presented in Chapter 3 is operationalized based on existing research and from new insights acquired from the studies presented in chapters 5 and 6. Hence, this chapter may be seen as a bridge between theory and new insights on the one hand, and the hypothesis-testing study on the other.
Chapter 8: *Hypothesis development*	Based on the research model outlined in the previous chapter, 16 hypotheses are developed and presented. The hypotheses deal with organizational characteristics, entry order and performance.
Chapter 9: *Prediction of entry order and performance*	Presents results and analyses from testing the 16 hypotheses formulated in Chapter 8.
Chapter 10: *Conclusions and implications*	Conclusions from the empirical studies are discussed and linked to entry order theory and to existing PE research. Interpretations of general patterns and their theoretical meanings are offered. Other insights acquired throughout the development of this dissertation are presented to further the discussion. Thereafter, research contributions are elaborated upon. Finally, limitations of the studies and suggestions for future research are discussed.

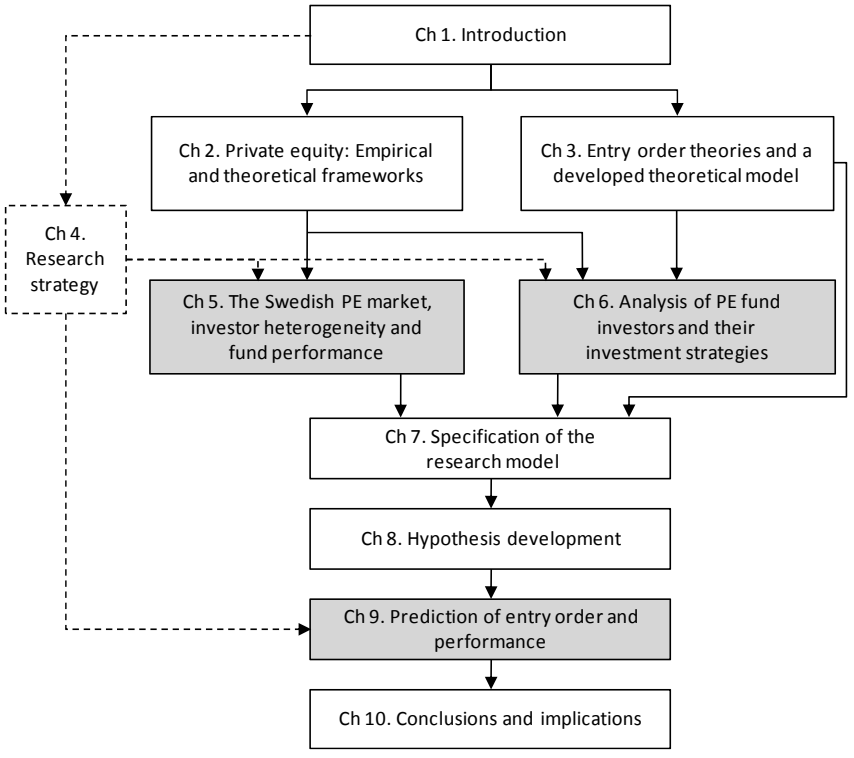

Figure 1.3. Structure of the dissertation (empirical studies in shaded boxes)

CHAPTER 2

Private equity: Empirical and theoretical frameworks

This chapter provides a presentation of the private equity (PE) field from both a general perspective and an institutional investor perspective, i.e., viewing private equity as a financial asset class. First, the fundamentals of this empirical field are outlined, including the terminology, key players, and special characteristics. This is followed by a general overview of how the PE market arose and has evolved over time. Thereafter, a more detailed discussion of PE as a financial asset class is provided, including descriptions of: (i) the financial motives behind investing in this type of asset, (ii) the investors in PE funds, (iii) historical allocation levels to PE, (iv) how PE partnerships are structured, and (v) the unique characteristics of PE fund investments. The chapter ends with a literature review of extant PE research, with a special focus on studies closely related to this dissertation, i.e., those that are oriented around PE fund performance, associated performance determinants, and studies about institutional PE fund investors.

2.1 Fundamentals of private equity[4]

2.1.1 Definitions

Given the broad nature of the field, providing a comprehensive and univocal definition of the term *private equity* is no easy task. One of the more commonly used definitions arrives from the European Private Equity and Venture Capital Association (EVCA), which refers to private equity as "*equity capital to enterprises not quoted on a stock market*". However, this rather simplistic description needs to be adjusted to more fully incorporate the investment activities occurring within the PE industry. First, while the majority of PE investments are made into unlisted companies, such investments may also target publicly traded firms (Fraser-Sampson, 2007). Second, private equity investments may include securities that have 'equity features' but actually are debt instruments, e.g., convertible preferred stocks or subordinated debts that include conversion privileges (Fenn *et al.*, 1997). Third, and most importantly, while other alternative assets such as hedge or real estate funds have some similarities to private equity, the transformational, value-added, active investment strategy with an apparent exit objective which is associated with this particular asset class clearly sets it apart from most other types of investments (Gilligan and Wright, 2010).

[4] A glossary of private equity terms defined, or referred to, in this chapter and used throughout the dissertation is provided in Appendix 1.

Based on the development stage of the target firms, private equity is often split into two major sub-segments: venture capital (VC) focused on earlier company stages, and buyout (BO) capital for more mature businesses[5].

Venture capital targets firms in their seed, startup or expansion phases. A commonly used definition of institutional, or formal, venture capital is "*independent, professionally managed, dedicated pools of capital that focus on equity or equity linked investments in privately held, high-growth companies*" (Gompers and Lerner, 2001, p. 146)[6]. As this quote indicates, the target businesses of interest to early-stage VC firms primarily belong to high-growth industries, such as IT, telecom or biotech (Hellmann and Puri, 2000). Few of these investee firms are profitable at the time of the first venture capital investment. However, venture capital can also be used in expansion phases (so-called expansion or growth capital), where investments are made into more mature companies. Such target firms may enjoy steady growth and profitability, but are seeking to expand their operations at a more rapid pace. Furthermore, venture capital is also provided to distressed companies, i.e., turnaround capital. Hence, venture capital includes, among other things, the capitalization of firms for developing new products and technologies, expanding operations, commercialization activities, internationalization, making acquisitions, or turning around unprofitable businesses. Although convertible debts may be used in venture capital transactions, the primary investment instrument is equity. A venture capitalist would typically seek minority stakes in the firms she invests in, leaving the majority ownership (at least initially) to the investee firm's management (Fraser-Sampson, 2007). Despite a minority ownership, however, a venture capitalist will through comprehensive contractual restrictions ensure decisive influence on strategically important decisions and thereby keep close control of her investee firms (Kaplan and Strömberg, 2003; Cumming, 2008). Another characteristic of VC firms is the propensity for syndicated investments, i.e., investing alongside other venture capitalists and thereby sharing financial and operational risks (Sorenson and Stuart, 2001).

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[5] There are many types and styles of private equity that are difficult to categorize using a simple classification matrix. Common investment strategies include management buyouts, leverage buyouts, venture capital, expansion/growth capital, distressed investments, mezzanine capital, private investments in public equity (PIPE), and secondary investments. In order to simplify and shorten the presentation, however, this overview will divide private equity investments into the two classical areas venture capital and buyout capital.

[6] VC investments can also be independent, or informal, when referring to so-called business angel investments. Angel investors are typically defined as high net worth individuals investing a proportion of their assets directly into unquoted companies to which they have no family connections (Harrison and Mason, 2000; Avdeitchikova *et al.*, 2008). To some extent, business angels function in a manner that is rather similar to formal early-stage venture capitalists in their focus on start-up firms as well as by offering guidance and assistance in addition to capital infusions. The major distinction between the two, however, is that while business angels operate with their own money, formal VCs make investments primarily on behalf of others. Hence, given the scope of this thesis with its focus on institutional investors, the definition of venture capital, and consequently private equity, in the current work excludes business angel investments.

Buyout capital comprises investments in established private, or publicly listed, companies that are expected to undergo a fundamental change in strategy and operations. In a buyout transaction, the business, or business unit, is fully or partly acquired from other shareholders. The segment can broadly be divided into insider driven deals whereby the BO firm invests alongside the existing management team, i.e., management buyouts, or outsider-driven deals when a new management team enters the company, i.e., management buyins (Wood and Wright, 2009). Capital invested in buyout processes can, for example, be channeled to business acquisitions or mergers, spinouts of divisions or subsidiaries, or to resolve ownership and management issues. Contrary to venture capitalists, a BO firm would typically target majority control of investee companies that will entail significant ownership and a majority of voting rights (Kaplan and Strömberg, 2009). Most buyouts are financed with a substantial level of leverage, where the target company's assets are used to secure loans and its operational cash flow is used for future repayments. Hence, an important criterion when selecting investments is that the target firm shows strong cash flows at the time of the investment. Normally, a combination of various debt instruments from banks and other debt providers are used in buyout transactions. As a result, the term 'leveraged buyouts' is commonly used when referring to these types of transactions.

While the descriptions above identify a number of differences between venture capital on the one hand and buyout capital on the other hand, they do share a number of fundamental commonalities. One of the unique traits of private equity investing is the *active ownership style*, so-called 'value-added investing', where the investors are expected not only to bring capital but also to provide non-financial services in terms of relevant knowledge and experience, business contacts, and certification (e.g., Wright and Robbie, 1998; Gompers and Lerner, 2001; Fraser-Sampson, 2007; Kaplan and Strömberg, 2009). Hence, in contrast to most shareholders in public companies, private equity investors put a great deal of effort into monitoring, managing and restructuring their investee companies to create value (Gilligan and Wright, 2010). Such operations require specific skills and practices, whereby a private equity management team consists of specialist professionals working closely with their investee companies while maintaining significant influence and control of strategic decisions and operational activities.

An important differentiator between PE firms is their respective source of capital. Although most PE firms invest funds primarily on behalf of third parties, the capital origin affects the organizational as well as the legal structure of the receiving PE firm. Some PE companies are listed on public stock exchanges, whereby the capital naturally arrives from a broad range of larger and smaller investors. Private equity businesses may also be affiliates or subsidiaries of banks, insurance companies or industrial corporations, and may make investments on behalf of their parent firms. For example, large technology companies occasionally set up special organizations that are responsible for

investing in technologies of interest to the parent company. Alternately, banks might prefer to centralize their private equity activities in a separate subsidiary, distinct from the organization's role as a commercial bank. These firms are referred to as corporate or captive PE firms. Other private equity entities are government-affiliated investment programs that support early-stage companies either directly through state or regional funding, or channeled through governmentally funded VC firms. Such PE firms tend to put developmental objectives related to national innovation and growth above commercial success. The most common organizational structure in the PE industry, however, is the *limited partnership* structure that is an investment vehicle in the form of independent and fixed-life funds (Sahlman, 1990; Gompers and Lerner, 2001). In such structures the PE firm serves as the general partner (GP) and is fully responsible for the management of the fund, while institutional investors provide the bulk of the capital in passive roles as limited partners (LPs). A more detailed description of the limited partnership structure will be presented in Section 2.2.4.

Given these closed-end fund structures, another common feature of most PE firms is that they build *portfolios of investee firms*. The number of portfolio companies per fund depends on the size of, and the strategic directions for, the fund (Sahlman, 1990). When one fund is closed for further investments, the PE firm needs to raise new funds in order to stay in business. Yet another special feature of private equity investing is the *time horizon*, which tends to be longer than for many other investments. The holding periods for later stage investments are expected to be around three to five years, while the holding periods for earlier investments often are extended to five to seven years (European Commission, 2006)[7].

A final distinguishing characteristic of private equity is that paybacks and rewards to investors, to the PE management team and to the investee firm's management will be released first when an investee firm has been exited. Investments may be exited in several ways, whereof initial public offerings (IPOs) or trade sales, where the entire firm is bought by a third party, are considered the most advantageous (Gompers and Lerner, 2001). Thus, a crucial task for PE firms is to *successfully exit* their investments.

[7] Many PE firms, however, have during economic downturns been forced to keep their investment companies for significantly longer periods than these presented averages.

Table 2.1. Characteristics of PE investments. Inspired by Fraser-Sampson (2007, p. 9) and the European Commission (2006, p. 10 ff)

Formal VENTURE CAPITAL	BUYOUT CAPITAL
• Target firms in their early phases • Investee firms are rarely profit-making • Invest mainly in high-growth industries • Primarily use equity or equity-like instruments • Typically seek minority ownership	• Target mature established firms • Profit levels of investee firms crucial • Invest in various sectors • Large proportion of leverage used • Typically seek majority ownership
• Involve active ownership to drive value creation • Invest (primarily) third-party capital on a professional basis, often structured as limited partnerships • Build portfolios of investee firms • Medium- to long-term holding periods • Seek to exit the investments through IPOs or trade sales	

Table 2.1 provides an overview of general similarities and differences between the two sub-segments as discussed in this section. Based on these characteristics, in this dissertation the following definition of private equity will be used, which is in line with the definition set forth by Sahlman (1990) and the formulation of the European Commission (2006, p. 9): "*Private equity, consisting of venture capital and buyout capital, is the professional provision of capital and management expertise to companies in order to create value, and subsequently, with a clear view to an exit, generate capital gains after a medium to long holding period. Private equity firms act as financial intermediaries between businesses and, primarily, institutional investors.*"[8]

Before providing a more thorough overview of private equity as an asset class, a short historical discussion of the rise and development of the private equity industry is offered.

2.1.2 Rise and development of the PE industry[9]

The development of the private equity industry has occurred through a series of boom and bust cycles that have been ongoing since the middle of the twentieth century. While the two sub-segments of private equity, i.e., venture and buyout capital, have developed in parallel, they have followed interrelated tracks.

[8] The terms 'venture capital', 'formal venture capital' and 'VC' will in this thesis be used interchangeably. Similarly, the terms 'buyout capital' or 'BO capital' will be used synonymously. When referring to the managers of private equity funds, for simplicity reasons and given the thesis' focus, the terms 'private equity firms', 'PE firms', 'PE fund managers', 'general partners', or 'GPs', will all be used to describe the same actors. When discussing investors in PE funds, the terms 'PE fund investors', 'institutional PE fund investors', 'limited partners', and 'LPs', will all be assumed to have the same meaning. Finally, the company or entity into which a PE firm invests will be referred to either as a portfolio company/firm or an investee company/firm.

[9] An overview of the evolution of the Swedish private equity market is provided in Chapter 5.

The international roots of private equity investing are traced back to the establishment of the venture capital firm American Research and Development Corporate (ARDC) in 1946 as an effort to commercialize innovative technologies developed during the Second World War (Bygrave and Timmons, 1992). Also the passage of the Small Business Investment Act of 1958 and the establishment of the Small Business Administration (SBA) to provide financial and managerial support to small entrepreneurial businesses in the US, are considered important starting points for the modern private equity industry. During the 1960s and 1970s, private equity was primarily targeting startup firms within high-tech areas, and as a result, the term came to be almost synonymous with technology financing. The emergence of a larger buyout market first took off in the late 1970s (although the first leveraged buyout dates back to the 1950s). At this point, the public for the first time became aware of how private equity could actually affect public companies, through business dealing often associated with so-called 'corporate raiders' and 'hostile takeovers'. The typical targets for buyout firms were public companies whose stock prices were depressed due to poor management or misreading of their true potential (Friedman, 2009).

Until the late 1970s, capital provisions to the private equity markets were made in a rather unstructured and fragmented way. Investments were undertaken predominantly by wealthy families, industrial corporations or financial institutions, which invested directly into issuing firms (Fenn *et al.*, 1997), or originated from governmental initiatives. Up to this point, private equity was primarily a US-specific phenomenon. However, towards the end of this decade and during the beginning of the next, an international private equity market emerged. At the same time, the institutional capital flows to the industry increased dramatically. The main catalysts behind this development stem from regulatory and structural shifts in both Europe and the US (Bance, 2004). In the US, clarifications of the Employee Retirement Income Security Act (ERISA) in 1978, the so-called 'prudent man rule', relaxed many of the limitations of pension fund investments policies, including investments in private equity and other alternative strategies (Gompers and Lerner, 1999b). In the UK, the move towards the Competition and Credit Control policy in the beginning of the 1970s provided banks with greater investment flexibility (Bance, 2004). Similar structural and legal changes occurred throughout the rest of Europe, including changes in pension fund and insurance company regulations, which expanded the investment universe for institutional investors. In addition, a few tax reforms in Europe, e.g., more attractive gains from capital investments, positively affected financial institutions' propensity to invest in this particular asset class. At the beginning of the 1970s, the structure of limited partnerships arose as the dominant organizational form for PE fund investing. As such, the institutional investors' liabilities were limited to the committed capital at the same time that they avoided labor-intensive direct investment activities (Fenn *et al.*, 1997). This in

turn enabled higher allocations to the asset class. Taken together, these catalyst factors promoted a rapid increase in the amount of capital used for private equity investing.

The steady growth of capital into the VC industry in the late 1970s and early 1980s caused a virtual explosion of new VC firms in the US market. This resulted in an overcrowded market with large numbers of inexperienced venture capitalists, intense competition for promising investment opportunities, and over-investments (Gompers and Lerner, 1999b). However, these commitments came to a sudden halt in the late 1980s due to declining returns, a collapsing stock market and the withdrawal of international capital from the US market. After a thorough shakeout and consolidation of the industry in the beginning of the 1990s, only the more successful firms survived. Eventually, the returns became attractive again, after which the industry once again expanded, constituting the basis for a new, this time worldwide, VC boom, i.e., the 'dot-com bubble' era (Metrick, 2007). The boom occurred in the late 1990s, when many high-tech startups benefited from massive public interest in nascent Internet technologies and when initial public offerings of technology stocks were frequent occurrences. However, this unsustainable way of investing in largely unproven concepts eventually gave way to reality, leading to the NASDAQ crash in March 2000 and thereby to a massive valuation drop of startup technology firms. In practical terms, this turn of events paralyzed the entire global VC industry. Over the years to come, VC firms were forced to write off large proportions of their investments. A significant number of venture capital firms were swept away from the market since fund investors to a large extent abandoned the industry. By mid-2003, the industry had decreased in size to less than half its 2001 capacity (Kedrosky, 2009). A decade after the 'dot-com' collapse, little recovery has been seen in the VC industry on a general basis.

The buyout market also flourished in the 1980s. Besides the changed regulations and their positive effects on capital flows into the industry discussed above, the boom was also driven by the availability of high-yield debt, so-called 'junk bonds'. The changes in the ERISA act had enabled pension funds to invest in this type of riskier debt securities, which opened up a new financing source to buyout investments (Friedman, 2009). The buyout firms during this period were particularly focused on taking public companies private, and larger and larger deals were carried out as more capital flowed into the industry. As a result of the high leverage levels of most transactions, failed deals occurred regularly. However, the promise of significant returns on successful investments continued to attract more capital. During this time period, private equity was a controversial topic, commonly associated with hostile takeovers, i.e., the stripping of assets, widespread layoffs and job losses, and wind-downs (ibid.). As a response, some corporations adopted techniques to avoid unwelcome takeovers, such as so-called 'poison pills'. As a result, hostile takeovers became difficult to carry out which, together with the collapse of the junk bond market, caused the industry to face a number of bankruptcies of large buyout firms in the late 1980s. Consequently,

the prevailing way of conducting buyouts by taking public firms private declined significantly (Kaplan and Strömberg, 2009). Instead, by the early 1990s, the reemerging buyout market tended to favor midsized entities of non-publically traded firms. In order to earn legitimacy and respectability, buyout firms now typically made attractive propositions to existing management and shareholders of identified target companies, and also accepted slightly longer investment horizons. Hence, surviving BO funds found new routes for conducting their business and eventually the returns from buyout investing turned positive again. Thus, the buyout industry once again took off and experienced steady growth in the period from 1995 to 2007, except for a dip around the millennium shift on the back of the 'dot-com' crash (ibid.). The combination of historically low interest rates and thereby widespread access to cheap debt, regulatory changes for publicly traded companies (especially the Sarbanes-Oxley legislation from 2002), rising profitability in most industries and the allocation of significant investments from institutional investors to this particular asset class, caused an extreme development of the BO industry during the end of this period. Once again, the deals grew larger due to the significant inflow of capital. However, this flourishing market characterized by extraordinary growth and returns came to an abrupt halt in 2008 with the collapse of the world's debt markets and a deepening economic crisis that impacted countries around the world. After that, deal activity decreased substantially and has still not fully recovered (Kaplan and Strömberg, 2009).

After this general introduction to the PE field, the next section will take another view of private equity, i.e., the capital providers' perspective. This is the key perspective for this dissertation, which regards private equity as a financial asset class amongst other assets into which institutional investors, and others, make allocations and invest capital.

2.2 Private equity as an asset class

2.2.1 Asset allocation and financial asset classes

Two crucial questions that face all professional investors are: what financial asset classes should be invested in, and what would be an optimal mix of these. A widely used practice in the financial industry, when outlining asset allocation strategies, is derived from the ideas behind modern portfolio theory (Markowitz, 1952). The theory attempts to maximize expected portfolio returns from investments given a certain risk – or to minimize risk for a given level of expected return – by choosing an optimal mix of various assets. This is based on the fundamental principle of diversification, which is considered to help improve portfolio returns while reducing risk. However, what constitutes an optimal asset mix for one investor might not be the same for another. Instead, organizational characteristics and individual preferences will steer the selection

of the risk levels and return requirements that will be appropriate for a specific investor. These factors constitute the guiding stars when deciding upon investment strategies (Bodie *et al.*, 2005).

To many investors, liquidity, i.e., the ease and speed with which an asset can be sold at a fair price, will be an important factor in this decision-making process. A related concern is the investment horizon, which is the planned liquidation date for the investment. Other restricting factors arise from legal regulations or organization-specific constraints. While all professional investors managing third-party capital naturally are subject to prevailing laws and fiduciary responsibilities, there might be additional regulations that apply only to certain groups of investors (Davis and Steil, 2004). For example, asset allocation may be constrained by so-called 'denominator effects'. Institutional investors typically set guidelines for themselves in terms of the capital proportions that can be put into each of the various asset classes. As a result, a decrease in, for example, the value of public equity holdings may force investors to reduce their investments in private equity, since this share may come to account for a disproportionately large part of the overall portfolio. Other investors are subject to special restrictions. For example socially or ethically responsible funds may avoid investments within industries such as alcohol, tobacco, pornography, gambling or weapons. Moreover, some institutional investors must take additional steps to account for their clients' unique features. For example, pension funds typically differ in investment policies depending on the average age profile of participants (Bodie *et al.*, 2005). Or, such endowments that are only allowed to invest surplus funds may show a preference for investing in high-dividend yielding assets. Also, personal preferences at the individual-investor level are likely to impact investment strategies as well. All in all, legal and moral constraints, organization-specific regulations and personal preferences may prevent asset managers from achieving the most efficient frontier, as stipulated in Markowitz' (1952) theory of modern portfolios.

For decades, investors broadly built their portfolios using three traditional financial assets: (i) money market instruments, i.e., cash or cash equivalent securities, (ii) fixed income securities, i.e., bonds, and (iii) publicly traded stocks. These instruments have well-understood characteristics (Bodie *et al.*, 2005). For example, money market instruments are the most liquid securities, bonds are expected to deliver relatively low returns at low risk, and stocks to deliver higher returns at a higher risk. Over time, however, institutional investors started to look for supplementary assets to add to their investment portfolios. A broad dissatisfaction with falling equity markets and generally low interest rates, together with eased restrictions and changes in regulations, all contributed to an increasing interest in new types of financial instruments (IMF, 2005). Many of the new assets presented to the market were classified as so-called 'alternative assets'. The financial rationale to invest in such assets has two components (ibid.). First, while alternative assets are considered more risky than traditional instru-

ments, their returns are expected to outweigh the additional risks. In other words, they are expected to provide a better risk-return payoff than traditional investments. Second, alternative assets are assumed to have low correlation with traditional securities, and hence are assumed to contribute positively to portfolio diversification. Consequently, the number of alternative asset classes has increased. Today this category includes real estate, infrastructure, commodities, hedge funds and private equity. Furthermore, the level of capital allotted to these types of investments has grown rapidly over the last two decades, as will be discussed in a subsequent section. Before that, however, an overview of various types of institutional investors will be provided.

2.2.2 Institutional investors

Institutional investors are a heterogeneous group of organizations that populate the global capital markets. Davis and Steil (2004) define these organizations as "*specialized financial institutions that manage savings collectively of small investors towards a specific objective in terms of acceptable risk, return maximization, and maturity of claim*" (p. 12). The authors identify three main types of institutional investors: pension funds, life insurance companies and mutual funds. Other definitions have a broader scope and in addition include banks (e.g., Ryan and Schneider, 2002) and endowments (e.g., Lerner *et al.*, 2007) into the group of institutional investors. However, many organizations choose to manage their capital in-house by setting up internal investment organizations without passing through intermediaries. Such organizations function largely in a manner similar to those that are managing third-party capital, except that they are responsible for asset management of their parent companies. Following this, a broader definition of an institutional investor as "*an organization whose primary purpose is to invest its own assets or those it holds in trust for others*" is provided by Griffin (2009, p. 216). Based on this definition, institutional investors may include pension funds, insurance companies, banks, investment companies, endowments, large family offices, corporate investors and government organizations, which is in line with the definition set by EVCA. Given the dissertation's aim of providing a comprehensive understanding of institutional investing into private equity funds, this broader definition of institutional investors will be applied in the current work.

The major differentiating factor between institutional investors and other investors, i.e., individuals or smaller organizations, is obviously size, which has a number of implications. First, by collecting and managing large sums of capital, institutional investors provide a form of risk pooling and thus are expected to offer a better trade-off between risk and return than is generally possible via direct holdings for smaller investors (Davis and Steil, 2004). Second, larger size will typically allow for more resources, enabling recruitment of qualified and dedicated investment teams. This in turn suggests that institutional investors develop investment skills, which are especially important when investing in some of the more complex asset classes. Third, larger size

is also expected to lead to economies of scale and thereby to lower costs (ibid.). This may arise from the ability to transact in large volumes leading to lower commission charges, or from a more efficient use of internal resources. Fourth, larger size may provide access to investments that are not broadly available to small investors.

While larger size is a common characteristic for most institutional investors, although with major variances, they do not belong to a homogeneous group but rather possess significant differences that, as discussed in the previous section, depend not only on their respective risk tolerances and return requirements but also on their individual objectives and preferences. In the following section, various types of institutional investors are presented and discussed.

Types of institutional investors

A *pension fund* is an asset pool of savings for future retirement expenses (Davis and Steil, 2004). These funds manage the investments of employees' pension schemes, and are mainly sponsored by employers, although the use of personal savings (typically through contracts between individuals and life insurance companies) is common as well. There are two types of pension plans: private (or corporate) plans for employees in the private sector, and public pension plans, which are retirement vehicles for public sector employees, i.e., state and local government employees. With respect to pension funds, areas of importance when deciding asset allocation strategies include the age profile of members and the maturity of the funds. That is, if a fund's members are mostly retired individuals the duration needs to be shorter to guarantee liquidity, and vice versa (Bodie *et al.*, 2005). The management of pension funds may be handled internally or externally.

Another group of financial investors consists of *insurance companies*, which can be split into two distinct types: the first category includes companies selling life insurances, annuities and pension products; the second category includes property/causality insurance companies offering other kinds of insurance. Both types of insurers collect premiums that are invested with the objective of meeting eventual contractual obligations occurring in the future (Herrero, 2007). In addition, life insurance companies are also active investors of retirement savings. Life insurance companies typically have long investment horizons, while property/causality insurers tend to cover significantly shorter periods. All insurance companies are subject to regulatory regimes and restrictive tax and accounting rules, which may vary between various types of insurers or between countries (Davis and Steil, 2004). Pension funds, together with insurance companies, are among the largest investors in the world, where most of them originates from the Anglo-Saxon countries (Hobohm, 2009).

Commercial *banks* are financial institutions that, simply put, obtain capital deposits and lend money, and where profits are earned based on the spread between the

lending and the borrowing rates (Davis and Steil, 2004). Banking is a highly regulated market, adhering to standards such as Basel I and Basel II. These rules stipulate, among other things, that banks need to hold capital in accordance with perceived risk in order to safeguard overall solvency and economic stability (VanHoose, 2007). Therefore, commercial banks typically represent a relatively small percentage of the total institutional equity investments, including private equity (Ryan and Schneider, 2002). On the other hand, investment banks, i.e., institutions that assist corporations and governments in raising capital amongst other things, are often appointed as relatively large investors in PE funds.

One large set of institutional investors are the *investment companies*, also referred to as asset managers, a category that includes a broad variety of businesses. However, a common denominator for these organizations is that they provide professional management of financial assets on behalf of their clients (which may be other institutions or private investors). One way of investing such pools of capital is through so-called mutual funds. These funds are typically open-ended, where capital is raised by issuing shares of the fund to the public (Ryan and Schneider, 2002). There are many different types of mutual funds, including equity funds, bond funds, hedge funds, and fund of funds. One group of investment companies that have become sizeable and important capital providers to PE funds are *private equity fund of funds*. These institutions proliferated in the 1990s as smaller organizations and individuals began to demand access to private equity. Many of these latter entities were too small to gain direct access to better funds, and few had the organizational knowledge that would enable them to invest in such a complex asset class (Shanahan and Marshall, 2010). Hence, a large number of organizations and individuals began to choose to invest in private equity through these intermediaries despite higher costs in the form of an extra layer of fees.

Some of the first institutions to invest in private equity partnerships were *endowments*. These are organizations managing donated money or property, where the returns are used for purposes stipulated by the donor. Endowments are often made to universities and to other non-profit organizations. As opposed to most other investors, endowments typically have long investment horizons and relatively loose mandates (Fenn *et al.*, 1997). Hence, endowments are often found to be more willing to invest in high-risk and illiquid types of asset classes such as private equity. A similar type of investor in terms of size and method of working is *family offices*, investing capital on behalf of high net worth families. However, unlike the more altruistic endowments, these institutions are created to manage the wealth of individuals, and thus, to maximize profits (Hobohm, 2009).

Corporate investors are yet another type of institutional investor. Besides the fact that some corporate organizations manage pension schemes for their employees internally, as discussed above, most companies have a need for ongoing management of financial assets. Companies may use the proceeds to fund various activities such as acquisitions,

reinvestments into the existing organization, the establishment of new businesses, or to distribute it to owners through dividends. Meanwhile, existing funds are invested accordingly to the needs of the specific corporation. Similarly, *governmental organizations* manage financial assets on behalf of one specific stakeholder, i.e., the state or a local government. In addition to the pension funds for employees in the public sector, as previously mentioned, some of the most common vehicles for managing state-owned assets and reserves held by central banks and monetary authorities are so-called sovereign wealth funds (SWF). While most other institutional investors discussed above are largely located in developed geographical areas, the governments of many emerging countries have come to control large SWF funds (Hobohm, 2009). In addition, government agencies, i.e., state-controlled organizations that are responsible for the implementation and oversight of policies stipulated by the government, may have continuous needs for managing smaller amounts of financial assets (ibid.).

All of the above categories of institutional investors discussed in this section invest in private equity[10]. The next section will discuss the extent to which these investment activities are undertaken.

2.2.3 Allocations to alternative assets including private equity

In the past decades, investments made by institutional investors have witnessed a remarkable increase. For example, total assets under management by major global institutional investors exceeded USD 60 trillion in 2008, which was three times the amount managed by institutions in the early 1990s (Gompers and Metrick, 2001; IFSL, 2009). According to Davis and Steil (2004) there are several factors that have made investing via financial institutions attractive to smaller investors including ease of diversification, liquid-

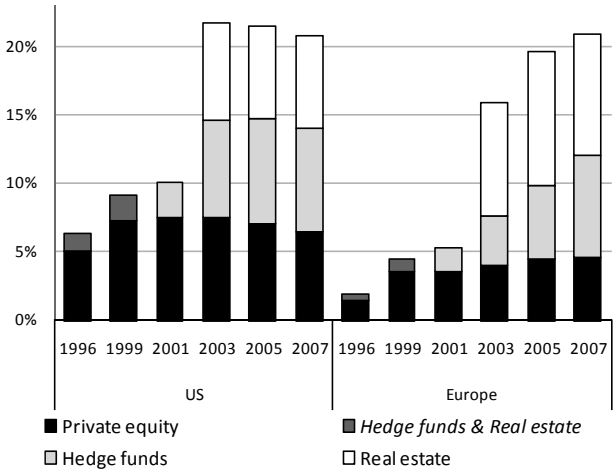

Figure 2.1. Institutional investors' allocations to alternative assets. Average values for large institutional investors as percentages of total assets. Source: Goldman Sachs/Rusell (2001, 2006, 2009)

[10] For a more thorough presentation of different types of institutional investors investing in private equity funds, see Hobohm (2009).

ity, improved corporate control, deregulations and technology advancements. While most of the institutional investments remain dedicated to traditional stock and bond assets, an increasing proportion is invested in various forms of alternative investment vehicles, including private equity. Figure 2.1 illustrates how large institutions' allocations to alternative assets, as percentages of total capital, changed between 1996 and 2007. Institutional investors in the US allocated about six percent to alternative investments in 1996, while they set aside more than 20 percent in 2007. European investors increased their allocations to alternative assets even more dramatically, from two percent in 1996 to 20 percent at the end of that period. As a result, US institutions and their European peers allocated approximately the same percentages to alternative instruments by 2007. Concerning private equity fund investments, however, US-based institutions have consistently allocated more capital to this asset class compared to their European counterparts, although the gap is closing. In 2007, European institutional investors on average allocated close to five percent to private equity fund investments, while US investors set aside seven percent.

As a result, the inflow of capital to private equity investments has increased dramatically during the last 20 years. Figure 2.2 shows how the total capital committed to European private equity funds has changed over the years. The 'dot-com bust' effect is obvious, with a clear decrease in total funds in 2002 to 2004. Also apparent is the decline in commitments to PE funds in 2007 to 2008, largely as a result of the global financial crisis. The average annual growth rate of total assets committed to European PE funds between 1991 and 2008 was 31 percent. The percentage of capital set aside to PE fund investing tends to fluctuate between various types of investors, geographies and, not least, over time. As outlined, internal diversification strategies, regulations and restrictions, along with the current market conditions, determine the proportion of capital that an institution will allocate to private equity investments (in addition to more irrational decision factors, as will be discussed in Section 2.3.6).

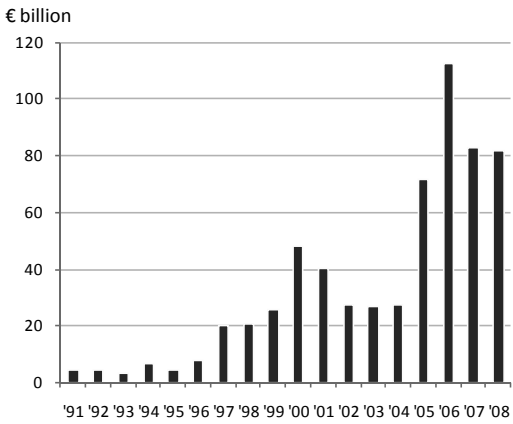

Figure 2.2. PE funds raised in Europe 1991-2008. Source: EVCA/PWC/Thompson Financial

Figure 2.3 depicts, in descend order, the largest to the smallest institutional investors in European PE funds over the years 1998 to 2008, measured in total committed capital. Figure 2.4 illustrates how the proportion of capital from each type of investor has changed over the years. The largest group of investors in European PE funds

throughout the period is pension funds, where the proportion of capital arriving from these institutions has been approximately on the same level, i.e., around 20 to 25 percent. But while US pension funds set aside on average five to eight percent for investments in PE funds between 1995 and 2005, their European counterparts only allocated one to three percent to the asset class during the same time period (Russell Research, 2006; 2009; 2010).

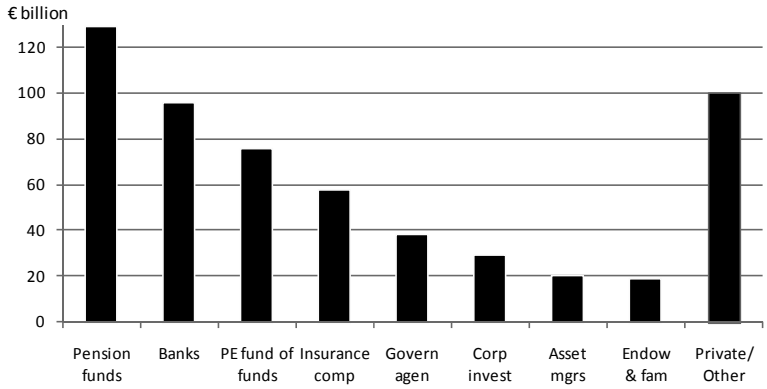

Figure 2.3. Types of European PE fund investors 1998-2008.
Source: EVCA/PWC/Thompson Financial

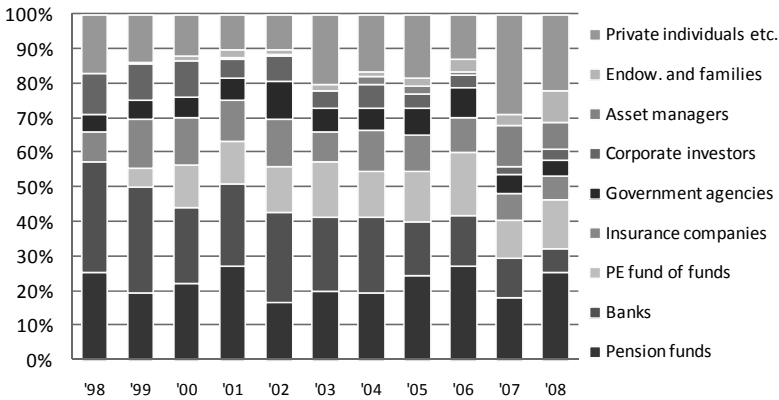

Figure 2.4. Contributions to European PE funds by type of investor 1998-2008.
Source: EVCA/PWC/Thompson Financial

The second largest capital providers to European PE funds during the period 1998 to 2008 were banks. Their share of the total committed capital, however, has quite radically decreased over the years. While banks represented more than 30 percent of the capital provided to European PE funds at the end of the 1990s, these investors only accounted for 10 to 15 percent towards the end of the period.

The third largest capital providers to European PE funds in the period 1998 to 2008 were private equity fund of funds, a group that was not even identified as a distinct class of investors in the beginning of the period, but which accounted for almost 15 percent of the capital provided by 2008. Finally, the fourth largest group of investors in European PE funds from 1998 to 2008 was insurance companies. While US insurers have been rather consistent in their allocations to private equity by setting aside a steady three to six percent, European insurance companies have over the years increased their allocation levels significantly. In 1995, European insurers allocated about two percent to private equity, while this figure had increased to more than ten percent by 2005[11].

2.2.4 Structure of limited partnerships

As mentioned previously, the prevailing structure for private equity fund investments in the US and in many European countries, including Sweden, is the limited partnership, in which the private equity firm serves as the *general partner* (GP) and the investors serve as *limited partners* (LPs). The limited partnership is a legally defined structure and is considered an attractive vehicle to investors mostly due to liability and tax reasons (Sahlman, 1990). In order for LPs to qualify for specific benefits, however, the partnership must meet some fundamental conditions of which one of the more important is that LPs are not allowed to participate in the active management of a fund. This means that the LP's liability is limited to the committed capital while the GP is fully responsible for all investment activities and assumes unlimited responsibility for the consequences of management and investment decisions (ibid.)[12]. Unlike corporations, these partnerships are set up as closed-end funds with finite life spans. Typically, a private equity fund has a duration of ten years, often with a possible two-year extension (Gilligan and Wright, 2010).

The mechanisms behind private equity investing through a limited partnership structure are fairly standardized[13] (see also Section 2.3.6). Each fund will have a group of investors, i.e., the limited partners, which is typically dominated by institutional investors and, to some extent, wealthy individuals. When signing up to a fund, LPs commit to provide a certain amount of capital to the fund during its lifetime, so-called

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[11] The Swedish institutional investors' allocations to private equity will be touched upon briefly when presenting results from the qualitative study in Chapter 6.

[12] Typically, though, LPs are almost always permitted to vote on certain key issues such as amendments of partnership agreements, extension of a fund's lifetime, removal of a GP, or portfolio valuation (Lerner and Schoar, 2004).

[13] For ease of reading, this description is to some extent simplified. Typically, the GP, the private equity firm, and the investment manager are three separate legal entities. Here, however, all three entities will be treated as one in the same. For a more detailed description of these entities and their legal setup, see Gilligan and Wright (2010).

committed capital (Sahlman, 1990). The LPs generally also require management to invest a meaningful portion of their net worth in the fund on the same terms as the LPs, in order to ensure alignment of interests between the LPs and the GP. Once the fund is established, the GP has a pre-agreed time frame within which to identify and make investments (i.e., the investment period), often around five years (Kaplan and Schoar, 2005). When the GP has decided to make an investment, it calls, or *draws down*, the required amount of capital from its LPs on a pro rata basis. Over time, the GP will build a portfolio of investments. The number of portfolio companies vary depending on strategy; they often number between five and twenty (Sahlman, 1990). Thereafter, the GP will use the remaining time of the fund's life to manage and exit the portfolio (i.e., the divestment period). As investments are realized, proceeds are distributed according to a pre-agreed formula (see below). Finally, the GP will liquidate the investments and divide the proceeds between the limited and the general partners (Gompers and Lerner, 1999b). When a fund is reaching the end of the investment period, the GP needs to raise a new fund in order to stay in business.

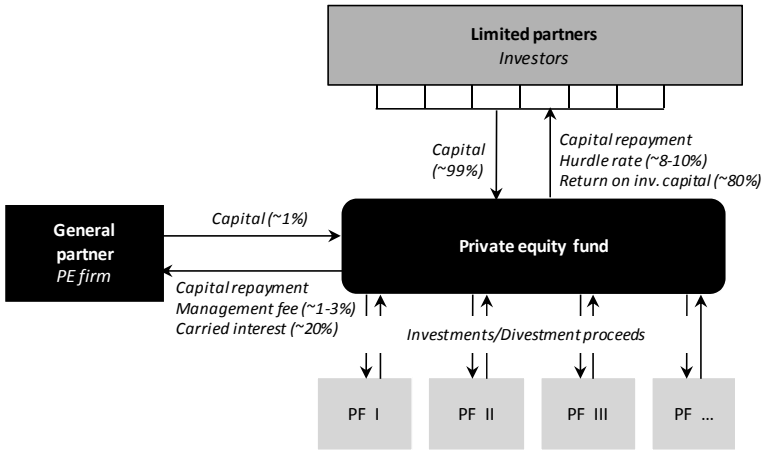


Figure 2.5. Generic structure of payment streams in a limited partnership

The structure of the payments to the general and limited partners in a limited partnership also tends to be fairly standardized (see Figure 2.5). GPs' compensation consists of both fixed and variable components. First, the GP earns a *management fee* for the operating costs of managing the fund, which is usually set as a percentage of the committed capital[14]. This fee is fixed in the sense that it does not depend on the performance of the fund. The prevailing size of the fee is between one and three percent; the higher percentages typically apply to smaller funds and the lower to larger funds

[14] Some GPs may also charge additional fees, such as transaction and monitoring fees, to the companies in which they invest.

(Sahlman, 1990; Cumming and Johan, 2007). As the GP divests an investment, the proceeds will, insofar as possible, first be used to return invested capital to the LPs together with a predefined *hurdle rate* (or preferred return). That is the level of return that must be achieved before the GP has the right to any profit sharing. A common range for the hurdle rate is between eight and ten percent of the invested capital (EVCA). Once the investors have achieved their pre-agreed rate of proceeds, the GP will share the excess. This second part of the compensation to GPs is referred to as a *carried interest*, and depends on the success of the fund. The level of carried interest is fairly standardized at 20 percent of the proceeds (Conroy and Harris, 2007; Metrick and Yasuda, 2010).

2.2.5 Characteristics of PE fund investments

All alternative assets share some common features that set them apart from more traditional investments. On top of that, private equity has a few distinctive characteristics that make the asset class even more unique. Hence, these peculiarities need to be taken into consideration before deciding to invest in this asset. Some are results of the characteristics of the asset itself, while others are due to the limited partnership structure.

As discussed, PE equity fund investing, similar to all types of alternative investments, is expected to generate *better risk-return payoffs* than traditional assets. Such investments are also expected to have *low correlations* with traditional instruments. In addition, private equity funds tend to have long investment horizons (Leitner *et al.*, 2007), and thus are considered *long-term and illiquid investments*. As outlined, the lifetime of a private equity fund is normally set to ten years, and a LP cannot easily break from its obligations prematurely. Although a secondary market for limited partnership stakes is under development (see Fraser-Sampson, 2007, and the footnote in Section 2.3.4), a quick sell at a fair market value is still difficult to achieve and in some instances is not even permitted. Hence, one of the principal characteristics of this asset class is the liquidity risk (Bance, 2004). One challenge of selling partnership stakes during their lifetime is the *issue of determining interim values*. Since PE funds are not traded on a daily basis on a transparent market, interim valuations are typically subject to estimates made by GPs, which introduces noise and biases (see Section 2.3.4).

Furthermore, the asset class is considered to suffer from a general *lack of information*, because fund managers tend to be unwilling to disclose performance or any other information publicly. This makes it difficult to learn from best practices and to identify benchmarks among PE fund investors (Müller, 2008). Moreover, given that LPs have no right to interfere in the daily operations of a fund, the actual reviews and investment decisions are left to the general partner. Hence, private equity fund investing is also referred to as *blind pool investing*, implying that there are no concrete assets to evaluate at the time of a fund investment (Bance, 2004). Therefore, the ability to select

talented fund managers is often put forward as a success factor (Lerner *et al.*, 2007). That is, as a result of the high levels of confidentiality and long lead times that characterize this asset class, the task of identifying promising general partners is more complex than that of benchmarking publicly listed asset managers (Bance, 2004). As such, investing in private equity funds is considered to *require specialized investment skills* at the LP side (Leitner *et al.*, 2007). Also, post-investment monitoring of fund performance requires more resources than other investments. Consequently, PE investing turns out to be a more *resource-intensive* activity than investing in traditional assets. Finally, due to this high demand of resources in addition to the relatively high costs for remuneration of GPs, private equity fund investing is considered an *expensive asset class* (Bance, 2004). A summary of the unique characteristics of private equity fund investing discussed is provided in Table 2.2.

Table 2.2. Characteristics of PE fund investments. Inspired by Müller (2008, p. 25)

Characteristics of PE fund investments due to the **UNDERLYING INVESTMENTS**	Characteristics of PE fund investments due to the **LIMITED PARTNERSHIP STRUCTURE**
• Expected higher risk-adjusted returns • Expected low correlation with traditional investments • Long-term and illiquid investments • Difficult to assess interim value	• Lack of information • Blind pool investing • Requires specialized investment skills • Increased resource requirements • Expensive asset class

After this overview of the private equity field in general, and, more specifically, as a unique asset class, the next section will outline and discuss results from an extensive literature review of private equity studies, which was carried out with a clear focus on existing research about PE fund investing.

2.3 Private equity literature review

In this section, a short summary of the private equity literature that has evolved over the past 30 years and the topics that have received special attention from scholars will be provided. Then, the research streams of special relevance to this dissertation will be elaborated upon in more depth.

2.3.1 An overview of PE research streams

Research about private equity does not to belong solely to any one single discipline. Studies about private equity have been published in journals in the areas of financing (Journal of Finance, Journal of Financial Economics, Journal of Corporate Finance), economics (American Economic Review, Quarterly Journal of Economics), management (Academy of Management Journal, Management Science), entrepreneurship (Journal of Business Venturing), and sociology (American Journal of Sociology),

amongst others. Having said that, a majority of the theoretical work and empirical studies have come from the finance and economic disciplines, as around 60% of PE studies are published in financial or economic journals (Cornelius and Persson, 2006). Among the most cited researchers in the field, finance scholars seem to dominate. Hence, a large number of studies use theoretical perspectives based on neo-classical economics such as agency theory, capital market theory, game theory, and signaling, as well as more classical supply and demand theories. Another stream of research, however, arrives from the entrepreneurship and management disciplines, typically focusing on the venture capitalists and/or their portfolio companies. While earlier studies in this stream tended to be of a descriptive and exploratory nature without any strong theoretically foundations, more recent research increasingly applies a variety of theoretical perspectives to the field, including resource-based theory, learning theory, social capital theory, social network analysis, population ecology theory, and institutional theory. Thereby, the theoretical foundations of PE research have evolved and deepened since the 1970s when the first studies in the field were published. Likewise, the sophistication of the methods has increased significantly over the years. While early studies were often based on data collected through rather simplistic mail questionnaires, collection and analysis methods used later on include, for example, conjoint analyses, social network analysis, and advanced multivariate data analysis. Though financial scholars tend to follow quantitative trajectories, other researchers are more heterogeneous in their choices of methods, including the use of qualitative data.

The empirical focus has changed to a slight degree, as well. From a situation where most research was US-centric, the proportion of international studies has increased significantly over the years. During the 1990s, only 29% of PE research was undertaken outside of North America. However, by the early 2000s, 58% of the studies conducted in the field arrived from the rest of the world, predominately from the EU (Cornelius and Persson, 2006). Today, PE research is a multifaceted discipline with topics ranging from the relationships between private equity firms and either their investors or their portfolio companies, through governance and control on several levels, to valuation and performance of portfolio firms and private equity funds, as well as the performance of the industry as a whole.

Over the years, a number of literature reviews of this empirical field have been published. Timmons and Bygrave (1986) presented one of the first overviews of venture capital investing and of existing research in the field, providing a holistic overview of the professional entrepreneurial financing industry. Following that, Sahlman (1990) published a widely cited paper on the structure and governance of US-based VC organizations. In the early 1990s, Bygrave and Timmons (1992) released a popular book, *Venture Capital at the Crossroads,* which summarized the key characteristics of venture capital investing. One of the more comprehensive books about private equity was written by Gompers and Lerner (1999b). The book was supplemented in

2001 with a more practitioner-oriented volume (Gompers and Lerner, 2001). A somewhat different type of review was put together by Cornelius and Persson (2006), which offered an extensive bibliometric analysis of studies in venture capital research. More contemporary overviews of studies focusing solely on buyout capital have been presented by Wright *et al.* (2009) and by Wood and Wright (2009).

The following literature review is based on more than 300 published peer-reviewed papers, books and recent unpublished studies, whereof only a selected number will be covered here. The purpose of the review is to present overarching themes occurring in the PE streams of research with a special focus on topics of particular importance to this thesis, i.e., studies about: (i) PE fund performance, (ii) associated performance determinants, and (iii) institutional PE fund investors. The structure of the review is based on the unit of analysis used in the individual studies (see Figure 2.6). First, research focusing on the private equity firm, or a combination of the PE firm and its portfolio companies, is presented. The vast majority of extant PE studies belong to this group. Second, research concerning how macro conditions may impact PE investing is briefly outlined. Finally, the limited but growing body of studies oriented around institutional investors as the major capital providers to this asset class is discussed in more details. This category aligns with the unit of analysis for this dissertation.

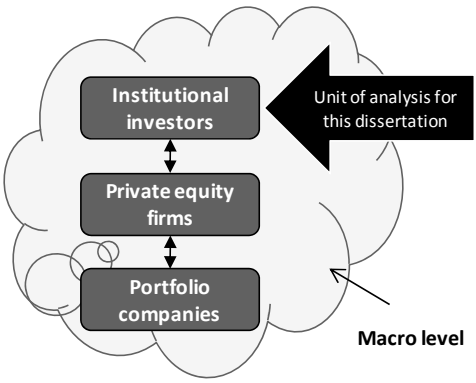


Figure 2.6. Levels of private equity research

Each group of studies tends to be oriented around a common set of questions:

Studies about PE firms and/or their portfolio firms

- PE firm's working processes: *What do private equity firms do, and how are investments selected, governed and exited?*
- Private equity firms' added value: *Do private equity firms add any non-financial value to their portfolio firms, and if so, what types of value?*
- Portfolio firm performance: *How do private equity-backed firms perform in relation to non-private equity financed firms?*

Studies about macro factors and private equity

Studies about PE fund investing

- Fund performance: *How do private equity funds perform in relation to other financial asset classes?*
- Performance determinants: *What factors determine PE fund performance?*
- Institutional investors: *What do institutional investors do, why do they invest in this asset class, and what explains heterogeneity among investors?*

In the following subsections, an overview of existing PE research will be presented based on the respective unit of analysis that applies to each category. The first two groups, which are large but of limited importance to the present study, are briefly discussed. The remaining group, consisting of studies related to PE fund investing, will be covered in greater detail. A list of the studies discussed in this literature review is presented in Appendix 2.

2.3.2 Studies about PE firms and/or their portfolio companies

The focus of the earliest private equity studies was to a large extent placed on understanding more about this new type of investing. The research questions were typically oriented around how PE firms make selections, take decisions, work with their investee firms, and finally exit them. One of the more cited papers in this stream was written by Sahlman (1990), in which the author documents the organization of venture capital investing, the deal-making process, deal structuring, etc. The investment processes and selection criteria of VC firms, first modeled by Tyebee and Bruno (1984), garnered significant interest from scholars in the earlier PE research (MacMillan *et al.*, 1985; Fried and Hisrich, 1994; Steier and Greenwood, 1995; Zacharakis and Shepherd, 2001; Dimov *et al.*, 2007). In addition, investors' abilities to manage and control their investee companies is a common theme in this stream, with a focus on evaluating venture capitalists' as well as buyout firms' governance processes. Special interest is devoted to control mechanisms outlined in contractual agreements between PE firms and their investees, including staged financing, liquidation, and other control rights. The agency perspective on contracting is particularly popular in finance-oriented papers, typically assuming that entrepreneurs (or executives in investee companies) are agents of the PE firm whereby conflicts of interest may occur (Sahlman, 1990; Admati and Pfleiderer, 1994; Sapienza and Gupta, 1994; Gompers, 1995; Hellmann, 1998; Kaplan and Strömberg, 2004).

Another popular topic within this stream of research relates to how PE firms interact with other investors. This issue was tested in the empirical context of investment syndication networks, a trend initiated by Bygrave (1987; 1988). Examples of research questions in these studies are: why do PE firms syndicate (Lockett and Wright, 2001),

who syndicates with whom (Lerner, 1994a; Podolny, 2001; Sorenson and Stuart, 2001; Seppä, 2003), how does a PE firm's position in a network affect performances or behaviors (Sorenson and Stuart, 2001; Shane and Cable, 2002), and what costs are associated with investment syndications (Meuleman *et al.*, 2009).

An area that has attained great interest from scholars is determining the extent to which PE firms add any value over and above the infusion of capital. The first studies within this stream simply described how PE firms, in contrast to most other investors, take on rather active roles in the development of their investee firms by providing non-financial services. Identified value-added areas included: acting as sounding boards, assisting in additional financing rounds, recruiting management and boards of directors, monitoring financial and operating performances, and providing access to networks and contacts (Gorman and Sahlman, 1989; Rosenstein *et al.*, 1993; Barney *et al.*, 1996; Cressy *et al.*, 2007). Or, shorter, non-financial contributions in terms of knowledge, networks and certification. Earlier studies tend to be somewhat overenthusiastic about private equity managers' ability to bring substantial value in addition to pure capital (Gorman and Sahlman, 1989; Muscarella and Vetsuypens, 1990; Sapienza *et al.*, 1996; Fried *et al.*, 1998; Hellmann and Puri, 2002; Arthurs *et al.*, 2008). Following these studies, though, a more nuanced view began to emerge wherein differences between various PE firms' capabilities to add value were identified. To what extent an investor could contribute with anything more than money was found to be related to the individual investor's experience (Sørensen, 2007; Bottazzi *et al.*, 2008; Zarutskie, 2010), prominence (Gompers, 1996; Stuart *et al.*, 1999; Podolny, 2001; Hsu, 2004), ability to create open environments (Sapienza, 1992), or her learning capability (Barney *et al.*, 1996). A few studies have even questioned whether PE investors actually add value in addition to the capital infusions, especially within the VC stream of research (Busenitz *et al.*, 2004). Berg-Utby *et al.* (2007), for example, argue that there is a significant gap between entrepreneurs' expectations and the perceived contributions from venture capitalists. Along the same lines, a recent review on this topic finds little consensus in the literature about value added outcomes, i.e., whether venture capitalists contribute to the success of their investee firms tends to be unclear (Large and Muegge, 2008).

Related to the stream of research about PE firms' abilities to add value is whether private equity-backed firms perform better than others, a question that has been a central focus for many studies. This literature focuses on the financial as well as non-financial outcomes of private equity-backed firms, typically matched with a control group of similar types of private companies that have not received PE capital. Measurements that have been used for evaluating the performance of portfolio companies include exits through initial public offerings, stock price development, employment growth, patent intensity, or company survival rates. Within the VC research stream, a change in opinion has been noticeable. Earlier studies provided a relatively unified consensus that venture capital-backed companies develop better than do non-VC

backed companies (Barry *et al.*, 1990; Brav and Gompers, 1997; Jain and Kini, 2000; Kortum and Lerner, 2000; Hellmann and Puri, 2002; Davila *et al.*, 2003). Later studies, in line with the previous discussion, suggest that the successes of VC-backed firms to a large extent depend on the respective VC firm's capabilities to add non-financial value. The issue of causality seems, however, often to be bypassed; is better, or worse, performance merely an effect of a superior ability to pick winners (cf. Cressy *et al.*, 2007; Diller and Kaserer, 2008)? A few VC studies indicate that VC-backed firms do not generally perform better in terms of growth or financial returns than other companies (Bottazzi and Da Rin, 2002; Florin, 2005). Research on buyout investments seems to follow the same path as the VC studies, although it has lapsed a few years behind the other field. Until recently, the overall finding put forward in this stream of research was rather univocally that BO firms add significant value to their portfolio firms by improving operational efficiency, which in turn leads to superior performance (Muscarella and Vetsuypens, 1990; Harris *et al.*, 2005). More recent research, however, suggests that portfolio firm performance depends to a significant extent on the backing BO firm's skills and characteristics (Cressy *et al.*, 2007).

2.3.3 Studies about macro factors and private equity

Taking on a macro perspective, a number of studies have been concerned with the overall supply and demand for private equity on a societal level. The drivers for a 'private equity demand' include areas such as overall new venture growth and thereby the size of a possible investment market for PE firms, the competitiveness in the national science base, how technical innovations may be transferred from universities to industry, and the ability of entrepreneurs to capture the fruits of their inventiveness. The drivers for 'private equity supply' include the presence of well-functioning stock markets, the overall tax climate for entrepreneurs and investors, as well as other legislatures and overall structural issues. Examples of factors that are considered to increase the supply of private equity are GDP growth, deep and liquid stock markets, lower labor market rigidities, decreases in capital gains tax rates, and regulatory changes.

Some scholars who have investigated factors that may affect the overall supply and demand of private equity include; Manigart (1994), Gompers and Lerner (2000), Black and Gilson (1998), Jeng and Wells (2000), Leleux and Surlemont (2003), Romain van Pottelsberghe de la Potterie (2004a; 2004b), and Zacharakis *et al.* (2007). The majority of these studies make comparisons on a cross-country basis.

As indicated previously, the lion's share of extant private equity studies concern PE firms and their portfolio companies. This dissertation aims to add to the currently narrow stream of research about institutional investors investing in private equity funds. Hence, in the following subsections, more in-depth presentations of existing research within this particular area will be provided.

2.3.4 Studies about PE fund investing I: Fund performance

As discussed previously in this chapter, private equity is an asset class with rather unique characteristics, and hence, evaluating PE fund performance is not a simple task. A number of studies, though they are still rare due to a seemingly constant lack of data, have sought to measure private equity returns while correcting for a number of biases. An overview of the studies discussed in this subsection is presented in Appendix 3.

How to evaluate private equity returns

As private equity investments are rarely traded on secondary markets[15], or at least the pricing of such transactions is not disclosed, scholars as well as practitioners usually rely on the cash flow history of fund investments and divestments when determining returns. For that purpose, the internal rate of return (IRR) or a public market equivalent (PME) is typically used (Diller and Kaserer, 2008). IRR is calculated as an annualized effective compounded rate of return, using monthly cash flows, which can be calculated in net (i.e., including fees to the managing PE firm), or in gross terms. During a fund's life-time, it is common to refer to the 'interim' IRR, which is a theoretical exercise to estimate the current status and future potential of an unrealized PE fund portfolio, whereby realized and unrealized IRRs are calculated, the latter at fair market value using different assumptions. The PME is usually defined as the ratio of the present value of all cash distributions over the present value of all take-downs from PE fund investors (Diller and Kaserer, 2008). This measurement is usually referred to as the 'investment multiple'.

Analyses of the profitability of investments in private equity face a number of problems. First and foremost, since information within the private equity industry by definition is 'private', compared to public markets, transparency requirements are limited. To the extent that public data are available, primarily from vendors such as Thomson Venture Economics or Dow Jones, they are largely collected from PE firms on a voluntary basis and thus subject to selection bias. For example, only roughly half of all private equity funds are estimated to be sampled in Thomson Venture Economics' VentureXpert database (Kaplan and Strömberg, 2009). Second, PE firms' unclear and inconsistent reporting of net or gross returns, i.e., whether the reported results include or exclude fees to the PE firms, makes comparisons problematic. Third, reported data are based on unrealized as well as realized investments, which introduces noise and potentially biases due to subjective accounting treatment (Ljungqvist and

[15] Diller and Kaserer (2008) point out that secondary markets for PE investments, though still small, have grown rapidly over the last several years. This is supported by Fraser-Sampson (2007) and Gilligan and Wright (2010). AltAssets estimates that, currently, three to five percent of yearly PE investments are traded in secondary deals. Hence, the degree of illiquidity for private equity might decrease, but is still considered to be high in comparison with other assets.

Richardson, 2003). External valuations of portfolio companies only exist in the events of: (i) initial public offerings, (ii) trade sales based on tradable securities or cash, (iii) additional financing rounds with new investors, or (iv) if the company files for bankruptcy. Therefore, according to Ljungqvist and Richardson (ibid.), the calculations of interim IRRs that are computed before a fund reaches maturity are not very informative. In a similar vein, Cumming and Walz (2010) claim that there are systematic biases in the reporting of interim IRRs. The authors argue that experienced PE firms tend to report significantly lower valuations than their younger, especially early-stage and high-technology focused, counterparts. Fourth, there is a limited history on private equity, as compared to other asset classes (Conroy and Harris, 2007). Hence, useful and comparable data are lacking. Fifth, evaluating performance returns alone provides an incomplete picture if the process of analysis does not incorporate the risks associated with an investment. Investing in private equity is considered to be associated with especially high risks in several dimensions (e.g., Phalippou and Gottschalg, 2009. See also Section 7.2.2). Hence, given the increased risk in addition to long investment periods, illiquidity and large investment sizes, a higher return compared to other asset classes is required *a priori* when investing in PE funds.

To summarize, studies using data from existing secondary sources when analyzing returns generated from PE fund investing run the risk of presenting somewhat biased and skewed results if these potentially problematic issues are not corrected. This is a fact that should be kept in mind when reading and evaluating research about PE fund performance.

Studies evaluating private equity performance

The literature on private equity performance can be divided into two groups. The first set of studies focuses on performance at the PE firm level, evaluating returns from individual portfolio company investments and then calculating their aggregate performance. Cochrane (2005) measured performance on a portfolio company level for US-based venture capital financed firms during the period 1987 through 2000. He provides evidence of a positive risk adjusted return gross of fees with an average fund alpha estimated to 32 percent per year. Comparing the result with corresponding returns of the S&P 500 Index and NASDAQ indices, Cochrane (ibid.) found an over-performance of the aggregated VC portfolios. Another study on a portfolio-firm level was carried out by Hwang *et al.* (2005). They used the same dataset as Cochrane, also including only VC-financed firms in the US, but during a longer period, 1987-2003, and with fewer missing financing rounds. They found that the average performance was lower, but close, to that of the S&P 500. Gro and Gottschalg (2008) analyzed a unique dataset from a sample of 133 US buyout-based investments from 1984 to 2004. They compared the buyout returns with a control portfolio including equally leveraged

investments in the S&P 500 index. The authors found a positive and significant alpha for buyouts, i.e., buyout investments outperformed the S&P 500 during the period.

The second group of performance studies document cash flow streams to PE fund investors, including fee payments and carried interests. Chen *et al.* (2002) examined 148 venture capital funds that had been liquidated between 1969 and 2000. They found an average annual return of 9.99%, with the highest annual IRR of 74% and the lowest of -72%. Ljungqvist and Richardson (2003) analyzed the cash flow data of a single large US private equity investor during the period 1981 to 2001; 85% of the firm's holdings were BO funds. They concluded that private equity fund investments outperform the S&P 500 by six to eight percent and the NASDAQ Composite Index by roughly three to six percent. The authors suggest that the over-performance was driven by a potential bias since the sample consisted primarily of mature buyout funds, which generally tend to outperform VC funds.

Jones and Rhodes-Kropf (2003) evaluated the performance of 1 245 US-based funds, 70% VC and 30% BO, in the period 1980 to 1999. They did not find any excess return even though the average fund alpha was positive (but small). In a sample almost identical to that used by Jones and Rhodes-Kropf (2003), Kaplan and Schoar (2005) analyzed 746 US-based private equity funds, whereof 78% where VC-based, over the years 1980 through 2001. They found that average fund returns net of fees were slightly less than the S&P 500 index and that fund returns are relatively persistent over time. Using a sample similar to the one employed by Kaplan and Schoar (2005) but adjusted for sample selection and writing off the residual value of 'living dead' funds, Phalippou and Gottschalg (2009) found a significant underperformance of private equity funds. The authors show that their sample, consisting of 852 VC and BO funds whereof 64% US-based, lagged behind the S&P 500 return by as much as 3% per annum. Similarly, Driessen *et al.* (2008), studying a mix of US VC and BO funds, found that venture capital funds are associated with a high market beta and significant underperformance, while buyout funds show a low beta but no abnormal performance. Finally, Conroy and Harris (2007) analyzed the performance from 1 700 US private equity funds. They showed that private equity's attractiveness as an asset class is overstated, and that net returns to investors have not been as desirable on a risk-adjusted basis as many have assumed.

However, private equity performance is found to include a great deal of heterogeneity and skewness, i.e., there are large differences between the best and worst performing funds (Kaplan and Schoar, 2005; Conroy and Harris, 2007; Phalippou and Gottschalg, 2009). For example, Gottschalg (2010) showed that buyout funds on average underperform broad public market indices but that top-quartile funds significantly outperform equally risky public market investments. Conroy and Harris (2007) also underline the large dispersion and skewness in PE fund returns.

Taken together, the overall finding from these studies is that PE funds, in general and after adjusting for risk, have generated lower returns than comparable public indices. At the same time, it has been found that these performance measures conceal a significant amount of heterogeneity. In other words, PE firms vary in their ability to generate excess returns. The key question is what causes these differences in returns, a topic that will be discussed next.

2.3.5 Studies about PE fund investing II: Performance determinants

Scholars have identified factors affecting PE fund performance in all possible areas, ranging from broad macro determinants to rather narrow portfolio firm related factors (see Söderblom and Wiklund, 2005, for a review of VC fund determinants). The performance factors presented below are structured into three categories: (i) PE funds' focuses and characteristics, (ii) PE managers' skills and governance of investments, and (iii) macro factors. The factors related to the first two categories have more or less direct impacts on PE fund returns, while the factors presented in the third category have somewhat more indirect effects. The studies presented below are listed in Appendix 3.

PE funds' focuses and characteristics

As already indicated in the previous section, the performance of a PE fund seems to be highly related to whether it focuses on *venture capital* or *buyout* investments. Although there exist wide variations across management teams and also across geographical areas, the overall finding tends to be that buyout funds in general outperform venture capital funds (Ljungqvist and Richardson, 2003; Driessen *et al.*, 2008; Phalippou and Gottschalg, 2009). Having said that, a few extremely well performing VC funds have generated significantly better returns than all other PE funds (Schmidt, 2006). That is, BO fund investments show less variations in returns compared with VC fund investments, and thus are associated with lower risks (ibid.). Related to this discussion, it has been found that the *phase focus* of VC funds, i.e., the development stage of targeted portfolio firms, is considered to have a strong impact on performance. Manigart *et al.* (2002) show that early-stage VC firms require a significantly higher return for an investment than companies focusing on later phases. Das *et al.* (2003), in a similar vein, argue that a high rate of early-stage investments has a negative impact on the proportion of successful exits.

In addition, the *geographical origin and focus* of a fund seem to impact returns. European PE funds are considered to generate lower returns than US-based funds, where Hege *et al.* (2008) found that US VC firms on average exhibit significantly higher performances in terms of IRR than their European counterparts. This result is supported by Phalippou and Gottschalg (2009), who tested data including both VC and BO funds. A breakdown of European private equity returns also revealed strong

variations in performances across funds in Europe (Megginson, 2004; EVCA, 2007). The geographical scope itself may influence performance as well; Manigart *et al.* (1994) found that European VC firms with a local focus generate lower returns on average than VCs with broader geographical focuses.

Furthermore, the *degree of specialization* of a PE fund is considered to be related to subsequent performance. Gompers *et al.* (2009) found, when studying a set of 122 VC firms, that generalist PE firms tend to underperform relative to specialist firms. Cressy (2007) arrived at similar results when analyzing a sample of UK buyouts. Whether this superior performance is due to a better ability to select investments or to add value is unclear. In a similar vein, Das *et al.* (2003) showed that there is a high cross-sectional variation in the probability of an exit across industries. Thus, not only is industry specialization *per se* important, but similarly significant is the ability to focus on the 'right' industries.

Finally, the characteristics of the PE funds themselves may matter as well, where especially large *fund sizes* have been attributed to better outcomes. Size captures several performance-related dimensions such as prominence, learning and economies of scale (Gompers and Lerner, 1999b). For example, Laine and Torstila (2004) found that larger venture capital funds have significantly higher rates of successful exits compared to smaller funds, a conclusion supported by Hochberg (2007). Studies on buyouts have arrived at similar results; larger BO funds perform better and provide higher investor returns (Nikoskelainen and Wright, 2007). Likewise, Phalippou and Gottschalg (2009) found that one of the main drivers for private equity fund underperformance is small fund size. Also Metrick and Yasuda (2010) argue that one reason why BO funds tend to perform better than VC funds is that the former are more scalable, leading to significantly higher revenue per investment professional. However, there are also contradictory views about optimal PE fund sizes, indicating that too large funds may underperform relative to their smaller peers (Fraser-Sampson, 2007). Kaplan and Schoar (2005) found evidence that PE firms' returns decline when their funds grow abnormally fast, and that top-performing firms' funds grow less than proportionally. The diminishing returns for larger funds are typically attributed to the challenges of finding sizable and potentially lucrative deals (e.g., Gompers and Lerner, 1999b). Another disadvantage of larger funds, according to Phalippou and Gottschalg (2009), is the risk of opportunistic behavior. For example, large US VC funds are more likely to invest in overseas buyout deals to obtain a track record of participating in these types of investments, which bring both diversification and additional income to the VC firm at the cost of their fund investors. In a similar vein, it is suggested that overly large funds may affect the incentive structure negatively and eventually erode the alignment of interest between the general and limited partners. That is, the model of billing managerial compensation as a fee for committed capital may have adverse

consequences when the GP has a strong incentive to grow fund sizes at the expense of achieving higher returns for investors (cf. Chen *et al.*, 2004, for hedge funds).

Related to fund size is the issue of the *number of investments in a portfolio*, where Schmidt (2006) shows that there is a high marginal diversifiable risk reduction of about 80% when the portfolio size is increased to include 15 investments, and that an ideal PE portfolio contains between 20 and 28 investments. Jääskeläinen *et al.* (2006) argue that the number of portfolio companies a venture capitalist manages and the total returns of the VC fund will exhibit an inverted U-shaped curve. Their data suggest that venture capitalists reach their respective optimum level with slightly over 12 portfolio companies per partner of a VC firm.

PE managers' skills and governance of investments

Two factors that are considered to have a significant impact on PE firms' abilities to generate excess returns are: (i) the skills of, and (ii) the governance and control mechanisms set up by, the private equity firm. Both areas have received substantial attention in the PE literature.

Several scholars argue that one of the most important determinants of excess returns from private equity investing is related to the management teams' *skills* in several dimensions, including their ability to identify beneficial investments, to provide professional support to portfolio companies, or simply to make better deals (Kaplan and Schoar, 2005). For example, Phalippou and Gottschalg (2009) found that more experienced and skilled PE firms offer higher returns and have higher survival rates compared with their less experienced peers. Also, Diller and Kaserer (2008) showed that fund returns are positively correlated with the managing PE firm's skills, not least their selection capabilities. Similarly, Hege *et al.* (2008) argue that an important explanation for the outperformance of US VC funds relative to their European counterparts is that US GPs possess superior screening capabilities. Furthermore, Hochberg *et al.* (2007) suggest that cross-sectional differences in returns are closely related to PE firms' abilities to nurture investments, i.e., to add value to portfolio companies. In a similar vein, Walske and Zacharakis (2009) showed that nascent VC firms founded by managers having prior venture capital or senior management experience were more likely to raise subsequent funds.

Following the reasoning that experience has a strong impact on performance, there is an expectation that the returns from a subsequent fund will be in line with, or better than, the previous fund's return. This so-called '*persistence phenomenon'* has been documented by several researchers (Kaplan and Schoar, 2005; Diller and Kaserer, 2008; Phalippou and Gottschalg, 2009). In other words, it is widely believed that a PE investment team that outperformed the industry benchmark with one fund is likely to outperform the industry with the next, as well. According to Kaplan and Schoar

(2005), as well as Diller and Kaserer (2008), this effect is more pronounced for VC than for BO funds. Consequently, first-time funds, i.e., the first funds raised by newly established PE firms, are found to generate lower returns compared with follow-on funds (Hochberg *et al.*, 2007; Phalippou and Gottschalg, 2009). Similarly, sole funds, i.e., those not followed by a subsequent fund, have lower proportions of successful exits than others (Laine and Torstila, 2004). Therefore, a fund sequence number has been suggested as a valid predictor of fund performance (Kaplan and Schoar, 2005; Phalippou and Gottschalg, 2009)

In addition, the extent to which PE firms' exercise of *governance and control* of their portfolio companies can affect returns has garnered substantial interest from scholars. For example, Kaplan *et al.* (2003) analyzed venture capitalists' use of financial contracts in the US and in non-US, primarily European, countries. They found that VCs using US-style contracts fail significantly less often. Hege *et al.* (2008) indicate that greater monitoring intensity with shorter time intervals between financing rounds increase the ratio of successful returns, which supports the idea of using staged capital infusions (i.e., payments in steps that are linked to the fulfillment of negotiated mile-stones). Also, Nikoskelainen and Wright (2007) found, when studying a set of buyouts, that returns are connected to the management firm's corporate governance skills.

Macro factors

Macro-oriented factors are considered to have significant effects on private equity fund performance. Scholars seem unified in their view that market entries in private equity are cyclical; in other words, *funds raised in boom times* are less likely to be followed by a subsequent fund compared with funds raised in other economic situations. This implies that 'boom-time' funds in general *yield poor results* (Kaplan and Schoar, 2005; Diller and Kaserer, 2008).

One of the main drivers of an overheated market is the increased level of capital allocated to private equity. Gompers and Lerner (2000) show that portfolio firm valuation in a financing round is increased when more money is poured into the private equity industry in the year before the deal was closed. They argue that there is a limited number of favorable investments in the private equity industry, giving way to the so-called 'money chasing deals' phenomenon, which has been supported by several researchers (Ljungqvist and Richardson, 2003; Hochberg *et al.*, 2007; Diller and Kaserer, 2008). Kaplan and Schoar (2005) suggest that established PE firms are less sensitive to business cycles than are new entrants. Along the same lines, Gompers *et al.* (2008) found that the level of variation in success between the most experienced and the least experienced private equity groups increases in 'hot' markets. Diller and Kaserer (2008) found this to be especially true for VC funds, as they are more affected by illiquidity and volatility than are buyout funds.

The next section will address the limited, but growing, stream of research focusing on institutional investors that invest in private equity funds, i.e., studies having the same unit of analysis as this dissertation.

2.3.6 Studies about PE fund investing III: Institutional investors

There is a small but growing body of research that seeks to enhance the understanding of financial institutional investing into private equity funds, a category to which this thesis belongs. In this section, the literature is divided into three major research areas: studies about (i) institutional investors' exercise of governance and control, (ii) determinants for PE fund investing and investment criteria, and (iii) heterogeneity across institutional PE fund investors. Appendix 4 contains an overview of the studies discussed in these sections.

Governance and control

One of the earliest topics of interest to scholars studying institutional PE fund investors was the investors' working processes, especially their exercise of *governance and control*. Sahlman (1990) pioneered the field, providing detailed descriptions about limited partners' decision-making procedures and interactions with their GPs. His research has been followed by a few similar studies. For example, Barnes and Menzies (2005) found that institutional investors typically follow comprehensive and structured procedures when identifying and selecting which private equity funds to invest in. Also after an investment into a fund has been made, LPs continue to pursue well-defined processes and decision paths when interacting with fund managers. Having said that, the authors also found that LPs develop strong informal relationships with the managing GP that fall outside the formal terms of the LP agreement. According to the limited partnership agreement, fund investors are supposed to be rather passive (see Section 2.2.4). In line with this, Lerner and Schoar (2004) showed that LPs hardly ever interfere in the operation of a fund, even in cases where they are granted the right to do so (for example by voting to dissolve a fund). On the other hand, the authors put forward the finding that LPs require wide-ranging information rights, allowing them to monitor the performance of funds. The role of information flow between PE fund managers and their fund investors after the investors have invested in the fund has also been studied by Müller (2008). He noticed three main functions of these information flows: decision support, governance enabling and relationship building.

An adjacent area that has also received considerable attention in the literature is the *contractual relation* between PE fund investors on the one hand and the fund managers on the other. Barnes and Menzies (2005) argue that institutional investors tend to pursue agreements and terms that adhere to standard market terms, and that they are rarely prepared to negotiate terms considered 'out of market'. That is, contracts are expected to be fairly standardized. However, other studies have, to some extent,

contradicted this finding when pointing at variations in negotiated terms. Gompers and Lerner (1996), for example, showed that US-based VC firms reduce the number of restrictive covenants in years characterized by high supply of capital to private equity. Similarly, Schmidt and Wahrenburg (2004) found that European VC firms receive less fixed but higher variable, i.e., performance-related, compensations in years of strong capital inflow into the industry. But variations in terms may also occur on a micro level, i.e., due to factors based on the managing firm's characteristics. For example, Gompers and Lerner (1999a) argue that investor prominence is an important factor for determining compensation terms. In the US, older and larger private equity organizations are especially sensitive to performance-related compensation factors and thus may demand greater shares of the capital gains than their younger peers. Litvak (2004) supports this notion when showing that compensation levels may vary across PE funds depending on the managing firm's prominence. Taken together, earlier research showed that the economic relation between LPs and GPs is fairly standardized. However, in times of high demand, or for a few outstanding GPs, the compensation terms to fund managers may deviate from industry standards.

Determinants for PE fund investing and investment criteria

Two common questions in studies about PE fund investors are: why do they allocate a part of their capital to this asset class, and what criteria are used when selecting which funds to invest in.

Several potential motivations for PE fund investing have been proposed. As outlined in Section 2.2.1, the 'financially rational' reason to invest in alternative assets, including private equity, is to *diversify investment portfolios* with securities providing high risk-adjusted returns and low correlation with other assets (Markowitz, 1952). Given the risks associated with PE fund investing, the 'fair' rate of return needs to be higher than for traditional asset classes. As discussed in Section 2.3.4, however, returns from PE investments have on average been lower compared with other financial assets (Kaplan and Schoar, 2005; Conroy and Harris, 2007). In addition, private equity turns out not to have an especially attractive hedging property in relation to traditional instruments (Diller and Kaserer, 2008). Thus, PE fund investing in general yields a relatively poor risk-reward distribution. However, given that this asset class shows such significant performance heterogeneity, investors that gain access to the *best performing funds* will likely be highly satisfied. That is, despite unsatisfactory average performances, especially when risk-adjusted, top-quartile funds have delivered excellent returns (Hochberg *et al.*, 2007; Phalippou and Gottschalg, 2009). Still, only a limited number of institutional investors gain access to the few top-performing funds; this forces non-privileged market participants without invitation to A-funds to invest in B-funds (Schmidt, 2006). Hence, another suggested explanation for investors' willingness to invest in an asset class with such modest overall returns is the possibility that LPs have

mispriced the asset class (Phalippou and Gottschalg, 2009). Low market transparency combined with high levels of uncertainty and complexity make performance comparisons between funds extremely difficult, as discussed previously (see Section 2.3.4). Phalippou and Gottschalg (2009) argue that even sophisticated investors are prone to over-optimism or evaluation mistakes.

Furthermore, although most fund providers invest in private equity in expectation of good returns, some institutional investors also have additional goals for their investments and may accept lower proceeds. Several non-financial reasons for PE fund investing have been offered. First, certain LPs invest in private equity to *stimulate the local economy* (Lerner *et al.*, 2007; Phalippou and Gottschalg, 2009). This behavior is witnessed among pension fund managers and government agencies, both in the US and in Europe. Lerner *et al.* (2007) argue that public pension funds face political pressures or constraints, which often negatively affect financial performance. According to Phalippou and Gottschalg (2009), the issue is more pronounced in Europe than in the US. Another reason to invest in private equity may be to establish *commercial relationships* with GPs, for example, for banks or consultants. Hellmann *et al.* (2004) argue that banks might diverge from maximizing returns on PE investments in order to maximize future banking income from the companies in which the GPs invest. Scholars have also discussed that *learning* might be a reason for some LPs to invest in PE funds (Phalippou and Gottschalg, 2009). As outlined previously, extant research indicates that running a PE fund requires skill, where funds managed by inexperienced teams in general tend to generate lower returns (Diller and Kaserer, 2008; Phalippou and Gottschalg, 2009). It is possible, then, that by participating in inexperienced and hence poorly performing funds, investors obtain tacit knowledge for future investments – in PE funds or directly in portfolio companies. Yet other institutional investors, such as non-financial corporations, make PE fund investments in order to keep an eye on new *technological developments* (Maula, 2001).

Given that institutional investors do invest in private equity funds, a related area of interest is what *criteria* institutional investors use for selecting PE funds. Fried and Hisrich (1989) detected five areas considered to be of special interest in PE fund evaluation processes: people, teamwork, discipline, strategy, and past performance. Similarly, Groh and Von Liechtenstein (2011), in a world-wide survey of institutional investors, analyzed determinants for VC fund investing. They found that proprietary deal flow and access to promising transactions, local market experience, the team's reputation, mechanisms proposed to align interest between LPs and GPs, and historical track record were the top criteria for investors when evaluating PE funds. Also, Gompers and Lerner (1998) argue that successful past performance is a key determinant for a management team's ability to raise new funds. Similarly, Barnes and Menzies (2005) suggest that LPs examine broad, and often intangible, indicators of VC firms' performance reputations in attempts to predict future fund returns. And finally, along

the same line, Kaplan and Schoar (2005) showed that previous returns affect not only the likelihood of raising new funds but also the sizes of the funds that are raised.

The next subsection, finally, outlines the small stream of PE research of special relevance to this dissertation, i.e., differences across institutional PE fund investors in terms of organizational characteristics and investment preferences on the one hand, and subsequent performance on the other.

Heterogeneity across PE fund investors

While little is still known about the heterogeneity across PE fund investors, a small but growing stream of research has started to address this research gap.

Some studies have investigated differences in *investment preferences* across various types of institutional PE fund investors. Lerner *et al.* (2007) examined investment heterogeneity across a set of US-based institutional investors. They found that endowments generally allocate more to smaller BO funds and have a greater share of VC funds in their portfolios compared with other PE fund investors. The authors also noticed that insurance companies often invest in smaller and earlier funds, i.e., those with lower sequence numbers, across all types of fund categories. Also, banks seem to prefer investments into first-time or second-time funds, regardless if they are BO- or VC-focused. On the other hand, public and corporate pension funds tend to invest in larger funds. Mayer *et al.* (2005) compared the investment activities and sources of finance to VC funds in four countries. They found that academic institutions are more prone to invest in early stages, which supported Lerner *et al.*'s (2007) finding. In addition, Mayer *et al.* (2005) showed that pension- and insurance-backed PE funds often focus on later stage investments in low technology sectors on a global basis, while bank-sponsored funds prefer domestic VC investments in later phases. The study also suggests that corporate-backed VC firms invest in early stages, preferably in high-technology ventures globally rather than domestically, and that governmental investors more often invest in national VC funds. Schertler (2005) used panel data for investigating VC investments in various European countries. Schertler also found that banks prefer investments in later stages, while LPs having additional goals besides direct return driven for their investment activities primarily target investments in young technology firms. In conflict with the findings presented by Mayer *et al.* (2005), Schertler argues that pension funds and insurance companies show especially high interest in early-stage investments. In a recent study, Hobohm (2009) analyzed differences in PE fund investment preferences across a large set of international institutional investors. The author found that investment companies, insurance corporations, PE fund of funds, banks and private pension funds invest more often in BO funds than the average LP. On the other hand, endowments, family offices, public pension funds and (US) government agencies do not overweigh BO investments. Furthermore, Hobohm (ibid.)

put forward the assertion that institutional investors differ in their degree of home bias. Public pension funds, endowments, and especially banks tend to prefer 'local' funds, while PE fund of funds are more likely to invest abroad. The home bias was found to be most significant for VC funds.

The extent to which *returns* from PE fund investing vary across investor types has only been analyzed in a few studies. According to Lerner *et al.* (2007), the proceeds that investors realize from their PE fund investments differ considerably between institutions. The authors suggest that PE funds in which endowments have invested by far over-perform relative to investments made by other financial institutions. On the other hand, funds capitalized by banks tend to lag sharply. Public and private pension funds have reached returns somewhere in the middle of these extremes. Hobohm (2009) also investigated differences in returns achieved by different PE fund investors. He found that insurance firms were the best performers. But contrary to the findings presented by Lerner *et al.* (2007), Hobohm suggests that banks on an overall level have been successful PE fund investors. The author attributes the difference in results to variations in data, where Hobohm's study includes investments after 1999 as well as non-US data, which is not the case for Lerner *et al.*'s dataset. Hence, although banks in general earned poor returns from venture capital, this was compensated over time by investments in superior performing buyout funds. Furthermore, Hobohm showed that endowments did outperform average investors, in particular because of their superior VC fund investments during the 1990s. However, their outperformance was not as strong as in the study by Lerner *et al.* (2007), which can also be explained by the differences in the datasets that were used. Furthermore, investment companies and private pension funds enjoyed industry-average returns, which was also the case for PE fund of funds. According to Hobohm, public pension funds were among the LPs with the lowest returns; US government agencies also underperformed all other LPs. Finally, non-Western government agencies were among the very best performers, likely due to their high percentages of BO fund investments.

A few alternative explanations for the observed heterogeneity in performance across PE fund investors have been discussed. There is strong support for the notion that LP returns to a large extent depend on the *specific fund types* included in the investment portfolio, where some LPs achieve above-average returns in one fund type, e.g., early-stage VC, but not in others, e.g., mid-sized buyouts (Hobohm, 2009). Fund investors' *experience and skills* are considered to be important when explaining differences in investment performance. Lerner *et al.* (2007) put forward the notion that "*LPs differ in their ability to evaluate the quality of funds and to invest based on this information, that is, in their level of sophistication*" (p. 733). For example, since endowments and universities were among the first organizations to invest in this asset class, they are assumed to have built up a deep understanding of PE investing and to better predict the performance of follow-on funds. Hence, older LPs tend to enjoy better performance than their young-

er peers (ibid.). Hobohm (2009), however, suggests that such comparative advantages may change over time. For example, during the 1990s, small LPs with significant experience outperformed other LPs, especially in the VC fund investment area. But in a later phase, less experienced but larger LPs with a BO fund focus achieved better returns. Hence, the author suggests that LPs' overall returns also depend on *timing*. Having *access* to funds managed by top PE firms, is another suggested determinant for successful PE fund investing. This is a factor that to some extent is related to experience according to Lerner *et al.* (2007), suggesting that some performance differences found for endowments may be due to early access to superior funds. The *size* of the institutional investors, in terms of managed capital, has also been appointed as a determinant for performance heterogeneity. Da Rin and Phalippou (2010) argue that large investors are more popular and thus attain advantageous terms and conditions in negotiations with GPs. Yet another explanation for identified variations in returns is LPs' *differing objectives*, as discussed above. For example, banks, corporate investors and governmental investors may pursue non-financial goals for their PE fund investment activities, and thus are expected to receive lower returns.

An adjacent explanation to performance variations relates to the importance of PE investments in a financial investors' *overall portfolio*. In cases where PE investments account for only a fraction of an entire investment portfolio, it is likely that minimal efforts are put forth to govern these investments (Müller, 2008). *Incentive structures* have also been pointed out as important. In cases where remuneration is not tied to the individual investor's performance, monitoring may be neglected. Compared to the standards in the private financial industry, public pension funds, for example, are found to offer rather modest compensation levels. Consequently, such organizations may face high turnover among investment professionals and, therefore, a scarcity of sufficiently experienced staff (Lerner *et al.*, 2007). Following this reasoning, some US university endowments are considered successful in retaining managers by offering better financial, as well as other types of, benefits (ibid.). Also, differences in *risk profiles* have been discussed as a possible explanation for heterogeneous returns. In other words, better performance may be related to a greater willingness among LPs to take on risk. However, existing research has not been able to find any support for such a link (Lerner *et al.*, 2007; Hobohm, 2009). Finally, LPs who are *geographically closer* to successful VC-intense areas are found to achieve considerably higher PE fund returns than other investors (Hobohm, 2009).

To summarize, the results arriving from the few existing studies about heterogeneity across PE fund investors seem to be scattered, incomplete and sometimes contradictory, which is apparent in Table 2.3. Some studies have focused on the extent to which investor characteristics affect performance, while others have investigated potential differences in investment preferences across institutional investors. However, very few, if any, have in a structured way analyzed possible links between investment

strategies and PE fund performances. That is, few studies have thoroughly investigated areas such as how private equity investment strategies may differ across investors or which strategies have proven to be successful for whom. Out of several central strategic decisions, one concerns entry order – which has been singled out as being especially important in the strategic management literature (Porter, 1980). Although this literature review indicated that institutional investors tend to differ in their preferences for first-time or subsequent fund investing, which could be considered a strategic choice of early or late entry, little is known about the reasoning behind these preferences and possible effects of specific choices.

Table 2.3. Summary of existing findings about heterogeneity in investment preferences and performances across PE fund investors

INSTITUTIONS	VC or BO	EARLY or LATE STAGE	FUND SIZE & NUMBER	GEOGRAPHY & INDUSTRY	PERFORMANCE
Banks	Later VC[2)] Prim. BO[4)]	Late[3)]	First fund[1)]	Local[2) 4)]	Low[1)] High[4)]
Corporate investors	Prim. VC[3)]	Early[2)]		Internat.[2)] High-tech[2)]	
Endowments	Prim. VC [1)]	Early[3)]	Smaller[1)]	Local[4)]	High[1) 4)]
Governmental investors		Late[3)]		Local[2)]	US Gov: Low[4)] Non-West: High[4)]
Insurance companies	Prim. BO[4)]	Early[3)] Late[2)]	Smaller[1)] First fund[1)]	Internat.[2)]	Medium[1)] High[4)]
PE fund of funds	Prim. BO[4)]				Low[1)] Medium[4)]
Pension funds	Priv: Prim. BO[4)]	Early[3)] Late[2)]	Larger[1)]	Low tech[2)] Publ: Local[4)]	Medium[1)] Priv: Medium[4)] Publ: Low[4)]

[1)]Lerner *et al*. (2007). [2)]Mayer *et al*. (2005). [3)]Schertler (2005). [4)]Hobohm (2009).

2.4 Summary

This chapter started by presenting and defining the phenomenon of 'private equity.' The perspective that was taken was similar to that of institutional investors, i.e., viewing private equity as an asset class. The first section offered definitions of central concepts as well as an overview of the evolution of the PE industry. In the next section, details about institutional investors, motives for investing in PE funds, allocation strategies, and the unique characteristics of PE investments were elaborated upon. Then, an overview of the current research status of the PE field was provided, with a focus on studies of special interest to this dissertation. Of the presentations and dis-

cussions outlined in the chapter, the following observations are considered to be of greatest relevance to the current work:

- While the stream of PE research in general is large, the literature addressing the institutional investor perspective is scarce. That is, there is a clear lack of research about private equity as an asset class. Given the large and growing amount of capital that institutional investors allocate to private equity, an enhanced understanding of the phenomenon as such, and not least about performance factors, is of great importance not only to the investors themselves but to all involved stakeholders.
- Measuring performance from PE fund investing is considered to be a complex task given a broad resistance from the PE industry to publicly disclose information about returns, capital flows, etc. As such, data available from public sources are considered to be both error-prone and biased. Consequently, there is a widespread need for better and more accurate data about private equity performance and adjacent information, in order to further develop performance-related PE research.
- The current conclusion from existing studies about PE fund performance is that the average risk-adjusted returns from PE fund investing have not been nearly as attractive as expected. Furthermore, private equity exhibits a rather high correlation with traditional assets. Having said that, performance across funds shows significant heterogeneity, where top-quartile PE funds outperform most other types of assets.
- A few PE fund performance determinants have been identified (see Table 2.4, left-hand side). First, BO funds usually outperform VC funds, with the exception of a few top-performing US VC outliers. Second, US PE funds have generated higher returns than their European counterparts. Third, later-stage VC funds perform better than early-stage funds. Fourth, VC funds with narrow industrial scopes realize superior returns in comparison with generalist funds. Fifth, more experienced and competent PE teams are found to perform significantly better than others. Sixth, performance seems to be strongly related to fund size, where larger funds tend to generate better returns than smaller – as long as the fund is not too large. Seventh, the macro-economic situation seems to impact fund performance, in that funds raised in boom times usually generate lower returns compared to other funds.
- There are a number of different types of institutional investors investing in private equity funds, each of which possess unique characteristics, business missions and objectives. Such differences are expected to impact these investors' respective investment preferences, investment strategies, and likely, their performance.

- While there is a rather broad understanding about performance determinants on a fund level, significantly less is known about factors affecting performance on a PE fund investor level. The existing research about investor performance determinants tends to be scattered and contradictory in that only a few performance factors are suggested, and so far based on only a few studies. The indicative findings from these few studies are summarized in Table 2.4, right-hand side. First, LP returns are naturally highly dependent on the type of funds, i.e., the funds' focuses, which are included in the investment portfolio. Second, the timing for fund investments affects performance. Third, more skilled and experienced institutional investors are considered to enjoy better returns. Fourth, variance in access to top-performing investment teams (and thus funds) is another possible explanation for differences in performance. Fifth, LPs that are geographically closer to successful VC-intense areas are considered to achieve better returns. Sixth, institutional investors having other than pure financial goals for their investment activities are expected to obtain lower returns compared with other types of fund investors. And seventh, the incentive structure for individual investment professionals has been suggested as a factor that may affect returns achieved from PE fund investing.

Table 2.4. Summary of identified performance determinants for PE funds and PE fund investors

Performance determinants for **PRIVATE EQUITY FUNDS**	Performance determinants for **PRIVATE EQUITY FUND INVESTORS**
• Buyout funds generally outperform VC funds • US PE funds generally outperform European PE funds (due to a few extreme outliers) • Later-stage VC funds generally outperform early-stage VC funds • Specialist VC funds tend to perform better than generalist VC funds • PE funds managed by GPs with extensive experience and skills outperform other funds • Large PE funds perform better than smaller (if not too large) • PE funds raised in boom times generate lower returns	• The focus for the underlying funds, e.g., the proportion of BO vs. VC funds, affects performance • Timing of PE fund investing is important • More skilled and experienced LPs outperform others • Access to top-performing funds has a positive effect on LP performance • LPs closer to successful VC-intense areas achieve better returns • LPs with only financial goals achieve better returns than others • LPs with better incentive structures for individual investors are expected to enjoy better returns than others

To summarize, there is a noticeable lack of research about institutional PE fund investing in general and performance determinants specifically. In addition to the need to increase the small stream of research investigating the links between organizational characteristics and performance, there seems to be a dearth of studies that investigate how institutional PE fund investors can strategically affect performance through outlined investment strategies. Out of several investment strategies that may affect

investor performance, one is related to entry order. Entry order is identified as a critical strategic decision within the strategic management literature and, as indicated in the literature review, is frequently cited as a vital decision factor for PE fund investors. And last, but not least, in order to investigate performance determinants for PE fund investors, there is a clear need for better and more reliable performance data.

This dissertation seeks to add to the existing literature by enhancing the knowledge about PE fund investing in general, and more specifically about how heterogeneity in organization-specific characteristics and entry order strategies may affect investment performance. Hence, the next chapter outlines existing theories of entry order and how they may be developed in order to be applicable to a field such as private equity fund investing.

CHAPTER 3

Entry order theories and a developed theoretical model

This chapter reviews and develops theory central for a deeper understanding of order of entry behaviors and effects. Relevant theoretical perspectives are presented, whereof the most important derive from the first mover advantage and imitation streams of research. The last section presents a developed theoretical model of factors influencing entry order patterns and outcomes; a model developed to be applicable in a broader set of contexts in comparison with the original. This theoretical model constitutes the foundation for the specified and operationalized research model presented in Chapter 7 and, thereafter, for the hypothesis development presented in Chapter 8.

3.1 Introduction

A central theme in the strategic management literature involves the choice of entry order and its impact on performance. Within this stream, the theory about first mover advantages (FMA) holds a salient position, which has resulted in an impressive body of research. For example, a search for peer-reviewed articles in the Business Source Premier database yielded over 800 hits when using 'first movers' as key-words. The concept of first mover advantages appeared in the economic literature over 50 years ago, initially within practitioner-oriented writings (Kalyanaram *et al.*, 1995). Toward the end of the 1980s, the theory was broadly popularized by Lieberman and Montgomery (1988) in their seminal paper about the topic. The basic idea of FMA is that pioneering organizations are able to earn above-average profits as a result of entering a market early. In order to access this beneficial position, however, an organization needs not only to have the capabilities to become a first mover, but also to take advantage of the opportunity when it presents itself. The primary areas of interest in the FMA-based literature include: antecedents to first mover advantages, factors enabling first moves as well as generating first mover advantages, mechanisms that allow first movers to be protected from imitative competition, and, not least, performance effects derived from pioneering. Over the years, a few studies have expanded the FMA field to also investigate first mover disadvantages (Golder and Tellis, 1993; Lieberman and Montgomery, 1998; Rodríguez-Pinto *et al.*, 2008). Thereby this literature has, although still with a primary focus on first movers, been broadened to also incorporate the study of second mover advantages.

However, despite the significant interest in order of entry, the literature has not been able to present conclusive evidence of either first or follower advantages. In other words, empirical findings about how order of entry affects performance are mixed,

where some studies have gathered evidence in support of early entry advantages (e.g., VanderWerf and Mahon, 1997; Makadok, 1998; Robinson and Min, 2002), while others have marshaled evidence in support of late mover benefits (e.g., Golder and Tellis, 1993; Schnaars, 1994; Boulding and Christen, 2001; Suarez and Landzolla, 2005). This inability to identify a decisive link between entry order on the one hand and organizational outcome on the other hand has been attributed largely to two factors: environmental idiosyncrasies and theoretical shortcomings (Suarez and Lanzolla, 2007; Ethiraj and Zhu, 2008). Traditionally, the FMA literature has had an industrial perspective, typically evaluating how first mover advantages may arise and develop within a particular market. For the most part, the focus of the field has been on mature packaged-goods industries, which is an environmental setting that Lieberman and Asaba (2006) would classify as a low-uncertainty/high-rivalry type of market. Hence, explanations for certain entry order choices and subsequent outcomes have predominantly been developed based on empirical observations from such environments. This has led to a questioning of whether the theoretical explanations developed in traditional FMA research actually are fully applicable to radically different types of contexts, e.g., industries that are characterized by high uncertainty and low rivalry. A suggested approach for expanding FMA theories so that they may also be applicable in a broader set of environments is to cross-fertilize them with ideas about entry order that stem from other theoretical fields (Lieberman and Asaba, 2006; Ethiraj and Zhu, 2008).

One substantial body of research that also, at least indirectly, focuses on entry order is the imitation literature; although this field's primary focus is on followers rather than pioneers. While the first mover advantage literature is large, the stream of imitation research is even larger. A search using 'imitation' as the key word in the Business Source Premier database returned over 1800 peer-reviewed articles on the topic. Since imitation behaviors are believed to occur more often in environments characterized by uncertainty and ambiguity, such contextual settings dominate in this research (Lieberman and Asaba, 2006). Furthermore, one question seems to be more important than any other to scholars interested in imitation, which is identifying the underlying theoretical explanations for imitative behaviors. Imitation theories may be categorized into two principal groups, where one type of imitation or the other is apt to predominate in any given situation (ibid.). The first group consists of information-based theories, whereby organizations follow others that are perceived as having superior information and/or are considered especially prominent. The ideas arrive primarily from institutional theory and from economic theories of herd behavior. Second are the rivalry-based theories, stemming from the fields of strategy and economics, whereby firms imitate others in order to maintain competitive parity or to limit rivalry. While the rivalry-based motives primarily explain followers' patterns in situations where uncertainty is low and competitors are closely matched, the information-based theories

are believed to better explain imitative behaviors when organizations differ and uncertainty is high. In other words, the latter set of theories offers a promising route to enhance traditional FMA research with theoretical explanations for entry order that also apply in situations of high uncertainty. Furthermore, while the FMA stream of research is considered to be strong on empirical testing and short on theory, the imitation literature has been pointed out as being long on theory but short on evidence (Ethiraj and Zhu, 2008). Hence, a cross-fertilization of the two fields would likely enrich both streams when investigating two core questions in this dissertation, namely: (i) which factors influence entry timing decisions, and (ii) what are the consequences of various entry timings, within a financial services industry characterized by relatively high uncertainty.

In the following sections, a review of the two streams will be presented and elaborated upon and subsequently used to develop the extended entry order model at the end of this chapter. This model is used for developing the research model presented in Chapter 7 and constitutes the foundation for the hypothesis development outlined in Chapter 8. First, though, definitions of a few theoretical concepts of central importance to the dissertation will be provided.

3.2 Definitions of central theoretical concepts

As will become apparent in this chapter, there are four concepts that are particularly important for the theory development in this dissertation: (i) first movers, (ii) late movers, (iii) uncertainty, and (iv) reputation. In this subsection, definitions of these central concepts will be provided[16].

3.2.1 First movers

Within the strategic management literature, the first organizations arriving to a hitherto unexploited area are referred to as first movers or pioneers[17]. However, the task of providing a more exact definition of pioneers turns out to be more challenging than it would first appear. Many proposed definitions have a clear product-oriented focus, often defining pioneers as the first company(-ies) launching a new type of product on the market (Schmalensee, 1982; Golder and Tellis, 1993). The definition has been fairly appropriate and relevant since a vast majority of the FMA studies evaluate introductions of industrial or consumer packaged goods (e.g., Mitchell, 1991; Mascarenhas, 1992; Robinson *et al.*, 1992; Shamsie *et al.*, 2004; Rodríguez-Pinto *et al.*, 2008). Lieber-

[16] The manner in which these concepts have been operationalized in previous studies as well as in this dissertation is discussed in Chapter 7.

[17] Within this dissertation, the terms 'first mover' and 'pioneer' will be used interchangeably.

man and Montgomery (1988; 1990), though, presented a somewhat broader definition, whereby the first organizations to: (i) produce a new product or service, (ii) enter a new market, or (iii) use a new process, should all be defined as 'first movers'. Accordingly, the empirical scope for FMA-based research has expanded over time. For example, the entry order theories are frequently applied when studying how corporations expand into new geographical areas (e.g., Fuentelsaz *et al.*, 2002; Tan *et al.*, 2007). Furthermore, the industrial focus now embraces not only product-centric markets but also, to some extent, service industries. For example, empirical research has been carried out on different service segments, such as banking (Tufano, 1989; Fuentelsaz *et al.*, 2002), mutual funds (Makadok, 1998) and other financial services (López and Roberts, 2002). Still, other scholars have called for even greater generality and diversity when defining first movers. Patterson (1993) proposed the following definition: "*A first mover is an organization which is the first to employ a particular strategy within a context of specified scope*" (p. 765). Consequently, although still rare, a few studies apply the FMA theory more broadly. For example, the entry order theories have been used for studying how new management practices are diffused throughout a particular market (Naveh *et al.*, 2004) or investigating waves of acquisitions (Carow *et al.*, 2004; McNamara *et al.*, 2008). In this thesis, this broader type of definition of a first mover will be used (see Section 7.2.1).

3.2.2 Late movers

Similar to the situation discussed in the previous section, the literature does not provide a clear consensus on the definition of a late mover or a follower[18]. This is largely because following, or imitating, has been researched by scholars from two fundamentally different disciplines, i.e., the FMA literature emerging primarily from the fields of strategic management and economics, and the imitation literature arriving from institutional theory and the economic literature of herd behavior. The differences originate from the theoretical disparities in explaining the underlying mechanisms that lead to imitative behaviors (Lieberman and Asaba, 2006). On the one hand, ideas originating from the strategy literature explain imitation, or following, as a rational act with the purpose of mitigating rivalry or enhancing organizational effectiveness. That is, the imitation of superior products, processes, or systems is regarded as a fundamentally important part of the competitive process, according to strategy scholars (Porter, 1979; 1980). Lieberman and Asaba (2006) refer to this type of behavior as 'rivalry-based' imitation. On the other hand, theories arriving from the institutional and economic herd literature fields, although different from one another, both provide what is fundamentally the same explanation for imitative behaviors – namely, the dependence on

[18] Within this dissertation, the terms 'late mover', 'later entrant', 'follower' and 'imitator' will be used interchangeably.

other, often prominent, parties. This type of following is referred to as 'information-based' (ibid.). Herd behavior models propose that actions reveal signals about a firm's private information, and hence other organizations tend to copy such practices in order to reduce costs and risks associated with decision making (Banerjee, 1992; Bikhchandani *et al.*, 1992), i.e., to "*follow the behavior of the preceding individual without regard to* [...] *own information*" (Bikhchandani *et al.*, 1992, p. 994). Institutional scholars view imitation as a way to gain legitimacy by modeling an organization after prominent parties in the field (DiMaggio, 1988; Oliver, 1997). Taken together, information-based imitation happens when organizations (or individuals) follow the patterns of others who are expected to have superior information or are perceived as being prominent in a field.

Lieberman and Asaba (2006) propose that a particular rationale for following, or imitating, will dominate in a given context. That is, while information-based motives tend to dominate when uncertainty is high and organizations differ from each other, rivalry-based imitation is more common in situations with intense competition attributed to similar levels of organizational resources and market positions. Having said that, these two types of imitation theories are not mutually exclusive and may occur simultaneously, as Lieberman and Asaba (ibid.) suggest. Furthermore, the information-based theories of imitation tend to emphasize the negative implications of following others, while the rivalry-based theories more broadly deal with both the advantages and disadvantages of imitation.

In line with the definitions proposed by Ordanini *et al.* (2008) and Lieberman and Asaba (2006), I define imitation as a rational and deliberate decision that occurs after an organization receives a stimulus from another organization's behavior, and decides to model itself after the other, observed organization. Hence, I reject the notion that following, or imitation, is a ritualistic phenomenon that accidently happens (cf. Lieberman and Asaba, 2006). As such, imitation is clearly distinguished from the more general isomorphism phenomenon that identify some type of common external chock as the cause of similarities between organizational reactions (Ordanini *et al.*, 2008). Furthermore, I turn away from the view that following others does mainly lead to negative consequences. Instead, both advantages and disadvantages from imitation will be identified and discussed in the dissertation. And finally, in the current research the concept of 'imitation' does not imply that an organization is mimicking the behaviors of others in every minute detail. Instead, the concepts of imitation, late moves and second moves are all used interchangeably and refer to an organization's propensity to enter a domain within which other organizations have already functioned as pioneers.

3.2.3 Uncertainty

The concept of uncertainty, together with risk, is central to several theoretical fields, not least within the strategic management and the finance literatures. The broad inter-

est in these constructs reflects a common belief that greater uncertainty leads to increased difficulties to predict the future. Consequently, the ways that decision makers handle, avoid or even seek risk as well as how uncertainty may affect outcomes, together with a number of similar questions, have occupied scholars for decades (Bromiley and Rau, 2009). However, as with many other social science terms, neither of these concepts have clear-cut definitions.

Background

The notion of 'uncertainty' and 'risk' in the social sciences, and the difference between the two, was identified by Knight (1921). In situations characterized by high ambiguity, the accuracy and usefulness of predictions are reduced. Hence, the rational response to uncertainty, according to Knight, is to seek to reduce risk or, if that is not possible, to avoid pursuing such an alternative altogether (Miller, 2007). Another option, obviously, is to await the resolution of uncertainty before acting (Lieberman and Montgomery, 1988; 1998).

Knight (1921) argued that both uncertainty and risk are associated with imperfect knowledge. However, he pointed out a conceptual distinction between these two constructs. Knight proposed that 'risk' refers to situations when decision makers can assign mathematical probabilities to various outcomes. That is, risk involves recurring events whose relative frequency, to some degree, even if only probabilistically, is predictable based on past experience. In contrast, 'uncertainty' exists if the probability distribution cannot be determined *a priori*, meaning that uncertainty precludes the setting of objective probabilities due to imprecision or a lack of information. According to Knight, risk is in general considered a manageable problem in that it can be accommodated through pooling and insurance, while uncertainty is significantly more difficult to handle (Wu and Knott, 2006).

Despite the wide spread of Knight's (1921) conceptualizations of uncertainty and risk, his definitions of the concepts have not met with universal acceptance (Bromiley and Rau, 2009). Strategy scholars tend predominantly to use the term 'risk', defined as the "*unpredictability or down-side unpredictability of business outcome variables such as revenues, costs, profit, market share, and so forth*" (ibid., p. 261). In other words, this definition is closer to Knight's understanding of uncertainty than to his interpretation of risk. A fundamental line of thought in this literature, originating from behavioral theory, is the notion that successful firms with improving performance tend to avoid risk, whereas less successful firms with declining performance seek out risk (Cyert and March, 1963; Bowman, 1982; Figenbaum and Thomas, 1986; Bromiley *et al.*, 2001). Hence, market dominance may permit both higher profit and lower risk (which is counter to the core idea in finance theory about risk-return discussed below). The theory orients around aspiration levels, i.e., firms below a certain reference point, e.g., industry average

performance, try to reach the reference level through increased risk taking (Figenbaum and Thomas, 1986). However, the literature also points at exceptions. For example, firms with extremely strong resources that perform well above the reference point may take on risks because they can afford to gamble (Bromiley *et al.*, 2001). It has also been recognized that very poor performance might lead to a focus on survival and thereby to low risk taking (March and Shapira, 1992).

Financial scholars, by contrast, have traditionally applied the concept of risk in a way that is more consistent with Knight's definition. A central idea in finance theory is that expected excess market returns should vary positively and proportionally with market volatility (Markowitz, 1952; Sharpe, 1964; Merton, 1973). Put simply, all things being equal, people prefer less risk to more and hence will demand an increased return for increased risk. This thinking forms the core of financial portfolio theory, which is a body of models that describe how investors may balance risk and reward when constructing investment portfolios. Of such models, the Capital Asset Pricing Theory (CAPM) holds a salient position (Sharpe, 1964; Lintner, 1965). CAPM separates risk into two components: (i) the market, or systematic, risk, measuring the co-variance of a specific financial asset with a general market portfolio, and (ii) the company-specific, or unsystematic, risk that cannot be explained by aggregate movements in the market. According to CAPM, company-specific risks can be diversified away and hence, an investor's net exposure is equal to just the systematic risk of the market portfolio. Therefore, the risk of an individual financial asset should be measured relative to the market portfolio, where the expected profitability of a riskier investment should be higher than for less risky assets. However, while the CAPM has a strong intuitive appeal, the empirical record of the model is poor (Fama and French, 2004). In addition to explanations for these deviations referred to as being due to 'irrational behaviors' pointed at by behavioral theorists (for reviews, see e.g., Shiller, 2003; Subrahmanyam, 2007), more 'rational' reasons have been suggested. Such examples of situations in which the CAPM model may not be fully functional include: (i) when investors are constrained in some way from holding diversified portfolios (Merton, 1987), (ii) when probabilities are impossible to predict for a given type of financial asset based on its specific nature, e.g., high illiquidity or a limited history of prices (Gompers and Lerner, 2000; Koziol *et al.*, 2009), and (iii) when some of the underlying assets possess such large unsystematic risks that they cannot be disregarded (Jones and Rhodes-Kropf, 2003; Diller and Kaserer, 2008). These types of explanations have been put forward as being particularly relevant for investments into alternative assets (Koziol *et al.*, 2009; Woodward, 2009). Hence, recent research in the finance field contends that uncertainty, and not only risk, matters in the case of financial portfolio investing (Anderson *et al.*, 2009).

Types of uncertainties

There are a number of elements of uncertainty that are both external and internal to the firm. Uncertainties that originate externally can be referred to as 'exogenous', while those that arise from within the firm are termed 'endogenous' (Miller, 1992).

Exogenous uncertainties consist of factors that are related to the overall environment as well as to the specific industry in which the firm operates. Miller (1992) outlined a number of external uncertainties that a firm may face, categorizing them as: (i) general environmental factors, such as political, government policy, macroeconomic, or social, uncertainties, and (ii) industry-specific elements including market size, product-market, or competitive, uncertainties. In addition, (iii) uncertainties related to financial markets are examples of exogenous factors that may affect firms (Kaplan and Strömberg, 2004). Furthermore, exogenous factors can also refer to (iv) whether there will be a general demand for a firm's type of offerings and, if so, when such demand will materialize (Beckman *et al.*, 2004).

The endogenous factors of uncertainty relate to the quality of the management/organization and to their actions (Miller, 1992). In addition, internal factors also include more intangible elements such as managerial perceptions, attitudes and organizational perspectives. Examples of endogenous uncertainties are: (i) managements' and/or the organizations' operational capabilities and excellence in terms of sales and marketing, product and technology development, organizational and skills development, financial control, etc., (ii) potential liabilities and credit uncertainties, and (iii) the ability to manage strategic change, such as mergers and acquisitions, new market entries, or downsizing (Miller, 1992; Haunschild, 1994; Greve, 1996; McGrath, 1997; Kaplan and Strömberg, 2004).

Uncertainty definition

To summarize, while the uncertainty and risk phenomena to some extent are perceived differently by strategy and finance scholars, the literature streams have common roots and exhibit several similarities which suggest the possibility of an integration of the two perspectives (Wickham, 2008). This thesis will draw on both streams when discussing uncertainty and risk; however, the concept of uncertainty as interpreted by Knight will hold the central position. In other words, uncertainty is here used when referring to situations in which decision makers have difficulty predicting the future due to incomplete knowledge. As expressed by Lieberman and Asaba (2006), "*High uncertainty implies that managers have weak 'prior probabilities' about the likely success of alternative paths*" (p. 376).

3.2.4 Reputation

Scholars from various theoretical fields have paid significant attention to so-called 'social approval assets', which are considered critically important to organizations

through the contribution of sustainable competitive advantages given their rare, socially complex, and hard-to-imitate nature – especially in situations of uncertainty (Barney, 1991; Rao, 1994; Suchman, 1995; Fombrun, 1996; Deephouse, 2000; Jensen and Roy, 2008). Of these social assets, reputation holds a salient position.

Definition and background

Favorable reputation is considered an economically important resource that organizations may exploit for competitive advantages (Barney, 1991; Roberts and Dowling, 2002; Deephouse and Suchman, 2008). The concept refers to expectations about an organization's future abilities and outcomes built on perceptions, personal or more often vicarious, of past actions and performances (Fombrun, 1996; Rindova *et al.*, 2005; Deephouse and Suchman, 2008). In this way, the perceptions are treated as signals of underlying strategic characteristics of the organization (Rindova *et al.*, 2006). Hence, reputation serves as a relatively rational and analytical framework for interpretation of the likelihood that an organization will continue to exhibit similar outcomes and behaviors in the future as it has done in the past (Fombrun, 1996). However, reputation also has a 'prominence' dimension, which concerns the extent to which perceptions about an organization's ability to generate quality and value receive broad collective recognition in a social field (Rindova *et al.*, 2005). In such disseminating processes, associations with influential third parties are considered to be of special importance (ibid.). Similar to other social approval assets, the greater the ambiguity experienced by external stakeholders, the greater the importance of reputation as a way to reduce uncertainty (Rindova *et al.*, 2005). That is, in case of incomplete information and/or limited resources available for scrutiny and analysis, the assessment of an organization's reputation typically becomes a central part of business evaluations (Cyert and March, 1963).

The nature of reputation as built on others' perceptions implies that it can develop somewhat independently of reality, and hence is unlikely to stem from pure facts (Fombrun, 1996). Moreover, the concept emphasizes comparison among organizations, indicating a relative position amongst counterparts (Deephouse and Carter, 2005). This means that reputation is differentiating, whereby its dynamics encourage organizations to distinguish themselves from peers. Hence, reputation is fundamentally a continuous measure, placing organizations on a continuum from the best to the worst. Finally, reputation can be positive as well as negative, and may shift over time (Bitektine, 2011). That is, an organization's current reputation may be abruptly changed if new information about historical behaviors or associations comes to light, or if later efforts contradict existing perceptions (Lange *et al.*, 2011). Taken together, organizational reputation may be defined as "*an intangible asset stemming from collective expectations on an organization's future capabilities and outputs in comparison with others based on the perceptions of*

its past actions and performances" (Fombrun, 1996; Rindova *et al.*, 2005; Washington and Zajac, 2005; King and Whetten, 2008).

The reputation construct is akin to, but different from, the concepts of status and legitimacy (Deephouse and Carter, 2005; Washington and Zajac, 2005; Deephouse and Suchman, 2008; King and Whetten, 2008). Obviously, there are many similarities between the three concepts. First, they all stem from what stakeholders within a social system think or feel about a specific organization, i.e., they are based on some level of approval of an organization's actions. Second, they are all considered valuable intangible assets which are expected to improve the organization's ability to acquire resources and thereby positively affect future performance and survival (Rao, 1994; Deephouse and Carter, 2005; Deephouse and Suchman, 2008). Yet differences exist between the constructs. The status concept, unlike reputation, does not stem primarily from an organization's past actions and achievements but rather from its centrality in networks and affiliations with prominent partners (Podolny, 1994). That is, status reflects the organization's relative position in a wider network of inter-firm relations, and thus describes its social rank (Deephouse and Suchman, 2008). Thereby, status is fundamentally honorific and "*generates social esteem and special, unearned (i.e., non-merit-based) benefits known as privileges, which are granted to and enjoyed by high-status actors in a social system*" (Washington and Zajac, 2005, p. 284). Legitimacy, emphasizing social acceptance resulting from adhering to societal norms, values and expectations (Suchman, 1995), differs from reputation and status with its focus on similarity and non-rivalry (Deephouse and Suchman, 2008). That is, if an organization follows the prevailing accepted structures and practices and thereby is 'satisfying' at an acceptable level, it will be considered legitimate. Legitimacy is therefore, in contrast to reputation and status, a fundamentally dichotomous construct. Put simply, whereas reputation refers to the 'favorability' of an organization within a social system, legitimacy refers to its 'acceptability' (Zyglidopoulos, 2003). Furthermore, behaving according to set rules and norms will not only be beneficial for the individual organization but also to its whole social group, industry or the entire society (Bitektine, 2011). This suggests that legitimacy is a homogenizing concept resulting in conformity, which clearly sets it apart from both status and reputation as differentiating constructs (Deephouse and Suchman, 2008). Therefore, legitimacy is a fundamental requirement of all organizations, while reputation and status are desirable but not essential properties (King and Whetten, 2008).

Antecedents to and benefits of good reputation

As discussed above, reputation concerns external expectations of capabilities and skills to deliver value along some key performance dimensions, determined by general perceptions of previous efforts. These dimensions may vary, and examples of antecedents to a good reputation that have been mentioned in the literature include an organization's ability: to develop and deliver high-quality products and services (Shapiro,

1983), to attract high-skilled employees and exchange partners (Audretsch and Stephan, 1996; Rindova and Kotha, 2001), to carry out superior business evaluations (Stuart, 2000; Hsu, 2004), and not least, to achieve excellent financial performance (Hall, 1992; Podolny, 1993; Fombrun, 1996; Roberts and Dowling, 2002). Moreover, high-reputation may also stem from interactions with prominent third parties, whereby the prominence of the latter 'spills over' to the original organization (Rindova *et al.*, 2005). A favorable reputation, in turn, is considered to bring advantages which will improve the firm's reputation further, leading to a virtuous circle of reputation and various organizational benefits. For example, because reputation serves as a signal of the underlying quality of an organization's products or services, clients are found to be more likely to pay a premium for the offerings made available by high-reputation organizations, resulting in improved income and/or profitability (Shapiro, 1983; Deephouse, 2000). Alternately, employees are found to be more likely to accept lower remuneration or longer working hours when faced with the prospect of getting hired by high-reputation organizations, which in turn leads to cost advantages (Roberts and Dowling, 2002). A good reputation has also been found to be associated with other benefits, such as enhanced sales force effectiveness, more successful product introductions and better recovery strategies in the event of a crisis (Dowling, 2001). Enhanced performance has been identified as a consequence of favorable organizational reputation in a number of studies (Benjamin and Podolny, 1999; Deephouse, 2000; Roberts and Dowling, 2002). However, most research tends to indicate more of an indirect relationship between the two variables. That is, a high reputation is rarely a guarantee of success itself but may be exchanged for benefits that are likely to lead to advantageous positions and superior performance later on. Taken together, a positive reputation is like a reservoir of goodwill an organization can draw on for benefits when needed. One way for a high-reputation organization to use its positive resource asset is to offer certification to less prominent parties.

Good reputation used as certification

A substantial body of research from various fields has examined the benefits derived from certification, or endorsement, by prominent parties. The basic idea is that when uncertainty about the quality of someone or something is high, evaluations are influenced by the social standing and trustworthiness of the actors associated with it (Podolny, 1994). That is, prominent affiliations serve an endorsement function, certifying the quality of the focal firm when unambiguous measures cannot be observed or do not exist (Stuart, 2000). The certification function arrives from the belief that reputation-rich organizations will make high-qualitative and thorough evaluations of potential associates before entering into a business relationship, for three major reasons. First, prominent organizations are expected to be exclusive in their selection of partners in order to preserve their own reputations, which may be damaged through

dealing with low-quality or disreputable firms (Stuart, 2000). Second, high-reputation organizations are perceived as reliable and skilled evaluators, at least in the areas in which they have garnered a positive reputation, and hence are believed to be capable of discerning quality issues. Prominent firms also have incentives to ensure high predictability and reliability in order to maintain high levels of reputation (Fombrun, 1996; Stuart *et al.*, 1999). Third, high-reputation organizations have many potential partners, and hence their choices are deemed more desirable than a number of alternatives (Stuart, 2000). For these reasons, surviving the due diligence process of a high-reputation organization sends strong signals of the quality of the partner firm to other stakeholders (Stuart *et al.*, 1999; Nahata, 2008). The literature has put forward the notion that the greater the prominence asymmetry that exists between the two parties, the higher the value of the certification. Thus, partnerships between firms with significant differences in prominence not only increase the value for the receiving party on the one side, but also increase the risk of hurting the reputation of the prominent organization on the other (Lin *et al.*, 2009).

There are various types of organizational relationships in which one of the parties may serve as a certifier for the other. Examples of organizational relationships that serve certifying or endorsing functions in existing studies include: auditors (Beatty, 1989; Hogan, 1997), industrial alliance partners (Stuart *et al.*, 1999; Gulati and Higgins, 2003; Dacin *et al.*, 2007; Rao *et al.*, 2008), investment banks (Carter *et al.*, 1998; Gulati and Higgins, 2003; Pollock *et al.*, 2004; Fang, 2005; Pollock *et al.*, 2010), and venture capitalists (Megginson and Weiss, 1991; Lerner, 1994b; Gompers, 1996; Gulati and Higgins, 2003; Hsu, 2004; Lee and Wahal, 2004; Nahata, 2008; Krishnan *et al.*, 2010; Pollock *et al.*, 2010). In order for a certification to be effectual, it needs to fulfill at least two conditions (Booth and Smith, 1986). First, the endorsing organization must be in such a position that its own reputational capital would be at risk in the instance of an invalid certification. Second, the certified target organization is expected to pay a price for the endorsement provided. And it is assumed that high-reputation parties, highly aware of their relative rarity and value, would charge more than would less prominent organizations (cf. Pollock *et al.*, 2010).

While scholars have devoted a great deal of attention to the investigation of the benefits derived from endorsement by prominent actors, significantly less interest has been shown in the issue what certifying organizations get in return for their willingness to take on risks of supporting firms with limited reputations. That is, existing research that adopts the perspective of the endorsing party, regardless of whether it is based on providing reputation, status or legitimacy, is scarce, and when it exists, tends to be rather general in nature, with only a few exceptions. For example, Hsu (2004), when investigated negotiating power between highly reputable and less reputable venture capitalists, showed that venture capitalists with good reputations are more likely to be accepted by startup firms and, as a result, to enjoy considerably better terms compared

to other investors. Furthermore, Kaplan and Strömberg (2003) suggested that organizations that will gain the most advantage from endorsements are willing to accept especially harsh business terms and conditions. Yet another example can be found in a study undertaken by Chen *et al.* (2008) about the various costs associated with employing affiliates with different levels of prominence.

After providing definitions of these four, highly important constructs, the upcoming section will outline the main theoretical foundation for the dissertation – the theories about entry order.

3.3 Model of first mover advantages

While the concept of first mover advantages has appeared in the literature for decades (Frawley and Fahy, 2005), Lieberman and Montgomery (1988) were the first to broadly categorize first mover advantages and the mechanisms by which these advantages can be enhanced. In Lieberman and Montgomery's (1988; 1998) model of first mover-ship, opportunities arise endogenously within a multi-stage process, as illustrated in Figure 3.1[19]. The authors proposed that because of externally generated asymmetries, some firms gain head starts and become first movers in new fields. Such first mover opportunities may occur due to the possession of some type of unique resource – or simply because of luck. Setting aside first moves that occur as a result of luck, this means that a firm that recognizes an environmental opportunity and has the required skills and resources can become a first mover. Furthermore, if the pioneering firm is capable of exploiting its pioneering position, it will benefit from competitive advantages. That is, a pioneering advantage can only be realized if the first mover possesses the resources to actually capitalize on the opportunity (Schoenecker and Cooper, 1998). Obviously, resources (and luck) may also affect performance in ways that are unrelated to order of entry.

[19] In Lieberman and Montgomery's (1988; 1998) original model, the term 'Mechanisms for enhancing first mover advantage' was used. Over time, 'Sources of advantage' has become the standard term and thus replaces the older term here.

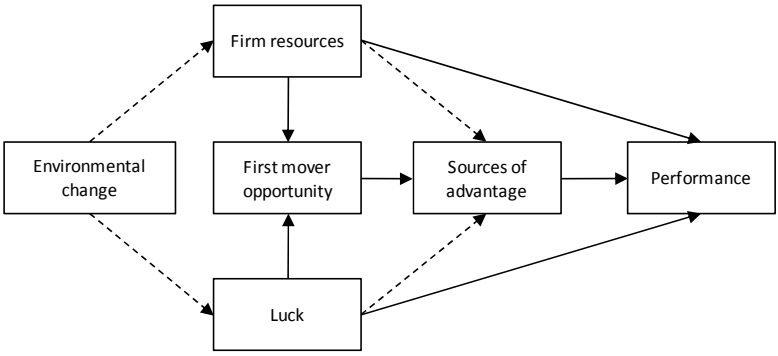


Figure 3.1. Generation of first mover advantages according to Lieberman and Montgomery (1988; 1998)

Over the years, Lieberman and Montgomery's model has been developed and enhanced by several scholars. For example, Kerin *et al.* (1992) developed a unified conceptual framework, incorporating moderating factors affecting the first mover positional advantages. In the 1990s, a number of studies appeared that focused on possible first mover disadvantages (e.g., Golder and Tellis, 1993; Schnaars, 1994). Furthermore, complementary theoretical perspectives have been used to identify and explain pioneering advantages, where the resource-based view has been central (Lieberman and Montgomery, 1998; Schoenecker and Cooper, 1998). Yet others have developed the model by, for example, incorporating macro conditions to a higher extent (Suarez and Lanzolla, 2007), or by emphasizing internal strategy dimensions (Rodríguez-Pinto *et al.*, 2008). More recently, integrating ideas from the imitation streams of research has been suggested as a fruitful way to expand the understanding of entry order further (Lieberman and Asaba, 2006).

In the following two sections, overviews of the current line of thinking in the FMA literature will be provided, complemented with relevant and contemporary thinking from the imitation streams of research. The structure will follow Lieberman and Montgomery's (1988) conceptualization of FMAs when presenting and discussing the two areas 'Sources of first and late mover advantages' and 'Factors affecting entry order'.

3.4 Sources of first and late mover advantages

Within the entry order streams of research, both advantages and disadvantages associated with being a first mover, or for that matter, a follower, have been addressed. The sources of the advantages that stem from one or the other entry strategy, and thus the rationale for taking on one of the two positions, will be presented and elaborated upon in the following section.

3.4.1 Sources of first mover advantages

A first mover advantage implies that organizations acting earlier than their peers establish a competitive benefit that leads to some kind of positive outcome, e.g., a superior market share, higher survival rate, or better profit (Lieberman and Montgomery, 1988). The issues why such advantages appear and how they can be protected from imitative competition (so-called 'isolating mechanisms') have gained significant interest in the FMA literature. These sources of advantages have been developed, classified and reclassified several times. Day and Freeman (1990) classified the sources into resource preemption, proprietary experience effects, and leadership reputation. Kerin *et al.* (1992) clustered them into economic, preemption, technological, and behavioral factors. Lastly, Lieberman and Montgomery (1988) divided the FMAs into technological leadership, preemption of assets, and switching costs. Given the specific industry focus for most FMA research, as mentioned previously, some identified sources of first mover advantages are primarily applicable to mature packaged goods industries. Others, though, are more general in scope. In addition, the imitation literature can contribute with additional theoretical explanations behind the sources of pioneering advantages. Below, the sources of FMAs are structured into four categories whereof the first two mainly are relevant to manufactured product markets (Lieberman and Montgomery, 1988; Kerin *et al.*, 1992; Lieberman and Montgomery, 1998), and the others are applicable in most industries (cf. McNamara *et al.*, 2008). The four categories are: (i) economic factors, (ii) technological factors, (iii) preemption factors, and (iv) proprietary experience effects. Obviously, the latter two sources of advantages are particularly relevant to this study, i.e., investments into private equity funds.

The first set of sources of first mover advantages concerns *economic factors*, particularly, ways to control and minimize costs. Arriving from economic theory, one of the more simplistic explanations behind first mover advantages is about size. That is, economic benefits to pioneers derive directly from their initial monopolistic position providing them with higher market shares that allow for economies of scale (Klepper, 1996). This source of advantage is considered to be more prevalent in capital-intensive industries than in less capital demanding markets. Another type of FMA source, also primarily applicable to manufactured products, is referred to as *technological factors* (1988). The advantage appears when firms become first movers through R&D or patent races. Thereby, the pioneering firm is expected to gain superior market shares and eventually become more profitable than late movers.

The third group of sources of FMAs includes so-called *preemption factors* (McNamara *et al.*, 2008) and are not considered to be limited to a certain industry or contextual setting. The concept refers to the various ways an incumbent could preempt critical resources and relations, which would raise entry barriers for late comers. A central preemption factor concerns the costs associated with attracting customers away

from pioneers, so-called 'customer switching' costs. Some of these are tangible and directly associated with customers' investments that are made into, for example, fundamental and widespread technology, education and training, marketing and sales material, or just transaction-related expenses (Lieberman and Montgomery, 1988). Other costs are more intangible and refer to the incumbent's level of market recognition and reputation, which will generate word-of-mouth effects (Lilien and Yoon, 1990). In addition, long-term relations typically lead to increased loyalty, which will also limit a customer's likelihood of changing exchange partners (ibid.). Taken together, customers of incumbents are likely to find it costly and inconvenient to change suppliers, which will make it more difficult for making late moves. Obviously, a similar reasoning could be applied to relations with other central stakeholders such as distributors, resellers, suppliers or financiers. Preemption is also used to describe how competition from late entry can be hindered when incumbents tie up critical assets on a legal/contractual basis. For example, first movers are considered to be in a better position to attract and retain key personnel, occupy superior locations, and enter long-term agreements with core partners (Lieberman and Montgomery, 1990).

The fourth set of sources of pioneering advantages, also applicable to non-product markets, concerns *proprietary experience effects* (Day and Freeman, 1990). Especially in situations with fairly stable customer needs, first movers are expected to enjoy advantages stemming from proprietary knowledge, where learning creates substantial entry barriers for followers. Also within the imitation literature, the area of imperfectly imitable knowledge and practices has been put forward as a disadvantage of imitative behavior (Lieberman and Asaba, 2006). Followers have an increased failure risk when lacking critical resources or when complexity, tacitness, and ambiguity prevent them from incorporating a satisfactory level of understanding of practices undertaken by first movers (Fligstein, 1991; Greve, 1998).

Finally, a combination of market preemption and proprietary experience may create a superior advantage allowing first movers to act on asymmetric advantages in identifying opportunities earlier than competitors. In an example that is particularly relevant to the current research, an early move may enable access to superior investment opportunities or lead to cost advantages, as the early mover acquires networks and experience before competitors perceive their true value (cf. McNamara *et al.*, 2008).

3.4.2 Sources of late mover advantages

The concept of late mover advantage implies that following others, rather than pioneering an area, leads to a superior position in relation to first movers, for example, in terms of profitability or long-term survival. The imitation literature has only to a limited extent focused on the effects of imitative behavior, and in such cases, it has focused primarily on the negative aspects of being a follower (Lieberman and Asaba,

2006). Furthermore, FMA research has historically promoted the advantages of being a pioneer to a much greater extent than the risks, and thus may have neglected possible benefits occurring from later entries (Lieberman and Montgomery, 1998). Over time, however, the potential disadvantages of taking on pioneering roles have begun to be highlighted in the literature, leaving room for examining the sources of late mover advantages (Schnaars, 1994; Lieberman and Montgomery, 1998; Boulding and Christen, 2008).

Similar to FMA, late mover advantages have been classified into various groups. Lieberman and Montgomery (1988) pointed at four sources of late mover advantages: free-rider effects, resolution of technological and market uncertainty, technological discontinuities, and incumbent inertia. Kerin *et al.* (1992) argued that later entrants can gain advantages by: benefiting from lower imitation costs compared to innovator costs, free-riding on first movers' investments, capitalizing on first movers' mistakes, enjoying economies of scale, or being able to influence customer preferences. In addition, the imitation literature has contributed with two critical advantages of later entry: diminishing risk exposure in general and attaining enhanced field-specific legitimacy (Hannan and Carroll, 1992; Aldrich and Fiol, 1994). Inspired by Lieberman and Montgomery (1988), Kerin *et al.* (1992), and not least by the line of thought arriving from the imitation literature, the sources of late mover advantages have below been categorized into four groups: (i) free-rider effects, (ii) incumbent inertia, (iii) learning effects, and (iv) resolution of uncertainty. Similar to the previous discussion about the sources of FMAs, some sources of late mover advantages are applicable generally, while others are valid primarily in certain industries or contexts. As will be outlined below, the groups of late mover advantages classified into 'free-rider effects' and 'incumbent inertia' are appropriate mainly when entering new product markets, while 'learning effects' and 'resolution of uncertainty' are relevant to a broader set of industries and contexts, and thus, of the four sets, the two latter are especially relevant to the current research.

While first movers in product markets typically enjoy advantages stemming from economies of scale, later entrants may take advantage of incumbents' initial investments. These are referred to as *free-rider effects* (Lieberman and Montgomery, 1988). Product imitation is considered to be less expensive compared to product innovation in most industries, typically due to technology improvements and diffusion (Mansfield *et al.*, 1981; Golder and Tellis, 1993). By deducing important information from the pioneer, e.g., through reverse engineering, imitators are given an opportunity to enhance speed in action. In addition, by avoiding costly errors made by first movers, later entrants can gain advantages by learning from the pioneer's mistakes and doing things differently (Lieberman and Montgomery, 1988). This provides an opportunity for imitators to free-ride on first movers' R&D investments. In addition, pioneers typically take on substantial costs for market development including expenses for regulatory

approvals, developing sales and distribution channels, as well as for establishing infrastructure facilities for service and training (Porter, 1980). Hence, late movers may be in a position not only to free-ride on pioneers' investments in product development, but also in market development.

Another source of advantage for late movers that is applicable primarily to manufacturing industries is so-called *incumbent inertia*, i.e., the notion that it is more difficult for incumbents to make rapid changes. In other words, pioneers in markets run the risk of being less capable or willing to respond to environmental changes or competitive threats (Lieberman and Montgomery, 1988). Incumbent inertia could stem from sources such as investments in outdated assets, reluctance to cannibalize on existing products, or organizational inflexibility. Typically, incumbents gradually update existing technology, rather than adopt new and improved technologies all at once. Hence, later entrants may 'leap-frog' incumbents with superior resources or technology (Naveh *et al.*, 2004; Kopel and Löffler, 2008).

While the two groups of late mover advantages discussed above are primarily applicable to mature packaged goods markets, others are valid in most industries or contextual situations. One such advantage, put forward in both the strategic management and the economic herd literatures, concerns the possibility of *learning* from preceding organizations and thereby reducing the consequences of failure (Kerin *et al.*, 1992; Bikhchandani *et al.*, 1998; Naveh *et al.*, 2004). Late movers can learn from first movers' successful practices as well as from their mistakes. In addition, by following practices and decisions made by others, organizations avoid being penalized for firm-specific failures (Scharfstein and Stein, 1990; Bikhchandani *et al.*, 1992).

The most important advantage for late arrivals, however, is related to the *resolution of uncertainty*. The reduced risk of entering more mature markets and thereby facing fewer uncertainties is dealt with in both the FMA and the imitation streams of research. Strategy scholars differentiate between technological uncertainty, arising from larger failure rates in first-generation products, and market uncertainty, arising from difficulties into forecasting customers' and other stakeholders' responses to pioneering initiatives (Lieberman and Montgomery, 1988). Early entrants are more likely to, for example, make regrettable strategic choices, miscalculate investment prospects, or simply fail to spot attractive business opportunities. Later entrants, on the other hand, can base their decisions on more current knowledge about a market's opportunities and characteristics (Porter, 1980), and thus, for example, can be better prepared to respond to customers' needs and wants. The institutional and population ecology scholars also address the benefits of entering a market first when uncertainty has decreased, although arriving from a different theoretical route. Based on the concept of legitimacy, the theoretical argument for reduced uncertainty is that legitimacy grows with density and once a new market has acquired a threshold of organizations, it is considered legitimate (Hannan and Carroll, 1992; Aldrich and Fiol, 1994). In turn,

industrial legitimacy enhances incumbents' ability to acquire critical resources and to attain interest from important stakeholders such as customers, partners, suppliers, or potential employees (Suchman, 1995).

This section has outlined the rationales behind FMA drivers, i.e., why a specific order of entry position may lead to a positive outcome, such as higher market shares or superior profits. However, not all organizations are capable of making a first move, or for that matter, even a later move. Furthermore, the extent to which an organization can actually turn a specific entry position into an advantage depends on its skills and resources, as well as on the environmental situation. Thus, factors affecting entry timing decisions and outcomes will be discussed next.

3.5 Factors affecting entry order

The possibility of obtaining advantages from either pioneering or following is considered to be affected by both micro and macro factors, an observation highlighted by Lieberman and Montgomery in their seminal 1988 article. In this section, organization-specific characteristics, as well as environmental contextual features in relation to entry order, will be presented and elaborated upon.

3.5.1 Organizational characteristics

A central tenet in the FMA literature is that optimal entry timing for an individual organization depends on both its qualifications to: (i) actually make a first move, and subsequently to (ii) develop a source of advantage from such a position (Kerin *et al.*, 1992). In other words, the extent to which a firm will be successful in regards to its order of entry strategy is said to be related to the strengths and weaknesses of its existing resource base (Lieberman and Montgomery, 1998). Drawing on the resource-based view of the firm (Wernerfelt and Karnani, 1987; Barney, 1991; Teece *et al.*, 1997), an impressive body of research has investigated how organizational capabilities and resources may capture benefits from primarily first, but also from late, market entries. According to this theoretical approach, firm-specific skills and assets are viewed as long-term competitive advantages to organizations (Barney, 1991). That is, due to environmental uncertainty, such possessions constitute a superior basis for sustainable competitiveness compared with a temporarily attractive market position (Grant, 1991). Hence, the essence of an organization's strategy is determining how to utilize existing resources and how to acquire or develop additional resources (Wernerfelt, 1984). The resource-based view makes a distinction between resources and capabilities (Makadok, 2001; Hoopes *et al.*, 2003). Resources are firm-specific tangible or intangible assets "*such as a brand, a patent, a parcel of land, or a license*" (Hoopes *et al.*, 2003, p. 890), which can be valued and traded. Capabilities, in contrast, refer to an organization's capacity to deploy resources and thus cannot be easily valued or

exchanged (ibid.). Not all resources or capabilities can get organizations to their desired levels of sustainable competitive advantages; they must be valuable, rare, imperfectly imitable, and without strategically equivalent substitutes, in order to be sought after (Barney, 1991).

The vast majority of FMA-based studies examining the organization-specific characteristics that are needed to make and capitalize on a specific entry order position are focused on first movers and their resources. *Size*, which is measured in terms of financial assets or number of employees, is frequently put forward as an enabler of first moves since large organizations are expected to be better prepared to wait for resolution of uncertainty and to take on costs associated with pioneering roles (Mitchell, 1989; Schoenecker and Cooper, 1998; Fuentelsaz *et al.*, 2002). Another resource associated with first moves is *strong brand capital*, whereby firms with such an asset are more likely to enter a new market early (Thomas, 1996). Also, ownership of an *internal sales force* has been attributed to successful first moves (Mitchell, 1989; Schoenecker and Cooper, 1998). In addition, *large research and development intensity* is considered often to lead to early entry (Schoenecker and Cooper, 1998). Another firm-specific capability potentially affecting a firm's tendency to pioneer or to follow, stemming from economic behavioral theories, relates to *past performance and risk-taking*, as discussed earlier in this chapter. The line of reasoning here is that poorly performing firms are more willing to undertake risks than are high performers, often in hopes of reaching a turnaround situation (Bowman, 1982; Figenbaum and Thomas, 1986). Hence, organizations with declining performance are expected to take on pioneering roles, despite the relatively higher risk of such positions.

A smaller stream of research has investigated whether a late mover also needs to possess specific capabilities and/or resources in order to make, and subsequently take advantage of, a later entrance. Such indications are noticeable in extant research, in which some of the capabilities or resources put forward as important characteristics for successful first movers are the same as here proposed as vital factors for late movers. *Size*, for example, has been recognized as a favorable resource also to followers. Since large organizations are able to apply more resources when entering a market, these resources may help them to nullify some of the advantages that early entrants have developed (Mitchell, 1991; Shamsie *et al.*, 2004). In a similar vein, Shamsie *et al.* (2004) found that organizations entering later are more likely to become successful if they have access to, and can make use of, *earlier experience* and/or *strong brand names*. Another argument for more experienced organizations entering the market in somewhat later phases arises from *learning curve effects*. Although pioneers may achieve an advantage in accumulating experiential knowledge early, organizations with extensive experience from related fields e.g., from similar industries or other geographical markets, can use such knowledge as a substitute for local experience when entering a new market (Mitchell, 1991; Schoenecker and Cooper, 1998; Shamsie *et al.*, 2004; Bayus and

Agarwal, 2007). Finally, organizations having *greater marketing skills* have also been pointed out as successful late movers (Robinson *et al.*, 1992).

The organizational resources and capabilities discussed in this section are often referred to in FMA research and have been tested in several studies. As stated earlier, however, a vast majority of the empirical FMA research has been applied to mature and stable production-oriented industries. There is less research focusing on how these resources enable a specific entry order strategy, and, thereafter, allowing firms to take advantage of the chosen position, in other market environments. Furthermore, it is possible that other resources, not addressed in the existing FMA research, also have significant effects on entry order and subsequent outcomes in other contexts. As outlined in Section 3.2.4, a favorable reputation is a social asset that is considered especially important in situations of uncertainty. How this asset may help to facilitate a desired entry order has not been investigated previously, but this issue is of specific relevance to the present dissertation and will be discussed in greater detail in Chapter 8 in the course of outlining hypotheses regarding organizational characteristics, entry order and performance.

This subsection has discussed and elaborated upon how various firm-specific resources may enable an organization to take on a desired order of entry position and subsequently to turn that entry position into an advantage. Increasingly, however, the macro perspective has enjoyed growing interest from scholars, suggesting that the contextual situation will have a large impact on how entry order advantages arise and emerge. Hence, the next subsection will elaborate on the links between environmental contexts and order of entry.

3.5.2 Environmental context

The question of whether environmental factors exert a significant impact on the ability of either first movers or later entrants to achieve advantageous positions is discussed extensively in the first mover literature (Lieberman and Montgomery, 1988; 1998), but is also addressed indirectly in the imitator research streams (Lieberman and Asaba, 2006). Most FMA studies have differentiated environmental factors on an industry or a geographical context basis. For example, Porter (1980) argued that advantages deriving from entry timing depend on industry characteristics, and Lieberman and Montgomery (1988) put forward the notion that the magnitude of pioneering advantages varies greatly across product categories and geographical markets. First movers are found to enjoy advantages especially in industries characterized by large scale and scope, where significant investments are expected from customers, and where production resources are scarce (Lieberman and Montgomery, 1998). For example, early movers within consumer or industrial packaged goods industries, such as pharmaceutical, tobacco, or computer devices, are considered to benefit from sustainable advantages vis-à-vis later entrants (Kerin *et al.*, 1992; Kalyanaram *et al.*, 1995). On the other hand, first mover

advantages are found to be difficult to maintain in service industries, given the issue of protecting intellectual property rights and the fact that competitive actions are easy to identify and imitate (Kerin *et al.*, 1992).

More contemporary research, however, tends to categorize contextual factors into clusters based on overarching environmental features. A fundamental classification of the environment was provided by Lieberman and Asaba (2006), who brought together a large number of theories including institutional theory, population ecology, economic theory of herd behavior, strategy, and economics. The authors presented two distinct environmental dimensions: the level of uncertainty and the level of rivalry. According to Lieberman and Asaba (ibid.), a low-uncertainty/high-rivalry environment is characterized by a high degree of competition, similar types of organizations in terms of size and skills, and limited levels of uncertainty. This is precisely the type of environment that has been in focus for most FMA studies and where a first move often has been put forward as the superior order of entry strategy. In a high-uncertainty/low-rivalry environment, on the other hand, competition is limited, organizations are rather different, and the level of uncertainty is obviously high. In situations of high uncertainty, a late move has been suggested as the optimal entry approach (Kerin *et al.*, 1992; Lieberman and Asaba, 2006), although the latter has been significantly less researched.

Taken together, while pioneer advantages are considered sustainable in many different manufacturing industries (Robinson *et al.*, 1992; Kalyanaram *et al.*, 1995), research about first mover advantages in service industries is still scarce (Usero and Fernández, 2009). Applying the line of thought behind FMA in a service industry has been put forward as a particularly interesting way to develop theory further, given the differences between products and services along several dimensions such as intangibility, heterogeneity, and simultaneity (López and Roberts, 2002). Studies focused on highly uncertain markets such as the financial sector are particularly limited, and theoretical explanations addressing which antecedents and enablers of first or late mover advantages are often either absent or contradictory (Tufano, 1989; Makadok, 1998; López and Roberts, 2002; Berger and Dick, 2007). Here, Lieberman and Asaba (2006), at least indirectly, point at a promising route to enhancing the understanding about entry order in situations of high uncertainty by incorporating ideas from the imitation literature.

3.6 Summary and a developed entry order model

This chapter began by stating that neither of the two dominant order of entry theories, i.e., the FMA and the imitation streams of research, alone lend themselves to fully explaining the patterns of entry order strategies within an area such as private equity fund investing. Hence, it was decided to follow a recent call (Lieberman and Asaba, 2006) to cross-fertilize the two fields and to develop theory further before testing the

ideas empirically. After that, four central concepts in the thesis were elaborated upon: first movers, late movers, uncertainty and reputation.

Then, FMA and imitation literatures were outlined and discussed, to a large extent following the structure of Lieberman and Montgomery's (1988) original FMA model. Four areas explaining sources of first mover advantages were addressed: (i) economic factors, mainly consisting of economies of scale and subsequent cost advantages, (ii) technological factors, based on R&D and patent races, (iii) preemption factors, which means that early entrants may preempt late movers by building relationships with important stakeholders and controlling critical assets, and (iv) proprietary experience effects, stemming from more extensive experience in the field and thus superior knowledge. While the first two groups mainly are relevant within manufactured goods industries, the latter two apply to most industries and to broader contexts in general. Next, some possible sources of late mover advantages were discussed and categorized into groups: (i) free-rider effects, which means that late movers may benefit from early entrants' investments in product and market development, (ii) incumbent inertia, meaning that incumbents may be unwilling or unable to react fast enough to environmental changes whereby followers may 'leap-frog' the pioneers, (iii) learning effects, indicating that second movers may learn from incumbents and thereby reduce failure consequences, and finally, (iv) resolution of uncertainty, where entering more mature markets is generally associated with lower risks in several dimensions. It was also noted that the two latter groups were especially relevant to the current study.

Following that, factors affecting an organization's ability to take on a desired entry position and subsequently to enjoy benefits from the chosen position were discussed. A general conclusion from the large body of FMA research is that firms with superior resources in terms of organizational size, financial means, brand capital, sales force or R&D capacity tend more often than others to take on successful pioneering roles. Organizations found to be successful late movers are, for example, those with strong marketing skills or with shared manufacturing resources. However, the review did reveal that size, more extensive experience and strong brand names may be beneficial to late entrants, as well. The observation that similar types of resources might actually be critical to both first and late movers refers to a core idea in FMA theory, namely, that needed resources will differ between environmental contexts. This review highlighted the fact that in industries characterized by large scale and scope, where switching costs for customers are high, and production resources are scarce, pioneering strategies are often found to be superior. On the other hand, in service industries, first mover advantages seem to be difficult to maintain and thus, second movers tend to be better off. However, the latter environment has rarely been in focus for FMA studies and hence there is a limited understanding of what types of resources or capabilities are needed to take on a successful first, or for that matter late, mover position in such situations. Moreover, the overview highlighted that organizational reputation, consi-

dered an especially valuable asset in situations of uncertainty, likely should be taken into consideration when evaluating factors affecting entry order and subsequent outcomes. Finally, the review indicates that the body of order of entry research is extensive in the areas of packaged goods and their introduction and entry into new geographical markets, while applications of these theories to other settings are still scarce, particularly within the empirical field of financial services, which is characterized by relatively high uncertainty.

To summarize, Lieberman and Montgomery's (1988) seminal model of first mover advantages has over the last 20 years been developed based on new theoretical insights and findings from empirical research. In this chapter, the model was extended further through ideas arriving primarily from the imitation stream of research. As a result, a modified version of the original conceptual FMA model has been developed (see Figure 3.2). This new model is an extension of the former in four major ways, namely, by (i) using Lieberman and Asaba's (2006) classification of the environment based on the level of uncertainty, (ii) combining insights from the first mover advantage and the imitation literature in order to further develop the theoretical explanations behind sources of either first or late mover advantages, (iii) incorporating the reputation construct as a potentially important organizational resource for initiating first or later moves and taking advantage of such actions, and (iv) embracing late moves and associated advantages to the same extent as first moves in the model.

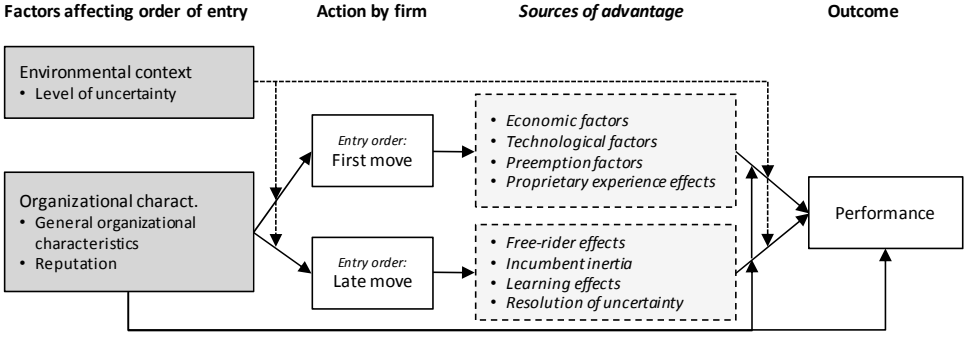


Figure 3.2. Extended theoretical model for generation of first and late mover advantages

In this dissertation, the above model will be tested within an empirical area that has rarely been in focus in existing FMA research, namely, the private equity industry, which is characterized by relatively high uncertainty in many dimensions. The next chapter will discuss the methods chosen for testing these ideas, as well as methods for providing a broader understanding of the field of PE fund investing in general.

CHAPTER 4

Research strategy

This chapter presents the research strategy for the doctoral dissertation. It initially provides a brief overview of my personal approach to research, before moving on to a presentation and discussion of the chosen research methods and the overall design. In the next subsection, the qualitative study is outlined, detailing how the cases were chosen, interviews performed, and data analyzed. Following that, three subsections cover the quantitative studies, including presentations of: (i) the data collection procedures and samples, (ii) chosen statistical methods, and (iii) potential issues with these methods and how they are resolved. The chapter ends with comments about quality aspects of the present research, focusing on the concepts of validity, reliability and contribution.

4.1 Research approach

All research is based on the investigator's underlying perspective and assumptions of what constitutes 'good' and 'valid' research. In order to allow for following and evaluating others' studies, I believe it is important to at least briefly explain and describe these suppositions. The two fundaments of a researcher's philosophical assumptions are related to her belief in the nature of reality, *ontology*, and how knowledge can be obtained, *epistemology*. Perspectives on research are commonly described along a continuum, ranging from positivism on the one side to subjectivist approaches on the other. The positivistic epistemology originates from a natural science view, i.e., the view that knowledge is cumulative and that new insights are added through the verification, or falsification, of existing theories. The subjective perspective, on the other hand, is based on the notion that the world is socially constructed and can only be understood from the point of view of the individuals who are directly involved. Following this, subjectivists reject the notion that science can generate some sort of objective knowledge. Put simply, the difference between the perspectives lies in their respective assumptions about whether a truly objective world exists independently of us, or if the world is subjective and only exists through human action (Berger and Luckman, 1967). Personally, I subscribe to a perspective between the two extremes, in line with the ideas of critical realism.

Critical realism, initiated by Roy Bhaskar (1978), emerged as a critique of post-modern epistemology and its foundations in social constructive ontology. Critical realists, like subjectivists, turned away from what they regarded as the positivists' naive, theory-independent and empirical ontology. However, the critical realists argued that the subjectivists had gone too far, and that the social constructivist view creates ambiguity and confusion. The core idea of critical realism is that an entity can, but doesn't

have to, exist independently of our knowledge about it (Fleetwood, 2005). This means that while a critical realist would agree with the subjectivist view that certain things are socially constructed by us, other things do in fact exist without human interference or interpretation. On the other hand, critical realists do not accept, unlike various forms of positivism, the existence of theory-neutral observations, interpretations, explanations or theorizations. That is, underlying structures or mechanisms are not immediately accessible but have to be theoretically constructed and mediated through processes of conceptual abstractions. Critical realists reject the idea that all representations of the world are equally valid. Instead, one should search for representations that constitute better knowledge of the world than others (Bhaskar, 1978). Hence, to critical realists, scientific theories are always open to revision and reformulation; it is not only possible but also necessary to assess competing theories and explanations to enhance our existing understanding (ibid.).

My position is to a large extent aligned with the critical realism perspective in that I do believe that there exists a world independently of me, although parts of it are socially constructed. Therefore, my ability to understand the world will always be incomplete and influenced by the norms prevailing in the society in which I exist and operate. However, I also take a rather pragmatic approach given my opinions about how research shall be used. That is, I consider it crucial that research is not only targeting an academic audience, but that findings, insofar as possible, are made widely available to practitioners. Without a strong basis in reality and sources of potential interest to a broader public, I believe that the core value and function of academic research, and even the necessity of continuing to conduct it, especially within a field such as business administration, in the long run may be called into questioned. Hence, I believe that a researcher needs to take on a somewhat pragmatic approach in the process of formulating individual interpretations of a phenomenon. That is, even if my interpretation of the world never will be exactly the same as the interpretation made by another observer, the collective findings from a group of researchers will hopefully provide a reasonably good understanding of the phenomenon – and thus will prove to be useful to practitioners.

4.2 Research methods and design

The process of determining whether to choose a quantitative or qualitative research method is one of the key decisions to be made in designing a research study. While some researchers would argue that the choice of data collection and analysis methods is a matter of personal ontological and epistemological beliefs, I agree with the more pragmatic view that the research method should depend primarily on the research question(s) being asked (cf. Yin, 2003; Punch, 2005).

The broad purpose of this dissertation is to increase the general understanding of PE equity as an asset class and, more specifically, to explore how differences in organizational characteristics and investment strategies across institutional investors affect performance. Given the notable lack of research within these areas, as addressed in Chapter 2, a qualitative research approach seemed to be a good choice. Such a method: (i) provides a more holistic view of social dynamics, (ii) reduces the risk of oversimplifying the complexities of real-world phenomena, and (iii) is more likely to identify important factors that cannot easily be quantified (Punch, 2005). More specifically, the methodological justification for making a qualitative study was to: (i) in general, provide a rich and encompassing understanding of the phenomenon of study, i.e., institutional investing in PE funds, and (ii) specifically, to investigate heterogeneity across institutional investors in terms of perceptions of the asset class, objectives for PE fund investing, working methods, choices of investment strategies including entry order, and satisfaction with returns.

Having said that, this dissertation has also a more specific purpose to investigate order of entry strategies and subsequent performance consequences for organizations operating within a financial services industry in situations of varying degrees of uncertainty. For this specific purpose, a quantitative rather than a qualitative study appeared to be the preferred choice of method. The motive is the rich prevalence of theories about first mover advantages, imitation, uncertainty and organizational reputation – i.e., the major theoretical frameworks for the thesis. In other words, given the aim of the current research to test theoretically derived hypotheses, a deductive approach was called for, as well, and, consequently, the use of quantitative data examined through statistical analysis presented itself as the most naturally suited research method (Punch, 2005).

Hence, this thesis includes both a qualitative and a quantitative hypothesis-testing study. In addition to what has been outlined above, the data and analyses arriving from these two studies have been used in a few complementary ways. First, the qualitative study served as an additional source for formulation of hypotheses, as well as for the interpretation of subsequent test results, with the objective of avoiding incorrect or trivial conclusions. Second, the quantitative data were also used for: (i) describing how the PE fund market has emerged and developed in Sweden, (ii) presenting an overview of performance heterogeneity amongst PE fund investors based on type, and (iii) evaluating factors determining the performance of PE funds. These studies contribute to the goal of providing a more comprehensive understanding of private equity as an asset class.

A summary of the studies included in this dissertation, and their respective focuses is provided in Table 4.1.

Table 4.1. Empirical studies included in the dissertation

EMPIRICAL STUDY	PURPOSE	TYPE
Chapter 5: *Analysis of the Swedish PE market*	Gives a broad understanding of how the PE fund investment field has developed in Sweden over the years.	Descriptive/ Quantitative
Chapter 5: *Analysis of performance heterogeneity across PE fund investors*	Provides a high-level analysis of performance heterogeneity across various types of PE fund investors.	Quantitative
Chapter 5: *Analysis of PE fund performance determinants*	Presents factors affecting PE fund performance.	Quantitative
Chapter 6: *Analysis of PE fund investors and their investment strategies*	Gives a broad understanding about heterogeneity across institutional PE fund investors related to perceptions of the asset class, objectives for PE fund investing, working methods, choice of investment strategies and satisfaction with returns. Constitutes an additional source for hypothesis development and interpretation of test results.	Qualitative
Chapter 9: *Prediction of entry order and performance*	Gives a detailed understanding about how heterogeneity in organizational characteristics and entry order strategies across institutional PE fund investors affect performance from PE fund investing.	Quantitative

In total, the dissertation builds on 76 interviews, complemented by a large amount of data derived from secondary sources. While 40 of the interviews were part of the quantitative studies, the remaining 36 interviews constituted the basis for the qualitative study.

4.2.1 Choice of empirical context

The empirical context for this dissertation is, as stated before, the private equity fund investment market. This environment was considered ideal for testing the research model and associated hypotheses (see Chapters 7 and 8), given that it allows for investigating entry order in a financial services industry with relatively high levels of uncertainty. In addition, the way of working with a fund structure in this industry, i.e., where PE firms strive to set up a new fund when the previous fund reaches its closing date, enables testing of the entry order theories in a novel way (more details will be provided in Chapter 7).

Yet another compelling reason why I chose to focus on private equity investments arose when I was working in this particular industry. During my tenure, a specific interest for performance determinants emerged. For five years, I have been working as a venture capitalist in the Swedish market, i.e., investing in, managing and exiting start-up firms. I used to be a partner of the private venture capital firm StartupFactory, and following that, I was an investment manager at the government-associated Swe-

dish Development Fund (Industrifonden). Furthermore, I have been a board member of the Swedish Private Equity and Venture Capital Association (SVCA). Hence, my pre-understanding of the industry is relatively high and my personal network includes a number of investment professionals working at private equity firms in Sweden. Gummesson (1991) explains pre-understanding as a researcher's knowledge and insights into a specific problem and experience before engaging in a research project. Such understanding has many advantages, including a shorter span of time being needed for collecting basic information, the formulation of more advanced and insightful questions, the fact that tacit messages can be more easily observed and interpreted, etc. Gaining access to accurate and reliable data about PE fund investments, and specifically, to performance data, is considered one of the more challenging tasks when studying PE markets (e.g., Kaplan and Strömberg, 2009; Cumming and Walz, 2010). The industry is considered to be surrounded with secrecy and a widespread reluctance to be transparent and make information public (see discussion in sections 2.2.5 and 2.3.4). By utilizing my social network in the Swedish PE industry, I have been able to develop a uniquely robust population database that otherwise would have been difficult to put together. Furthermore, although I do not have any personal experience in investing in private equity funds, my general understanding about the industry, its history, key stakeholders, working processes, and outcomes, provided a solid base for preparing and carrying out interviews, as well as facilitating the analysis and interpretation of the collected data. Therefore, my background and experience from the field has brought substantial benefits to this particular area of research.

Having said that, pre-understanding can also become a severe threat to objectivity as it introduces bias on the part of the researcher. That is, there is always a risk that the researcher, given her preconceptions of the studied phenomenon, may be reluctant to change or contradict existing theories and models. Hence, it is considered essential that a researcher's pre-understanding is continuously subject to change and that the researcher has a deep understanding of her perceptions and paradigms (Patton and Appelbaum, 2003). I am aware of the risks associated with having a relatively high practical knowledge about the phenomenon in focus for this dissertation. By preceding the empirical research with a rigorous literature review, building hypotheses on well-established theories, following highly structured survey and interview templates (see Appendix 7 and Appendix 10), immediately storing collected information in a computer-based database, and applying well-proven statistical procedures for hypothesis testing, I have taken proactive steps to identify and reduce potential pre-understanding issues as much as possible.

4.2.2 Unit of analysis and informants

The unit of analysis refers to the focal point of a study. In the business administration and economic literatures, research typically focuses on either a micro (e.g., idea, indi-

vidual, team, firm/organization) or a macro (e.g., industry, region) level. It is imperative that there should exist a clear correspondence between theories and research questions on the one hand, and the unit of analysis on the other hand (Davidsson and Wiklund, 2001). Given the goals set out for this dissertation, the most suitable level of analysis is the organization, and, more precisely, institutional organizations investing in private equity funds. Since the primary data collecting method was through personal interviews, the information submitted by an individual needs therefore to be considered representative for the organization she works for. Hence, the choice of respondents and the type of data collected were important in order to guarantee high validity (which will be discussed further in a subsequent section).

The data used in the dissertation are derived from various sources and from different types of informants. First, the qualitative study was based on interviews with individuals working with PE fund investments at institutional organizations. Second, for the quantitative studies, the information sources were drawn primarily from individuals working at private equity firms, not at institutional investment organizations. The reason for this was that these informants could more easily provide the kind of comprehensive data needed for the quantitative studies. Third, the quantitative data have been complemented with information from secondary sources. Details about the reasoning behind choices of informants and data sources will be provided in the following subsections.

4.3 Qualitative study

The broader qualitative study sets out to investigate PE fund investors and their investment strategies. This section provides details about how the study was modeled and carried out.

4.3.1 Case selection

The cases used within the qualitative study were chosen with broad variation, enabling analysis of different ends of the spectrum, as well as identification of important themes (Eisenhardt, 1989; Yin, 2003). That is, polar cases, differentiated by owner type, size, focus, and track record, were selected. Moreover, there was a desire that the selected cases collectively should reflect the composition of investors in the major quantitative, i.e., the hypothesis-testing, study. The idea was that the results from the qualitative study should be representative of the views arriving from all types of institutional PE fund investors that operated in the Swedish market during the time of study, i.e., between 1983 and 2003. Figure 4.1 illustrates how the organizations belonging to the qualitative and to the quantitative studies are distributed across the various types of investors. Apparently, the distribution is relatively equal except for an under-

representation of families/foundations and a slight over-representation of public pension funds in the qualitative study.

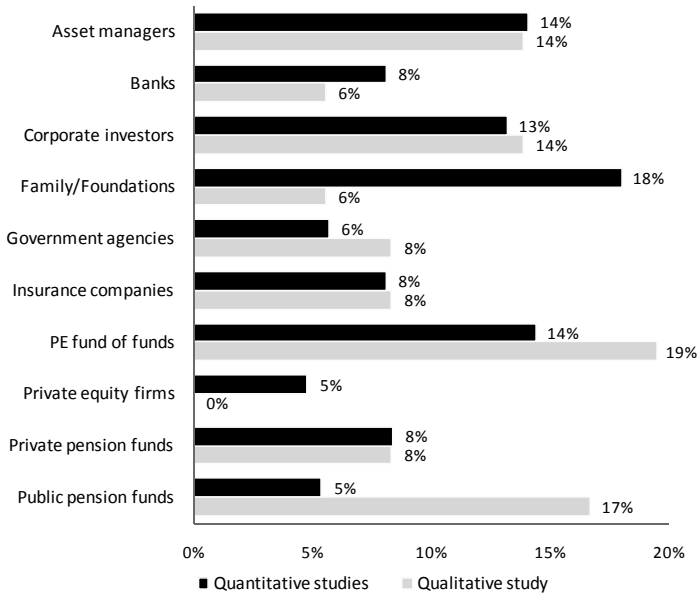


Figure 4.1. Types of institutional organizations participating in the studies. Percentage split per type of institution included in the quantitative studies (in total: 334) respectively the qualitative study (in total: 36)

Since 64 percent of the institutional investors included in the quantitative studies were non-Swedish, it was seen as important not only to interview Swedish institutions but also to get the perspective of international investors. Hence, ten out of the 36 cases selected in the qualitative study originated from the UK, the US, or another European country. Eight of the interviews took place in London and the remaining interviews transpired in Sweden. The total number of case organizations, as well as the number of interviews, amounted to 36. A list of the interviews is available in Appendix 6.

Efforts were undertaken to interview key informants at the respective institutional organizations, i.e., the person in charge of the PE fund investment activities (cf. Barnes and Menzies, 2005). Of the respondents, 33 percent had the position of partner and/or investment professional, while another 28 percent were in charge of private equity departments or were responsible for all alternative asset investments. Moreover, 14 percent of the respondents were CFOs (i.e., chief financial officers) with an overall responsibility for the financial asset management within their organizations, and finally, 25 percent held other senior management positions including the role of CEOs (i.e., chief executive officers). In other words, the respondents all have a comprehensive

understanding of their organizations' way of managing PE investments. The respondents' experiences from investing in the private equity sector varied from two to 27 years. Furthermore, 29 of the respondents were Swedish, while seven had US or UK citizenships. Only three of the respondents were women.

4.3.2 Interviews

Dependent on the degree of structure and how deep they go, interviews are typically classified into three different types: (i) unstructured, (ii) semi-structured, and (iii) structured (Patton, 2002; Yin, 2003). Unstructured interviews are based on spontaneously generated questions, often asked in a conversation-like environment that emerges between the researcher and the respondent. Semi-structured interviews follow some type of prepared thematic framework, but do not contain specific questions. Structured interviews, finally, follow templates of predefined questions that are asked in the same order to all respondents. In such interviews, the researcher aims at taking on a neutral role. In the present qualitative study, relatively structured interviews were carried out using a detailed interview template (see Appendix 7). In addition, a few open-ended types of questions were asked, leaving room for the respondents to elaborate upon their views about private equity fund investing in more general terms.

The interviews were always preceded by a thorough scan of publicly available material about the organization in question as well as about the specific respondent, with the purpose of enhancing confidence in the results and to increase efficiency in the research process (Eisenhardt, 1989). A large amount of written material originating from the focal organization, such as financial information, press releases, information published on the companies' web pages, advertising material, etc., was obtained and analyzed. In addition, publicly available information from other sources was used, e.g., from the trade association SVCA[20], PE firms, partners, the business press, etc. The 36 interviews were conducted during the spring of 2008. On average, the interviews lasted for 71 minutes; 34 of them where conducted face-to-face, and two transpired over the telephone (see Appendix 6 for more details).

During the pre-study period, I discovered that when turning off the recorder, the respondents were more open and provided more critical information compared to the discussions which were recorded. Hence, the decision was made not to electronically record the interviews. Along the same lines, respondents were given anonymity. In other words, given the small industry setting and the sensitivity of the study, I recognized that this research could not have been undertaken along with demands for electronic recording or revealing the identities of the respondents. Obviously, the fact that the interviews have not been recorded and that the cases have been anonymized

[20] The Swedish Private Equity and Venture Capital Association.

may have certain drawbacks in terms of the reliability of the study. This circumstances do not easily allow for a 'chain of evidence' where the reader can track conclusions back to original data directly, as suggested by Yin (2003). Hence, in order to reduce potential negative effects from the chosen approach, a rather formal and structured way of carrying out the interviews was adopted. Detailed notes were taken during the interviews and quotes viewed as important or interesting were written down carefully. After the data were collected, the material was documented and personal notes were rewritten within 24 hours. When additional questions or clarifications were needed, respondents were contacted immediately after the interview for follow-ups. Since the interviews were not recorded, and furthermore, since most of them were conducted in Swedish, the exact quotes as replicated in the dissertation could be somewhat adjusted. The overall meanings of the statements were, however, certainly conveyed.

4.3.3 Analysis

Given the structured type of interviews that were used and the collection of a large amount of numerical data, the analysis was likely easier compared with analysis of data based on more unstructured interviews. As recommended by Yin (2003), a case study database was created. All information captured in the interviews was stored in a Microsoft Access 2007 database. Microsoft Excel 2007 was used to structure, analyze and understand themes, patterns or conflicting responses in the data.

4.4 Quantitative studies: Data collection

This section presents how the data used in the quantitative studies have been collected. Given that the collection process was designed for the hypothesis-testing study, this is the study in focus in the following discussion unless otherwise stated.

4.4.1 Data collection and sample

A vast majority of the research investigating private equity performance is based on data arriving from one of the two commercial sources: Thomson Venture Economics and Dow Jones VentureSource (former Venture One). However, these databases have been criticized, e.g., by Ljungqvist and Richardson (2003), for, amongst other things, being subject to selection biases and thus being incomplete (see Section 2.3.4). Hence, for the current study, the decision was made to collect primary information through a survey and then build a unique database with detailed information about investments in Swedish private equity funds.

The main purpose of the hypothesis-testing study was to analyze heterogeneity in organizational characteristics, order of entry behaviors, and successes across institutional organizations related to their Swedish PE fund investing activities. The optimal

source of such information appeared to be individuals working at Sweden-based private equity firms. They were able not only to provide data about who had invested in which fund and associated capital commitments, but also to share information about each fund's characteristics and performance. Hence, the target respondents for the survey were not the institutional investors themselves (i.e., the LPs), but rather key informants at PE firms (i.e., the GPs). Similar to the qualitative study, only senior executives such as founding partners or CFOs were interviewed in order to access direct knowledge and experience.

There are basically two different methods used to collect data in surveys: based on mail questionnaires or on personal interviews, where the latter may be performed face-to-face or over the telephone (Lekvall and Wahlbin, 1993). Given the respondents' general reluctance to broadly provide transparent information, personal interviews turned out to be the optimal option. While the personal interviews fostered a greater willingness to disclose secret company information, they also had the positive effect of increasing the response rate to 100%. In other words, all of the PE firms that were contacted agreed to participate in the study, which is by far better than most mail surveys. The interviews were fully structured, i.e., a template was filled in during the interviews (see survey template in Appendix 10). The data are quantitative in nature and contain detailed information about each fund raised by the PE firm in question. The interviews ended with a few open, less restricted questions.

The identification of target objects for the survey, i.e., the PE firms, was done primarily through interviews with, and information provided by, SVCA. Based on this input, a list of Sweden-based private equity firms that are, or have been, members of the association was put together. According to SVCA, its association membership represents 95% of all private equity firms in Sweden. In addition, a thorough search for press releases, new articles, or other internet-based information was made in order to complete the list of PE firms operating on the Swedish market from its emergence until the date of the data collection, i.e., the fall 2007. To avoid 'survivor' bias, special efforts were taken to identify not only surviving PE firms, but also non-survivors. In total, 186 PE firms were identified, whereof 179 had been members of SVCA. In order to fulfill the purposes of this research with its focus on institutional investors, and to reduce unobserved heterogeneity within the sample, a large number of PE firms were removed from the list. That is, the sample was restricted to only those private equity firms managing funds fulfilling the following criteria (see Figure 4.2):

- Given that the study objects are institutional investors, funds solely financed by private capital were excluded.
- Since the present research evaluates order of entry in relation to PE funds, only PE firms that invest their capital through formal funds (or having similar structures) were included. Therefore, PE firms having 'evergreen' types of setups, e.g., go-

vernmental or regionally owned PE firms investing primarily soft money, corporate investors capitalized by their mother companies, or public PE firms traded on a stock exchange, were excluded from the study.

- Only funds managed by Swedish PE firms were included[21]. The restriction to Sweden was a result of both making a natural border with the desire to study a comprehensive population, as well as expected challenges and costs associated with international data collection based on personal interviews.
- Finally, in order to avoid possible biases in considering funds that were not sufficiently mature and hence not old enough to present reliable performance measures (cf. Gottschalg, 2010), only funds founded before or during 2003 were included in the study.

Consequently, from the full set of 186 identified private equity firms that had been active in the Swedish market over the time period 1983 to 2003, a subset of 34 firms fulfilling the four criteria above were included in the study. While the 34 firms correspond to only 18 percent of the number of private equity companies present on the Swedish market throughout the study period, these teams did supervise the lion's share of the capital, i.e., almost 60 percent. Out of these 34 private equity firms, 26 were still active as investors at the time of the study, while the remaining eight had closed down.

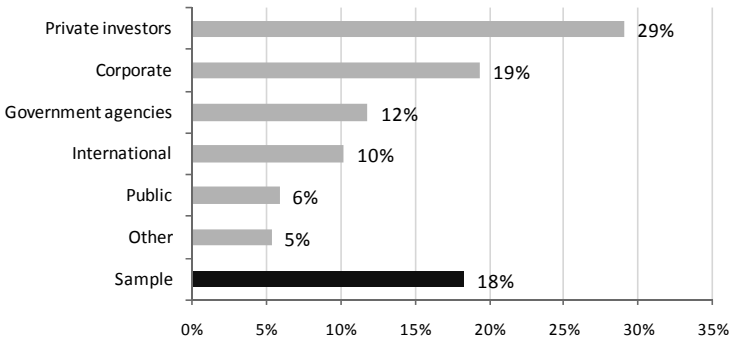


Figure 4.2. PE firms operating in the Swedish market 1983-2003 (in total: 186)

The survey data were gathered during 2007 in three phases (see summary in Figure 4.3 and lists of interviews in Appendix 8 and Appendix 9). Initially, a pre-study with the purpose of getting an overview of the current market situation was made through seven interviews with employees at SVCA and one governmental institution. Following that, pilot interviews were carried out in 2007 with five institutional investors. The

[21] Many PE funds set up by Swedish private equity firms are not legally 'Swedish', meaning that they typically have offshore structures to domicile the funds (e.g., located in Cayman Islands, Luxembourg, etc.). For simplicity reasons, though, this dissertation refers to 'Swedish PE funds' irrespective of their legal domicile.

purpose of these interviews was to test concepts in general, and especially to pre-test the survey questionnaire. Data were then gathered on a full scale during the fall and winter of 2007 through 28 interviews with respondents representing 26 unique private equity firms. Detailed information about each PE firm's funds and investors were collected in the interviews (see survey template in Appendix 10). Of the 28 interviews, 25 were made face-to-face and three were made over the telephone. Each interview lasted between 20 minutes and 110 minutes with an average of over an hour.

No of interviews	40
- pre-study	*7*
- pilot	*5*
- final survey	*28*
No of unique respondents	34
- pre-study & pilot interviews	*7*
- final survey	*27*
No of unique organizations	32
- pre-study & pilot interviews	*6*
- final survey	*26*

Figure 4.3. Overview of interviews and respondents in the quantitative studies

In 2008 and 2009, the survey-based data were complemented with information from three public information providers: Preqin, Capital IQ and the Orbis database from Bureau van Dijk. In addition, other publicly available data sources such as annual reports, company presentations, news articles and press releases, web pages, etc., containing information about institutional organizations identified as investors in the PE funds included in the study, have been thoroughly analyzed. In cases in which a fund had a Swedish AB setup, information from the Swedish Companies Registration Office ('Bolagsverket') was added. All in all, the secondary data sources were used to: (i) add data for the eight 'non-surviving' PE firms, (ii) complete the dataset with general information about the institutional investors, such as their characteristics, sizes, and experiences, and (iii) to some extent verify, and thereby triangulate, data collected in the interviews (see Table 4.2).

4.4.2 A unique database

All information collected from the primary and secondary sources, as described above, has been stored in a unique database. The dataset has several advantages over many others that have been used in existing PE studies. First, unlike commercial databases such as VentureXpert from Thomson Venture Economics or VentureSource from Dow Jones, this dataset is free from self-reporting and survivor biases (cf. Ljungqvist *et al.*, 2007). Second, it is a full population database in the sense that all PE funds raised in Sweden following the criteria

Period	1983 to 2003
No of institutional investors	334
No of PE firms	34
No of PE funds	73
- VC funds	*46*
- BO funds	*27*
No of PE fund investments	848
- VC fund investments	*342*
- BO fund investments	*506*

Figure 4.4. Overview of data used in the quantitative studies

outlined in the previous subsection are included. Third, all statistics, not least performance data, are reported in a homogenous way, which make comparisons adequate and reliable.

All data were stored in a relational database using Microsoft Access 2007. The data were then transferred to STATA, version 10.0, where statistical tests and subsequent analyses were carried out. Graphical illustrations such as diagrams and charts were made in STATA, version 10.0, and in Microsoft Excel 2007. A high-level summary of the quantitative data included in the thesis is presented in Figure 4.4. Table 4.2 presents the information sources used for collecting the data.

Table 4.2. Sources of collected data in the quantitative studies

AREA	PRIMARY SOURCE	SECONDARY SOURCE
PE fund performance PE fund characteristics *Vintage, fund number, size, phase focus, geo focus, industrial focus*	Interviews with GPs *For 26 existing PE firms*	News articles and LP company specific information[1)] *For 8 closed PE firms*
PE fund investors *Name, committed capital*	Interviews with GPs *For 26 existing PE firms*	News articles, LP company specific information[1)], data from the Capital IQ database, data from 'Bolagsverket'
LP company characteristics *Type, nationality, etc.*		LP company specific information[1)], data from the Orbis database
LP level of assets under management LP experience from PE fund investing. *Years & number of completed PE fund investments*		LP company specific information[1)], data from the Preqin and Capital IQ databases

[1)] Home pages, annual reports, press releases, etc.

4.5 Quantitative studies: Applied statistical techniques

In this dissertation, univariate analysis techniques were used for investigating performance heterogeneity across investors as well as for analyzing fund performance determinants (see Chapter 5). In these analyses, Wilcoxon Mann-Whitney, ANOVA and Kruskal-Wallis tests were applied. In the hypothesis testing of factors affecting entry

order and performance (see Chapter 9), two multivariate techniques, multiple linear regression and logistic regression, were applied[22].

In the following subsections, the applied techniques are presented together with their respective underlying statistical assumptions. Since a number of the inherent requirements are valid to more than one method, presentations of more important or complex assumptions are provided jointly in Section 4.6. Table 4.3 summarizes the analysis techniques used in the respective analyses.

Table 4.3. Summary of statistical techniques applied

EMPIRICAL STUDY	RESEARCH QUESTION	DATA	TECHNIQUE
Chapter 5: *Investor performance heterogeneity*	How do performances differ across various types of PE fund investors?	334 PE fund investors	ANOVA, Kruskal-Wallis
Chapter 5: *PE fund performance determinants*	What factors affect PE fund performance?	73 PE funds	Mann-Whitney, ANOVA, Kruskal-Wallis
Chapter 9: *Investor entry order*	What organizational characteristics impact certain entry order behaviors?	219 BO fund investors 186 VC fund investors	Logistic regression
Chapter 9: *Investor performance*	What are the performance effects of certain organizational characteristics, entry order behaviors, and macro conditions – alone and/or in combination?	219 BO fund investors 186 VC fund investors	Multiple linear regression

4.5.1 Univariate analysis techniques

In the statistical analyses of investor performance heterogeneity, as well as of PE fund performance determinants, a few univariate analysis methods were used (see Chapter 5).

Student's *t* test of variance is typically applied for comparing means between two samples. However, this parametric test assumes: (i) normal distribution of the depen-

[22] It may appear that event time analysis would be a preferred method to test entry order (cf. Blossfeld *et al.*, 2007). This technique has been used in a number of FMA-oriented studies (e.g., Mascarenhas, 1992; Fuentelsaz *et al.*, 2002; Tan *et al.*, 2007; Boyd and Bresser, 2008). However, the current database contains information about capital flows at only two occasions: when an institutional investor commits a certain amount of money to the fund and when it receives returns on the invested capital. Flows of investments and proceeds that have occurred in between these two junctures have unfortunately not been possible to trace within the framework of the current research. Hence, applying an event study analysis was not feasible, and instead, multiple linear and logistic regressions turned out to be more appropriate choices. These statistical methods have also been used in several studies evaluating first mover advantages (e.g., Schoenecker and Cooper, 1998; Durand and Coeurderoy, 2001; Carow *et al.*, 2004; Naveh *et al.*, 2004; Rodríguez-Pinto *et al.*, 2007; Yoo *et al.*, 2009).

dent variable, and (ii) homoscedasticity, i.e., that each group's variances are approximately equal (Hamilton, 2009). Although the *t* test is considered to be a fairly reliable measure also in cases of non-normality and the fact that sample sizes above 30 rarely have issues with unequal variances (Introduction to SAS, 2007), the non-parametric and more robust analogue to *t* tests, i.e., the Wilcoxon Mann-Whitney rank sum test, was carried out. The Mann-Whitney test combines the two groups into a single group and then ranks the objects. Given that the Mann-Whitney test can also be used in cases when the dependent variable is not normally distributed, which was the case here, it was considered more appropriate for the current data than the *t* test.

One-way analysis of variance (ANOVA) was also applied in these analyses. ANOVA is essentially a multi-group version of the *t* test, comparing whether there are differences between three or more groups' means. The method measures whether variances between groups are larger than the variance within the groups, and consequently if conclusions of significant differences can be made. The assumptions behind ANOVA are similar to the *t* test: (i) that the dependent variable is normally distributed, (ii) that there is homogeneity of variance, and, (iii) that the number of observations in each group do not vary widely (Coolidge, 2006). While ANOVA is considered a robust statistical method where violations of assumptions may still result in correct statistical decisions, overriding combinations of the assumptions can be problematic. For example, in case there are large differences in group sizes simultaneously with significant differences in the groups' variances, it may be problematic to apply an ANOVA test (Acock, 2006). However, also in this instance a rank-based non-parametric test could be an alternative technique (Hamilton, 2009). Called the Kruskal-Wallis rank-test, the test compares median scores across groups. Similar to the Wilcoxon Mann-Whitney test, the Kruskal-Wallis test makes weaker assumptions about measurements, distribution and spread (ibid.). For the two studies in focus here, both methods are used.

4.5.2 Multiple linear regression

Multiple linear regression is a statistical technique used to explain how past variation or predicted future variation relates to a single metric dependent variable. Hence, it was considered an appropriate method for testing the hypotheses related to institutional investors' characteristics and behaviors as independent variables, and subsequent performance as the dependent variable.

Multiple linear regression is based on 'ordinary least squares', which means that the model is fit so that the differences of sum-of-squares in terms of observed and predicted values are minimized (Hair *et al.*, 2005). The general form of the multiple linear regression equation is:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n + \varepsilon \quad (4.1)$$

where y represents the value of the dependent variable explained in the regression, β_0 is the regression constant (or intercept), $\beta_1 - \beta_n$ are the regression coefficients of the independent variables, $X_1 - X_n$ are the observations of the independent variables, n is the number of independent variables, and ε is the residual, or error term, representing observed residuals from fitting the regression line to the set of observations.

A special model for testing integration effects, which constitutes one important part of the hypothesis-testing study, could be written as:

$$y = \beta_0 + \beta_1 X + \beta_2 M + \beta_3 XM + \varepsilon \quad (4.2)$$

where X is the independent variable presumed to cause the variable y, and M is the moderator variable that alters the strength of the causal relationship. That is, the cross-product term XM represents an interaction effect between the two variables X and M and are additive in their respective effects. In case the regression coefficient β_3, measuring the moderation effect, is statistically significant, there is evidence that the relationship between y and X depends on M (or vice versa).

Two main statistics are examined when applying multiple linear regression analysis. The first is how well a model is fitting the data or, stated differently, how much of the variance of y is explained by the other variables, i.e., the model's explanatory power. This is represented by the coefficient of determination, R^2. The adjusted R^2 is the score when taking into consideration the number of included variables. That is, while a model with more variables naturally provides a higher R^2, the adjusted R^2 score corrects for such potentially false indications. The second statistic of interest is the statistical significance of the overall model, indicated by an F test of significant difference in variance. For the hypothesis testing in the current study, the three statistics R^2, adjusted R^2 and F are all reported (see Chapter 9). Furthermore, in the statistical tests a hierarchical linear modeling is used. This means that variables are added to the model sequentially, allowing for analyzing on multiple hierarchical levels (Acock, 2006). The change in the R^2 statistic gives valuable information about how much the explanatory power changes when entering an additional set of variables. Hence, the change in R^2 is reported as well, together with the statistical significance of the change.

The most important assumptions behind multiple linear regression analysis are: (i) linearity, (ii) limited multicollinearity, (iii) normality of residuals, (iv) independence of residuals, and (v) homoscedasticity (Hair *et al.*, 2005; Introduction to SAS, 2007). A presentation of these concepts will be outlined in Section 4.6, but before that, some comments about the other main statistical method used in this dissertation, i.e., logistic regression, will be offered.

4.5.3 Logistic regression

When evaluating the hypotheses related to institutional investors' propensity to take on first mover or second mover positions, logistic regression analysis turned out to be the optimal statistical method for the current data.

Logistic regression modeling, or logit analysis, is a form of regression appropriate if the single dependent variable is dichotomous, i.e., used to explain and predict a binary categorical variable. That is, the dependent variable reflects whether or not an event happens; in this instance, whether or not a firm will become a first mover. As with linear regression, the principle of logistic regression aims to find a 'best fitting' equation of the model. But instead of estimating a least square deviation for best fit, logistic regression uses maximum likelihood estimation. That is, it strives to maximize the probability of getting the observed results given the fitted regression coefficients. As a result, the overall statistics used for evaluating fit and significance differ between the two methods.

Logistic regression has its basis in the logistic function:

$$P = \frac{e^z}{e^z+1} \tag{4.3}$$

where P represents the probability or risk of a '1', i.e., whether the event occurs, ranging from 0 to 1, e is the base of the natural logarithm, and z represents the regression equation, typically written as:

$$z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n \tag{4.4}$$

where β_0 is the regression constant (or intercept), $\beta_1 - \beta_n$ are the coefficients of the independent variables, $X_1 - X_n$ are the observations of the independent variables, and n is the number of independent variables. Since the relation between X_i and P in non-linear, β_i does not have a straightforward interpretation in this model as it does in linear regression. The issue is solved through the concept of odds, or likelihood, ratios. The odds of an event happening is defined as the probability of the event happening, divided by the probability of the event not happening:

$$\text{odds} = \frac{P}{1-P} = \frac{\frac{e^z}{e^z+1}}{1-\frac{e^z}{e^z+1}} = \frac{e^z}{(e^z+1)-e^z} = e^z \tag{4.5}$$

Hence, by making a logistic transformation of the odds, z represents the logistic regression that predicts the log odds of the dependent variable, also referred to as the logit:

$$z = \ln(\text{odds}) = \ln\left(\frac{P}{1-P}\right) = \text{logit}(p) \tag{4.6}$$

In this way, the logistic regression estimates the odds of a certain event happening. The regression coefficients describe the size of the contribution of each risk factor, where a

positive coefficient means that the factor increases the probability of the outcome and vice versa.

A simple method of assessing the fit of a model when analyzing data with logistic regression, such as the R^2 used in linear regressions, does not exist. That is, given that logistic regressions are built on maximum likelihood estimates arrived through iterative processes rather than on calculations of minimized variances, the ordinary least square approach to a model's goodness-of-fit does not apply (Introduction to SAS, 2007). Over the years, though, several 'pseudo' R^2s have been developed to be used for investigating the fit of logistic regression models. These pseudo R^2s typically uses the same scale as when evaluating the fit of linear regression models, i.e., a scale ranging from 0 to 1 where the value becomes larger as the model fits better. One of the most popular measurements for goodness-of-fit in logistic regression is McFadden's pseudo R^2 (Long and Freese, 2006). When comparing two models on the same data, the pseudo R^2 will be higher for the model with the greater likelihood. In this study, this measurement will be used to evaluate the overall fit of the logistic regression model. Furthermore, the log likelihood chi-square statistic, χ^2, is applied when testing the statistical significance of the model as a whole.

In logistic regression analysis, some of the assumptions behind linear regression are voided, such as requirements of general linearity, normal distribution of residuals, and homoscedasticity (Long and Freese, 2006). However, other assumptions, some of which are unique and others of which are shared with multiple linear regression, are of significant importance, namely, that: (i) that the dependent variable is binary, (ii) that there exists a linear relationship between the independent variables and the log odds of the dependent variable, (iii) that residuals are independent, (iv) no severe outliers exist, and (v) the sample is large enough (Hair *et al.*, 2005).

4.6 Quantitative studies: Statistical issues

Many statistical techniques share a number of fundamental data requirements that need to be fulfilled in order to arrive at trustworthy and reliable results. Others have their own special underlying assumptions. Often, the researcher finds herself faced with the more or less impossible task of either satisfying all stated assumptions or risking a flawed and biased analysis. Therefore, it is important to make sound judgments when interpreting tests for each assumption, determining when to apply a remedy and when assumptions can be overruled with still acceptable results. Below, assumptions referred to in the previous subsection and comments on the ways in which these have been taken care of in the present research are outlined. Appendix 5 presents details about how regression diagnostics and subsequent adjustments of data have been carried out for the hypothesis-testing study.

4.6.1 Data quality

Probably the largest source of unreliable statistical analysis involves issues with the data itself. Missing observations, small datasets, or single observations that substantially differ from other observations, so-called outliers, could distort the results severely if not handled properly.

Given that personal interviews were used to collect information in the present study, the dataset does not have any general problems with missing data, as complete surveys have been filled out for all respondents. A majority of the respondents were willing to provide detailed facts not available from public sources, including (i) fund performance, (ii) lists of institutional investors investing in each fund, and (iii) the level of capital commitment from each investor. In rare cases when respondents were unwilling to reveal exact performance multiples and the information was impossible to retrieve from other sources, respondents were asked to give a range that gave an approximation of the performance. Furthermore, some respondents did not provide information about exact commitment from each fund investor (for 42 percent of the funds). In such cases, public data could be used to some extent, and for the remaining investors, an equal split of the total fund commitments was made. For the eight PE firms that did not exist at the time of the interviews, secondary sources such as press releases, news articles and information provided by SVCA were used as data sources. See Table 4.2 for an overview of information sources.

When applying both multiple linear regression and logistic regression analyses, sample sizes are considered to have a strong impact on explanatory power (Hair *et al.*, 2005). According to Long and Freese (2006), 100 is the minimum sample size with at least ten times the number of observations as independent variables required in order to avoid over-fitting of the models and to enable generalizability. In the present study, the sample size is in line with these recommendations.

A single observation with extreme values, i.e., an outlier, can cause severe distortion of results. They are typically referred to as observations with "*a unique combination of characteristics identifiable as distinctly different from other observations*" (Hair *et al.*, 2005, p. 73). Simply put, these are cases that are numerically distant from all other data points, and thus have large residuals. Outliers are either simple indications of data entry errors, or more fundamental indications of sample peculiarities. Outliers can be beneficial, indicative of characteristics of the population not discovered in the normal course of analysis, or they can be problematic, not representative of the population. Hence, their occurrence calls for further investigation and potential retention. For the present study, appropriate analysis of outliers has been done (see Appendix 5 for details).

4.6.2 Linearity

An implicit assumption behind multiple linear regression is the association of linearity (Hair *et al.*, 2005). In other words, the relationships between the dependent variable and the independent variables should be linear. When applying logistic regression analysis, there needs to be linear relationships between the dependent variable and the log odds (logit) of the independent variables. If this assumption is violated, the regression tries to fit in a straight line although the data does not follow such a pattern. However, minor deviations from this assumption do not greatly hurt a predicted model. While checking the linear regression in a bivariate regression is simple, it can hardly ever be confirmed in multiple linear regressions. One way to at least identify indications of non-linearity is to examine the bivariate scatter plots of the variables of interest. Another approach is to run simple regression analyses and then check the residuals (ibid.). In case the relationship exhibits a curvilinear shape, transforming variables might be a way to achieve better linearity (Hamilton, 2009). In the present study, bivariate linearity controls of the dependent variable and each metric variable have been done where data transformations of the independent variables were used in cases where they were needed (see Appendix 5 for details).

4.6.3 Multicollinearity

A core question when interpreting a regression is the extent to which the independent variables correlate. The term 'multicollinearity' describes a situation where the independent variables are highly correlated, i.e., in a near-perfect linear combination of the others. High multicollinearity is problematic, since it makes it difficult to determine the contribution of each independent variable because the impact is mixed. As long as the regression model is used to predict dependent variables within the same multivariate space used to set the equation, high multicollinearity might still be acceptable. However, if the model is stretched, there are several potential negative effects of high multicollinearity (Hair *et al.*, 2005). First, the variations of the regression coefficients are likely to become unstable to such an extent that they are not statistically significant. Second, the size and also the signs can be affected in ways that challenge interpretation. Third, the values of individual coefficients in the regression model may change severely when adding or removing independent variables to the equation.

A statistical technique used to identify multicollinearity involves analyzing the variance inflation factor (VIF). The VIF index specifies to what degree an individual independent variable is explained by the other independent variables in a model (Hamilton, 2009). Multicollinearity can be dealt with by: (i) omitting one or more highly correlated independent variables, or (ii) analyzing correlations between each independent variable and the dependent variable (Hair *et al.*, 2005). In this study, multicollinearity was examined with the VIF technique but also through pair wise

analyses of independent-dependent variables, after which appropriate actions were taken (see Appendix 5 for details).

4.6.4 Normality

Many handbooks in statistics put forward the notion that a fundamental assumption behind multivariate analysis is the normal distribution of variables and residuals (e.g., Hair *et al.*, 2005). However, contemporary overviews of assumptions behind multiple linear regression point out that there are no assumptions or requirements that the variables themselves, especially not the independent variables, need to be normally distributed (Introduction to SAS, 2007). If that would have been the case, dummy-coded variables clearly could not be included in the models. Having said that, many statistical procedures work best when applied to data that are at least somewhat close to normally distributed. In addition, severe skewed distributions could impact other assumptions such as linearity. The severity of non-normality has two dimensions: (i) the shape of the distribution, and (ii) the sample size (Hair *et al.*, 2005). First, the shape of distribution is typically measured by its *kurtosis*, i.e., the curve's 'peakedness' or the 'flatness' compared to normal distribution, and its *skewness*, i.e., the balance of the distribution. Second, the size of the sample usually has a large impact on normality, where researchers rarely need to be concerned about non-normally distributed variables in case of 200 observations or more. Normality is typically tested through inspection of data plots and by skewness-kurtosis tests (Hamilton, 2009). A common way to deal with normality issues is through data transformation. Non-linear transformations of skewed distributions, e.g., square roots and logarithms, are likely to become more symmetrical and hopefully nearly normally distributed. Another way to manage issues with normality is by applying robust regression, which is especially useful when having a few outliers that distort results. For example, regressions based on median values are more robust for outliers compared with mean values. In robust regressions, outliers are weighted less compared to more central observations and thus have less effect on the regression estimates (ibid.). For residuals, the assumption of normal distribution is crucial where larger deviations are likely to impact the validity of t and F test scores provided in tests.

In the current study, statistical properties of the variables have been examined, and when necessary, transformations of variables were conducted. Appropriate analyses of the normality distributions for residuals have been carried out for both datasets used in the tests (see Appendix 5 for details).

4.6.5 Independent residuals

An assumption of multivariate regression is that the errors associated with one observation should not correlate with the errors of any other observation. In other words, the residuals shall be independent from each other. The assumption is typically

checked by plotting the residuals against each variable (Hair *et al.*, 2005). If the residuals are independent, the pattern will appear random. Transformation of variables might be a solution in the case of dependence between residuals. In this study, analysis of residual dependence has been done properly and transformed variables have been used when necessary (see Appendix 5 for details).

4.6.6 Homoscedasticity of residuals

A final central assumption behind several statistical techniques, not least for multiple linear regression analysis, is the homogeneity of the residuals – so-called 'homoscedasticity'. This means that the residuals should exhibit equal levels of variance, i.e., they should be evenly distributed throughout the regression line; otherwise, it is said to be heteroscedastic (Hair *et al.*, 2005). Residuals whose variances increase over time or change systematically with the size of the predicted values are examples of a violation of this assumption. While slight heteroskedasticity is considered to have only a minor impact on significant results, higher levels can lead to serious distortions of findings. The assumptions can be checked by visual examination of residual plots, which was done for the multiple linear regressions performed in this study. Again, data transformation is often an effective method also for dealing with this type of issue (see Appendix 5 for details).

4.6.7 Causality

The central idea in the hypothesis-testing study is to present causal relationships between organizational characteristics, entry order and performance. In order to interpret an observation as a cause of another, and thus to identify a causal relationship, some main conditions need to be fulfilled: (i) the variables must be related, (ii) there must be a plausible theory explaining the lines by which the variables are casually linked, and (iii) a time order between the variables must be demonstrated (Punch, 2005). When applying a longitudinal design, the researcher gathers information from the same respondents at multiple periods of time. Cross-sectional studies, on the contrary, collect data at one particular point in time – an approach that may be problematic when testing causal effects. In particular, verifying a temporal order between the independent variables and the dependent, addressed in condition (iii) above, can be a challenge when using cross-sectional data (Rindfleisch *et al.*, 2008).

Given the long lead times in the PE industry, a cross-sectional rather than a longitudinal design turned out to be the only realistic choice for most of the data collection for this particular investigation. Three characteristics of the current data collection process, though, reduced potential causality inference issues. First, the hypotheses were developed on the basis of theories arriving from the entry order streams of research and from the PE literature. Second, as outlined above, the data were collected from several different sources. That is, while fund performance data were gathered from

personal interviews, data for the independent variables were retrieved from secondary sources and were collected on multiple occasions. Third, a majority of the variables used as predictors vary over time (see Appendix 12). Thereby, the risk of only measuring co-variation between variables, instead of causality, was reduced. All in all, given that a well-designed cross-sectional survey can offset some of its disadvantages and thereby serve as an adequate substitute for a longitudinal data collection process (Rindfleisch *et al.*, 2008), I would contend that the risks associated with the chosen design have been reduced and that causations from the observed empirical relations can be inferred.

4.7 Research quality

Evaluating the quality of a research project is obviously a crucial task to perform. Good research is expected to be: (i) *valid*, i.e., the study has investigated what it was supposed to, (ii) *reliable*, i.e., the operations of the study could be repeated, and (iii) *contributory*, i.e., the study adds to existing knowledge. When working with this dissertation, a considerable amount of attention has been paid to ensure high quality along these lines. Throughout this chapter, various methods used to increase validity and/or reliability have been touched upon. The following subsections will elaborate more on critical elements of validity, reliability and contribution that are relevant to the current research.

4.7.1 Validity

Validity refers to whether the research instrument really measures what it was supposed to measure and how truthful the results are (Lekvall and Wahlbin, 1993). Given that variables in studies are proxies or interpretations of 'real world' phenomena, there will always be inference involved between responses and the construct in focus. Research validity involves many areas; some of the more important are: (i) construct validity, (ii) content validity, and (iii) criterion-related validity (Punch, 2005). *Construct validity* focuses on to the extent to which a construct actually represents the theoretical expectations, that is, if it involves both theoretical and empirical support for the interpretation of the construct (Hair *et al.*, 2005). *Content validity* is about how a measure represents every aspect, i.e., all relevant facets, of a conceptual definition. The two steps involved in content validation are: specification of a definition's content, and developing indicators that reflect all parts of the definition (Punch, 2005). This process verifies not only that all relevant material has been included, but also that irrelevant material was excluded. While content validity regards the criteria for how a construct has been defined, the *criterion-related validity* focuses on how the operationalization will perform based on the theory of the construct. That is, criterion-related validity refers to when a study is demonstrated to be efficient in predicting an outcome based on

information from other variables. In criterion-related validity, an indicator is typically compared with other measures of the same constructs to be considered confident.

Within this dissertation, the qualitative study has been important in increasing, in particular, the content validity, i.e., incorporating several relevant facets of the research phenomenon. In the hypothesis-testing study, validity has been ensured in several ways. First, an extensive literature review of existing private equity research as well as of the entry order literature was carried out. As a result, hypotheses were developed based on existing theories and earlier empirical results. Secondly, both a pre-study and a pilot study were done, which increased the empirical understanding of the objects of study. Third, constructs and measurements were developed following procedures applied in previous studies as often as possible (for operationalizations and variables used in the hypothesis testing, see Chapter 7). Fourth, the interview templates used in the studies were developed and pretested with institutional investors with extensive experience in the field. Fifth, statistical methods were carefully selected and several techniques employed to increase credibility in results. Finally, results and conclusions were carefully analyzed to ensure their feasibility, not least by making use of the results emerging from the qualitative study. Consequently, applied constructs and subsequent measurements, applied statistical techniques and analyzing methods are all in line with a common understanding and application in existing literature and in practice.

4.7.2 Reliability

The concept of reliability refers to the ability of another researcher to replicate the same study and arrive at the same conclusions, i.e., the extent to which different and independent measurements of the same phenomenon create the same result (Lekvall and Wahlbin, 1993). It differs from validity since it does not concern what should be measured, but rather, focuses on how the phenomenon should be measured. For example, reliability focuses on how measurements are performed, how carefully information is analyzed, and how well measurement methods resist sudden influences. My epistemological position is such that I do not believe that two people ever would be able to carry out identical studies. However, I do believe that the reliability of a study can be enhanced by following a rigorous, structured and well-documented process that makes it possible for another researcher to carry out at least a similar study, arriving at similar results. In order to make it possible for another researcher to replicate the study, the research process must be as explicit as possible. There are two aspects of the reliability concept: consistency over time and internal consistency (Punch, 2005). *Consistency over time* is the extent to which the same instrument would arrive at the same score if given to the same people, under the same circumstances, but at a different time. *Internal consistency* assesses the consistency of results among various items within a study. The clearer the questions are formulated and the more standardized the usages

of measurements, the larger the probability of an acceptable reliability (Lekvall and Wahlbin, 1993).

The present research is mainly based on primary data collected from personal interviews, due in large part to the low quality of available secondary data. A number of actions were taken to ensure the reliability of the data collected in the interviews (see also Section 4.3.2). First, the questionnaires used in the hypothesis-testing study as well as in the qualitative study, were carefully designed with several rounds of revisions. Second, the type of interviews used, namely, with a structured format and gathering mostly quantitative factual data, are considered to be less susceptible to common method variance issues compared with collecting data using more abstract constructs (Punch, 2005). This type of data also has fewer built-in post-rationalization problems, which is otherwise a risk when applying a retrospective research design. Third, the possibility of cross-checking data from interviews with other respondents or secondary sources also helped to increase the reliability of the study. Fourth, interviewing key informants with presumably extensive knowledge about the issues being researched also had a positive effect on reliability. Fifth, all of the steps in this research process have been documented thoroughly, enabling other researchers to follow and analyze the research process in details.

4.7.3 Contributory

Last, but absolutely not least, is the question of whether a particular study contributes to existing knowledge. Research can be valid and reliable – but of no interest to anybody and thus unusable. Whether the research is contributory or not depends on its generalizability and relevance. The generalizability of the present research to other contexts is discussed in detail in the final chapter of this dissertation, i.e., Chapter 10. To be relevant, the research should be interesting and applicable. To me, the issues investigated are of high importance, and as such, it is expected that not only scholars but also practitioners will be interested in, and able to make use of, the results. Hence, I have taken pains to maintain close and continuous contact with practitioners within the private equity industry throughout the research process.

CHAPTER 5

Analyses of the Swedish PE market, performance heterogeneity across investors, and fund performance determinants

This chapter contributes to the overall understanding of the PE fund investment market by providing three distinct descriptions/analyses of the topic. First, an overview of the types of institutional organizations that have invested in Swedish PE funds over the years, and how the activity levels among these have varied over time, is presented. Second, a high-level discussion of performance heterogeneity amongst PE fund investors is provided. Third, presentations of found PE fund performance determinants. All three analyses make use of the data collected for the hypothesis-testing study.

5.1 Introduction

The quantitative data collected for the hypothesis-testing study enables a few additional analyses, which all contribute to the overall purpose of the dissertation, namely, to enhance the understanding of private equity as an asset class.

First, the data were used for completing a thorough analysis of the type of institutional investors that have been active on the Swedish PE fund market and determining how various investors' activity levels have changed over the years. As such, a relatively unique overview of how a private equity industry emerged and evolved from the perspective of institutional investors is provided. Second, based on univariate analysis, a high-level overview of identified differences in aggregated performances across PE fund investor types is outlined.

The last analysis presented in this chapter concerns fund performance determinants. Obviously, a PE fund investor's financial success has close links to the performance of the funds she has invested in. Hence, a deeper understanding of performance determinants for PE funds is likely to provide indications of importance when evaluating links between investment strategies on the one hand and returns from PE fund investing on the other hand. Consequently, the third analysis in this chapter outlines descriptive presentations and statistical tests of performance determinants for the PE funds in the dataset. Given that such factors have been studied in a number of previous studies (see Section 2.3.5), these tests primarily investigate whether existing research results are supported or rejected for the current data.

Conclusions arriving from these three analyses were also valuable as inputs to the development of the research model for this dissertation (see Chapter 7) and for the subsequent hypothesis development (see Chapter 8).

5.2 Rise and development of the Swedish PE industry

The time-frame for the study includes the period from 1983 to 2003, i.e., beginning with the first institutional investment into a Sweden-based private equity fund[23]. In total 334 institutional investors were identified within the scope of this research. On the whole they have invested in 73 private equity funds (46 VC and 27 BO focused funds) managed by 34 private equity firms originating from Sweden. The total number of Swedish PE fund investments made by these investors amounted to 848, representing a total of 115 billion SEK. Descriptions of the type of institutional investors included in the study are provided in Table 5.1.

Table 5.1. Overview of institutional organizations included in the quantitative studies

	# ORG	AVG AUM[1)] (bill. EUR)	AVG PE FUND INVESTMENTS Globally / Sweden	
Asset managers	47	22.3	16	2.2
Banks	27	113.0	7	4.4
Corporate investors	44	5.8	4	1.8
Endowments	14	3.7	35	1.4
Family offices (incl. foundations)	46	1.7	10	1.7
Government agencies	19	6.6	28	2.9
Insurance companies	27	5.9	8	2.9
PE fund of funds	48	3.7	48	2.3
Private equity firms	16	0.9	13	1.9
Private pension funds	28	24.3	5	2.5
Public pension funds	18	26.6	107	5.8
TOTAL/AVERAGE	**334**	**18.3**	**22**	**2.5**

[1)] Assets under management

One-third of these institutional investors could be referred to as professional 'investment companies', which includes asset managers, PE fund of funds and private equity firms. Together, they represent the largest group of PE fund investors in the material. The second largest group of institutions in the data consists of family offices, followed

[23] See footnote in Section 4.4.1 for a definition of Swedish private equity funds.

by corporate investors. Government agencies and corporate investors, which are investors considered to have not only financial objectives for their PE investment activities (see Chapter 2), together represent about 20 percent of the LPs. The most active group of PE fund investors in the dataset, in terms of the number of Swedish as well as international PE fund investments during the period, is public pension funds. These investors each made, on average, 107 PE fund investments throughout the period, of which an average of 5.8 were made in Sweden. No other institution came close to carrying out such high levels of investments, although the PE fund of funds with an average of 48 globally made investments in the period were in second place. Measured by assets under management, banks represent the largest group with an average of 113 billion EUR. However, this says little about how much capital that was invested in private equity since banks typically allocate only a fraction of their managed assets to this particular asset class, while, in contrast, PE fund of funds and PE firms are fully devoted to it (see Chapter 2). The majority of the institutional investors included in the dataset originate from Sweden, and the Nordic institutions together represent more than half of all investors (see Figure 5.1). North American, primarily US-based, and European institutional investors each represent about 20 percent, while investors from the rest of the world only account for a few percent.

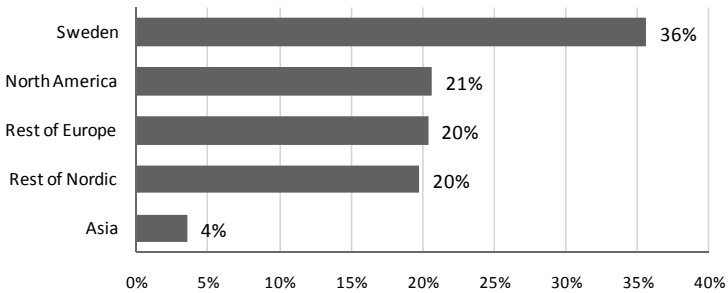


Figure 5.1. Geographical origins of organizational investors included in the quantitative studies (in total: 334 LPs)

Of the capital invested in Swedish PE funds throughout the period being studied, the vast majority arrived from pension funds, representing 25 percent, followed by PE fund of funds at 19 percent, insurance companies at 15 percent and asset managers representing 13 percent of the total combined investments of 115 billion SEK. This composition of institutions, however, is somewhat different from the situation for Europe as a whole. Figure 5.2 illustrates comparisons between the type of institutional PE fund capital sources in the period 1998 to 2003 in Sweden, arriving from the present study, and Europe, based on statistics from EVCA/PWC/Thompson Finan-

cial Economics[24]. For example, investment companies (including asset managers and PE funds of funds) have been a far more dominant group of investors on the Swedish market compared with the situation in the other European countries. Furthermore, banks that are considered large and important providers of capital to the PE market in Europe have been in comparison quite modest investors in the Swedish market. On the other hand, family offices have been considerably more active as PE fund investors in Sweden compared to the situation for other European regions[25].

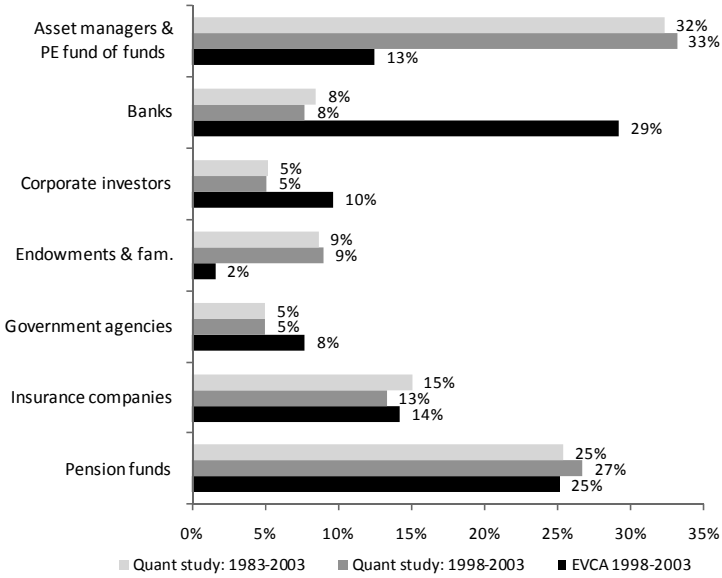


Figure 5.2. Types of institutional organizations: EVCA vs. the current quantitative data. Percentage split per type of institution based on invested capital into PE funds for the current research during the full period, and between 1998 and 2003 (=Sweden) vs. EVCA/PWC/Thompson Financial for 1998-2003 (=Europe)

The extent to which certain types of institutions have been actively investing in Swedish PE funds has changed considerably over time, as will be discussed next. Since the 'dot-com bubble' had such a significant impact on the world-wide PE market as out-

[24] There are limited statistics available about capital sources to European PE funds before 1998, hence the chosen time periods used in these comparisons.

[25] One can speculate about the identified differences in the composition of PE fund investor types in Sweden in comparison with the rest of Europe. Besides factual differences in the mix of institutional organizations in the various European countries, there are also other factors that may impact the results, such as data quality issues in the databases used in EVCA's analyses and reports. On the other hand, it may be likely that Sweden has a larger proportion of BO funds in comparison with the average European country, and as the upcoming analysis will show, BO funds typically have another mix of investors compared with VC funds. However, providing a more in-depth investigation of the reasons for the noted differences is beyond the scope of this dissertation.

lined in Chapter 2 (see also Section 5.4.1), three distinct periods emerge naturally from the material; before, under and after the 'dot-com' period (cf. Hege *et al.*, 2008).

5.2.1 The market is established: 1983-1997

The Swedish venture capital market took off toward the end of the 1970s. After a period of stagnation and industrial crisis, the Swedish government considered VC to be an important contributor to entrepreneurial innovation and growth and hence took an active role in forming the Swedish market (Karaömerlioglu and Jacobsson, 2000; Isaksson, 2006). In the mid 1980s, 30 new regional and governmentally managed investment companies had been established and, in addition, about 20 privately held VC firms were operational (Olofsson and Wahlbin, 1985). Up to 1997, eight of these Swedish VC firms managed eight PE funds capitalized by institutional investors. These early VC funds were relatively small, on average amounting to 217 mSEK, and had on average 5.9 institutional investors per fund. A vast majority of the investors, i.e., close to 90 percent, were local. The most common types of LPs were local pension funds or endowments/family offices, each representing about 20 percent of the investments made in the period (see Figure 5.3). Swedish government agencies or regional municipalities, however, accounted for only eight percent of the investments into the funds. Also, local banks seemed to be rather reluctant to invest in VC funds at the time, only making one investment during the period.

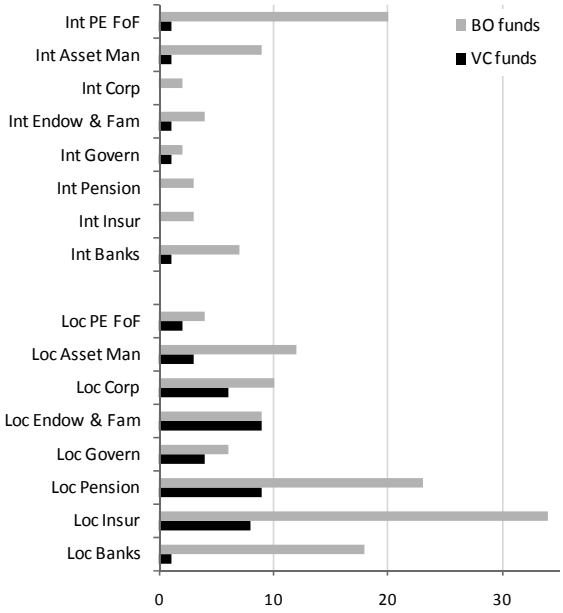


Figure 5.3. Number of investments made into Swedish PE funds 1983-1997. International and local investments into Swedish BO vs. VC funds

The BO fund market in Sweden developed in parallel with the VC market. In total, ten BO funds were founded during the studied period. While the government and regional municipalities played a crucial role in the formation of the young venture capital market, private institutional organizations kick-started the buyout industry. The data reveal that out of the first five founded Swedish BO firms, four started as in-house projects of two banks, one insurance corporation and one investment company,

before being spun out as stand-alone entities. In other words, having strong sponsors was obviously important also to BO firms, although the sponsors were private rather than governmental. A vast majority of these institutions continued to fund the BO firms after they had been spun out. The most active types of investors in terms of making BO fund investments were local insurance companies, followed by local pension funds and international PE fund of fund investors. In contrast to VC fund investing, international LPs also invested in Swedish BO funds in these early days. Other differences between the VC and BO funds were clearly the fund sizes and the average number of investors per fund; the BO funds were eight times an average VC fund, amounting to on average 1.7 billion SEK with 16.4 LPs per fund (5.9 LPs for VC funds).

When Sweden began to recover from the bank crisis by the early 1990s, the PE industry expanded dramatically. The amount of capital invested into Swedish PE funds by institutional investors between 1994 and 1997 was five times higher than the total capital invested in Swedish PE funds from 1983 to 1993. A slight shift in the composition of fund investors also took place during this period. While banks and insurance companies continued to be large fund investors in the mid-1990s, pension funds grew in importance, likely as a result of relaxed restrictions for alternative asset investments for public pension funds (see Chapter 2). In addition, asset managers and PE fund of funds emerged as active fund investors in the Swedish PE market in the mid-1990s.

5.2.2 The dot-com bubble: 1998-2000

Toward the end of the century, the Swedish VC market boomed, just as many other VC markets did. During the years 1998 to 2000, a total of 24 new Swedish VC funds were founded, which was three times more than in the substantially longer period 1983 to 1997. In addition, these funds were significantly larger than previous VC funds, amounting to, on average, 645 mSEK. In this 'dot-com bubble' period, institutions that previously had shown limited interest in venture capital now became active investors. While the VC fund investment scene in the period was still dominated by local pension funds, the variety of investors increased (see Figure 5.4). One type of investor that was especially active towards the end of the 1990s was corporate organizations, making up 15 percent of all VC fund investments in the period. Also, local banks, which had been more or less absent on the Swedish VC fund market until then, increased the number of investments in the asset class significantly. Furthermore, international institutions entered the Swedish VC market in full force and came to represent close to 20 percent of all VC fund investments made in the period.

Nine BO funds were established between 1998 and 2000, one fewer compared with the previous (however, much longer) period. The BO funds were growing significantly in size, now amounting to 4.4 billion SEK on average. Furthermore, the average capital infusion per LP and fund were considerably larger in this period compared with the previous, i.e., 255 mSEK versus 104 mSEK. It is interesting to note that while local institutions decreased their number of BO fund investments by 16 percent, international investors increased their activity level by the same number, i.e., 16 percent. In particular, local banks and local insurance companies made significantly fewer investments in BO funds, at the same time that both international endowments/family offices and international PE fund of funds dramatically increased their ratios of Swedish PE fund investments. In total, the international investors represented 37 percent of all BO fund investments made from 1998 to 2000.

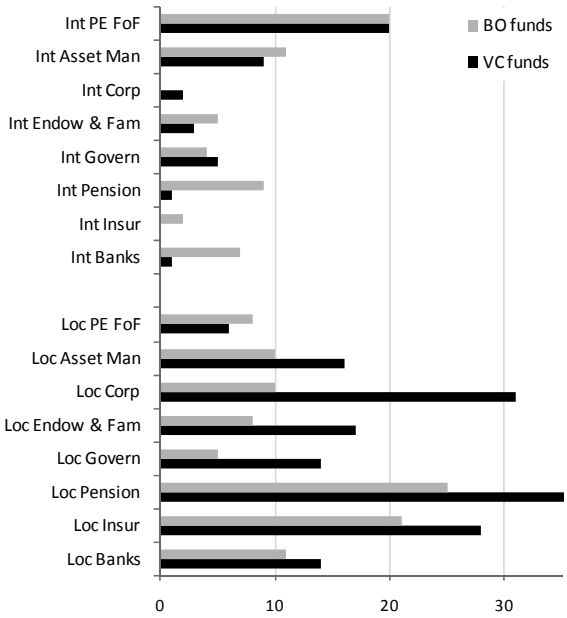


Figure 5.4. Number of investments made into Swedish PE funds 1998-2000. International and local investments into Swedish BO vs. VC funds

5.2.3 After the bubble burst: 2001-2003

After the year 2000, the Swedish PE market declined significantly due to the global economic slowdown, and again it was the VC market that caused the dramatic shift. In this period, the number of newly established VC funds decreased by 42 percent to a total of 14 funds. The average fund sizes actually increased slightly to 676 mSEK on average, although the number of LPs per fund decreased to 5.9 on average. In other words, similarly to what had happened previously in the BO market, fewer institutions invested more capital into fewer VC funds. The corporate investors heavily reduced their activity levels as VC fund investors at the beginning of the 21st century (see Figure 5.5). Local banks and local insurance companies made significantly fewer investments into VC funds, as well, decreasing their investment levels by 79 percent and 71 percent, respectively. Actually, while international investors also reduced the number of investments into Swedish VC funds (by 46 percent), local institutions decreased their rates even more (by 65 percent). Meanwhile, the Swedish BO market continued

to be strong. Although the number of established BO firms decreased by one to eight new funds during the period, the average fund sizes continued to grow, now amounting to 5.6 billion SEK on average. Interestingly, the trend from the previous period where local LPs decreased their activity levels as BO investors continued; Swedish institutions reduced the number of investments they made by 24 percent. The decrease was especially apparent with regard to local banks, local insurance companies, and local endowments/family offices. At the same time, the international LPs almost doubled their investment rates in the asset class. The largest increase was made by international endowments/family offices. International PE fund of funds took the position as the major investors in Swedish BO funds, followed by local pension funds, and then by international endowments/families.

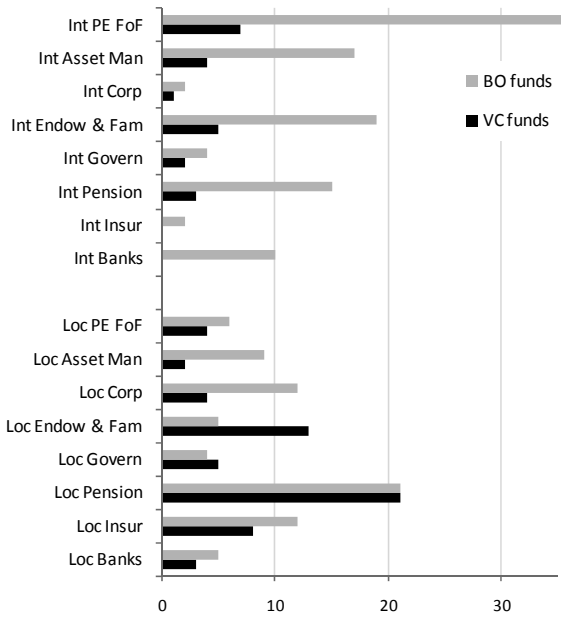


Figure 5.5. Number of investments made into Swedish PE funds 2001-2003. International and local investments into Swedish BO vs. VC funds

Before moving on to the analysis of PE fund determinants, a high-level overview of performance heterogeneity amongst the PE fund investors is offered.

5.3 Performance heterogeneity across PE fund investors

In this section, results are presented from a high-level analysis of performance heterogeneity across the various types and origins of institutional investors active as Swedish PE fund investors between 1983 and 2003.

Analysis of variance (ANOVA) was used to see how aggregated return multiples from PE fund investing in Sweden may have differed between various types of PE fund investors. A period-adjusted performance measurement was used to control for period effects (see Section 5.4.1). The results from the ANOVA test indicate that the differences in performance means between the various types of investors are significant, $F(10,323) = 3.67$, $p < 0.001$ (see Table 5.2). Since the Bartlett's test of equal variances showed that the data does not meet the assumption of equal variances be-

tween the groups, and given that the differences in the number of observations also are somewhat high, the more robust Kruskal-Wallis test of median scores was applied, as well. This test also indicates clear differences in performance among the 11 groups, i.e., $\chi^2(10) = 30.47, p < 0.001$.

Table 5.2. ANOVA and Kruskal-Wallis tests of performance heterogeneity based on investor type. Aggregated adjusted performance from investments in Swedish PE funds 1983-2003

Adjusted performance	N	Mean	Median	S.D.	ANOVA F-value	K-Wallis χ^2
Asset managers	47	1.01	1.06	0.51		
Banks	27	1.21	1.07	0.58		
Corporate investors	44	0.78	0.61	0.69		
Endowments	14	1.36	0.90	1.00		
Family offices	46	1.34	1.22	0.75		
Government agencies	19	1.01	1.08	0.54	3.67^{***}	30.47^{***}
Insurance companies	27	1.05	1.10	0.38		
PE fund of funds	48	1.36	1.46	0.75		
Private equity firms	16	0.71	0.68	0.47		
Private pension funds	28	1.25	1.12	0.72		
Public pension funds	18	1.31	1.32	0.61		

Significance levels: $^{***}p<0.001$; $^{**}p<0.01$; $^{*}p<0.05$; $^{\dagger}p<0.10$

Figure 5.6 graphically presents the aggregated adjusted performance means and medians from Swedish PE fund investing in the period 1983 to 2003 for 11 types of institutional investors. The investor groups are presented in falling order based on aggregated performance means. For the most part, the average and the median measurements provide the same rank of performance for each investor group in relation to the others. Among the most successful investors are PE fund of funds, family offices/foundations and pension funds. Banks, insurance companies, and asset managers arrive somewhere in the middle when ranking Swedish PE fund investors top to bottom. Private equity firms, corporate investors and government agencies have received the lowest returns compared to their peers throughout the period. Endowments turned out to be a more difficult group to classify. While this group's average performance has been superior to the others, the median value is on the lower side. This is due to large variations within the endowment group where a few outliers have outperformed all other investors, while others have been low performers.

These results are interesting to compare with earlier research on the same topic (see Table 2.3 in Section 2.3.6). Apparently, the findings from the current analysis both support and reject earlier results. For example, banks have both been pointed out as highly successful PE fund investors (Hobohm, 2009) and identified as having a tendency to sharply lag behind others (Lerner *et al.*, 2007). In this study, banks appear somewhere in the middle. Insurance companies have been found to earn low to me-

dium returns (ibid.), which is in line with the findings of the current study. Earlier research shows that pension funds have received rather mediocre returns (ibid.), but still belong to the top-half performers in this study. Finally, the current study shows that government agencies and corporate investors arrive at low returns, supporting earlier research and overall expectations, given their additional goals as PE investors, as discussed in Chapter 2 (Hobohm, 2009. See also Section 2.3.6).

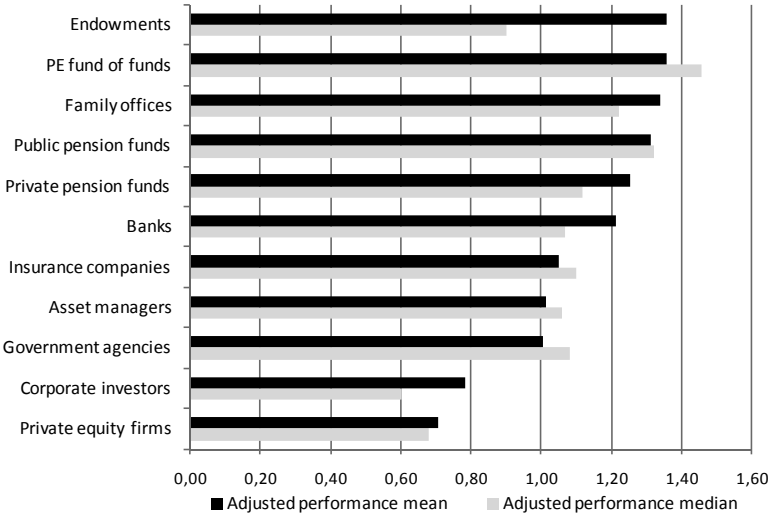


Figure 5.6. Institutional investor heterogeneity in performance based on type. Aggregated adjusted performance from investments in Swedish PE funds 1983-2003

In addition, the differences between investors based on their geographical locality were analyzed with an ANOVA test as well (see Table 5.3). Geographical locality here refers to the region in which the institutional investor is situated, i.e., has its headquarters. The tests indicated statistically significant differences between the groups, i.e., $F(4,329) = 7.61$, $p < 0.001$. Since the Bartlett's test of equal variances was not fulfilled for these groups either, the Kruskal-Wallis rank test was used, providing a $\chi^2(4) = 28.84$, $p < 0.001$.

Table 5.3. ANOVA and Kruskal-Wallis tests of performance heterogeneity based on investors' geographical origin. Aggregated adjusted performance from investments in Swedish PE funds 1983-2003

Adjusted performance	N	Mean	Median	S.D.	ANOVA F-value	K-Wallis χ^2
Sweden	119	0.91	0.82	0.61		
Rest of Nordic	66	1.09	1.09	0.49		
Rest of Europe	68	1.36	1.43	0.72	7.61^{***}	28.84^{***}
North America	69	1.35	1.44	0.80		
Asia	12	1.03	1.28	0.65		

Significance levels: $^{***}p<0.001$; $^{**}p<0.01$; $^{*}p<0.05$; $^{\dagger}p<0.10$

Figure 5.7 shows the performance means and medians from Swedish PE fund investments, based on the institutional investors' geographical location. According to the comparisons made here, European non-Nordic investors have been more successful than the other investors, followed by North American, primarily US, investors, and then by Nordic non-Swedish investors. Swedish institutions have received the lowest returns.

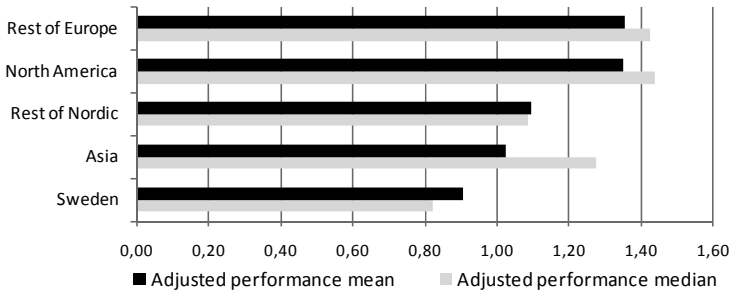


Figure 5.7. Institutional investor heterogeneity in performance based on geographical origin. Aggregated adjusted performance from investments in Swedish PE funds 1983-2003

This study, in combination with earlier studies about performance heterogeneity across PE fund investors (Lerner *et al.*, 2007; Hobohm, 2009), provides a sometimes contradictory and ambiguous picture of how institutional investors actually succeed in relation to others. The result is, however, not overly surprising. Hobohm (2009) argued that identified performance differences between investor groups to a large extent depend on the time of observation. This dissertation will show that other factors such as organizational characteristics and investment strategies likely are at least as important for distinguishing performance determinants for PE fund investors, and hence that a multivariate analysis is called for. The following section will provide some first indications of performance factors affecting PE fund investors.

5.4 PE fund performance determinants

In this section, descriptive presentations and statistical tests of performance determinants for the funds in the quantitative dataset will be outlined. As stated above, 73 private equity funds are included in the study, whereof 46 are VC funds and 27 are BO focused funds. Figure 5.8 illustrates the average performance for the BO and VC funds per vintage. The diagrams point at one performance determinant that has strong support in the PE literature and in practice (see Section 2.3.5); i.e., that BO funds in general outperform VC funds, although the variations in VC returns are larger.

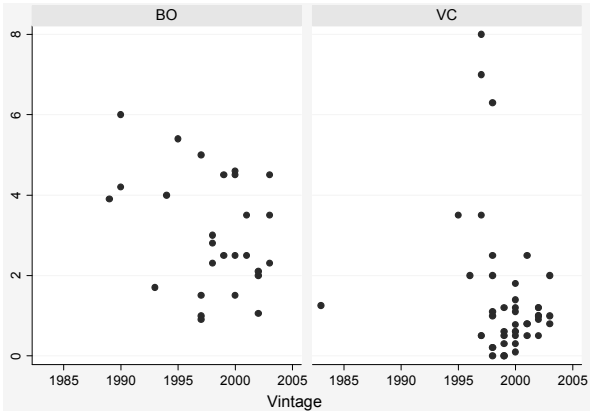


Figure 5.8. Swedish PE fund performance multiples per vintage and type. 27 BO vs. 46 VC funds

This factor is just one of several determinants of PE fund returns that have been identified in existing PE research (cf. Section 2.3.5 and Söderblom and Wiklund, 2005). In the following subsections, some of the more common performance factors pointed out in earlier studies will be tested on the current dataset. These are grouped into four distinct areas: (i) *macro-economic situation*, related to when PE funds are set up, (ii) management teams' *knowledge and experience* levels about/from private equity investing, (iii) size of managed capital, i.e., PE *fund sizes*, and (iv) targeted portfolio companies, i.e., *fund focus*. The variables of interest in the following analyses are presented in Appendix 11. In Appendix 13, correlations and descriptive statistics for the variables potentially associated with fund performance are presented.

5.4.1 Macro economic situation

Figure 5.9 depicts returns from the Swedish stock exchange market (i.e., the NASDAQ OMX Nordic Exchange), the Swedish long-run government bond yield index, together with the average return multiples per vintage for the VC and BO funds in the dataset. The latter numbers have been delayed by four years, taking into account that exits from PE investments are on average executed at the earliest three to five years after fund establishment (see Chapter 2). The diagram indicates that both VC and BO fund returns are linked to macro-economic conditions. That PE returns co-vary positively with business cycles and stock-market indices has strong support in the private equity literature, as well, as discussed in Chapter 2 (e.g Gompers and Lerner, 2000; Kaplan

and Schoar, 2005). Furthermore, the graphs indicate that VC funds are even more affected by downturns compared with BO funds, which also has been pointed out in earlier studies (Diller and Kaserer, 2008).

In Figure 5.9, three distinct boom and bust periods are noticeable. From the beginning of the 1990s until the year 2000, the stock market developed positively and the financial market in Sweden could be denoted a 'boom' market. Between the years 2000 and 2003, however, the overall economy went through a down period where the stock price index was clearly declining. In 2003, the macro-economic situation started to recover, resulting in a positive development of the stock market indices. Given the duration between fund foundation and portfolio firm exits, as discussed above, these three periods in terms of PE fund vintages could roughly be set to: (i) before 1998, (ii) between 1998 and 2000, and (iii) between 2001 and 2003. Variations in fund performance based on the period in which they were raised are clearly illustrated in Figure 5.10. Particularly apparent is the decline in VC fund performance from period 1 to period 2.

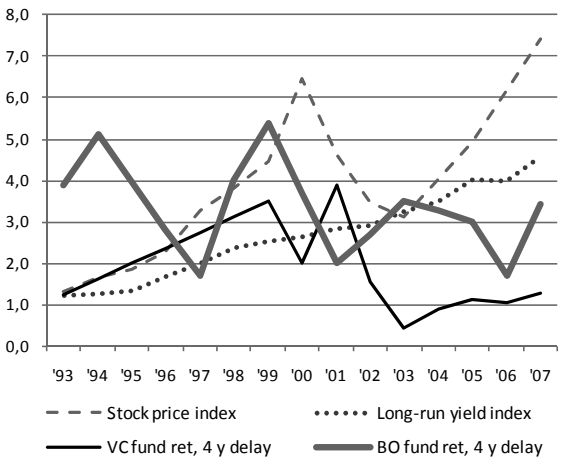


Figure 5.9. Swedish avg. PE fund performance multiples in comparison with stock and bond indices

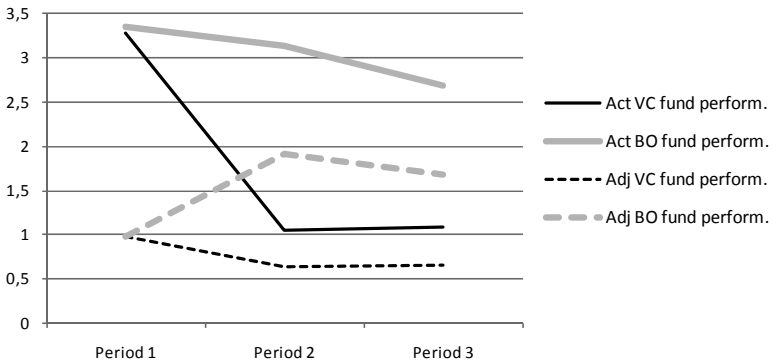


Figure 5.10. Swedish PE fund performance multiples (actual vs. period adjusted) - period and type

The performance differences between the 73 PE funds in the dataset based on whether they were raised in period 1, period 2, or period 3 were also tested statistically. An ANOVA test showed that the difference in performance means between the periods were significant, $F(2,70) = 7.10$, $p < 0.01$ (see Table 5.4). However, given that Bartlett's probability test indicates that the ANOVA assumption of equal variances was not fulfilled, the period effects on performance were also tested in a Kruskal-Wallis test of median scores across the groups. This test supported the notion that there were significant differences in fund performance in the three periods: $\chi^2(2) = 8.67$, $p < 0.05$.

Table 5.4. ANOVA and Kruskal-Wallis tests of PE fund performance variations in three distinct periods

Performance	N	Mean	Median	ANOVA F-value	K-Wallis χ^2
Funds raised 1983-1997	18	3.32	3.50	7.10**	8.67*
Funds raised 1998-2000	33	1.59	1.10		
Funds raised 2001-2003	22	1.67	1.12		

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10

Consequently, in order to control for period effects in the upcoming hypothesis testing, an adjusted performance variable was developed. This relative measurement of performance was calculated by dividing the actual performance by the average performance for the period in question. Figure 5.10 shows both the actual and the adjusted performances for the VC, as well as for the BO funds included in the study.

5.4.2 PE firms' knowledge and experience levels

Earlier research suggests that the return from a subsequent fund correlates with the outcome from its predecessor (Kaplan *et al.*, 2003; Diller and Kaserer, 2008; Phalippou and Gottschalg, 2009). That is, if a PE fund's performance is superior, the likelihood that the upcoming fund also will be successful is high. On the other hand, in case of a poor performing fund the subsequent fund is likely to be unsuccessful as well. Often, a PE firm that has managed a poor performing fund will not even be able to raise a new fund. Theoretical explanations behind this '*persistence phenomenon*' typically orient around management teams' skills and resources. For example, as discussed in Section 2.3.5, PE teams responsible for managing successful funds have gained superior knowledge and experiences, established networks and developed an attractive brand that will provide positive signaling effects (Manigart *et al.*, 2002; Diller and Kaserer, 2008; Phalippou and Gottschalg, 2009), factors that together will constitute a solid foundation for future successes.

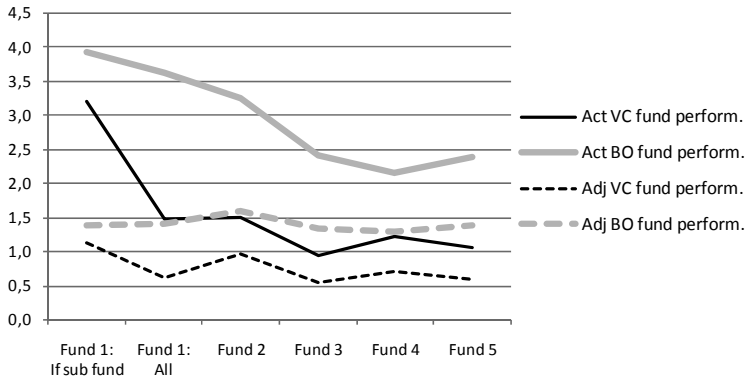


Figure 5.11. Swedish PE fund performance multiples (actual vs. period adjusted) - sequence number and type

Figure 5.11 shows the average performance of first funds, second funds, etc., split by VC versus BO funds. The figure illustrates both all first-time funds included in the study, as well as only those first funds that were followed by a subsequent fund. When considering all first-time funds in the data gathered, the 'actual' lines show drops in returns from first to second time funds for both BO and VC funds (see the solid lines). But, when controlling for period-based variances as discussed in the previous section, the diagram gives no clear indication of links between previous funds' and their preceding funds' performances (see the dotted lines). When tested in linear regressions, no significant relationship between an earlier fund's performance and subsequent performance could be noticed. Moreover, no relationship between fund sequence numbers and performance could be identified; a higher sequence number did not clearly covariate with higher performance. In other words, the data did not provide support for the notion that a previous fund's performance in general is a determinant for a subsequent fund's performance, which contradicts earlier research (Kaplan and Schoar, 2005; Phalippou and Gottschalg, 2009).

What these statistical tests did reveal, however, were clear differences between performance for first-time funds and later funds. Given that the adjusted performance variable did not follow a normal distribution, a Wilcoxon Mann-Whitney test was used for examining potential differences between first and later funds' returns. The test was carried out for all funds, and also separately for BO respectively for VC funds (see Table 5.5). For all three categories, subsequent funds did on average perform better than first-time funds, although the difference was only significant on the total level ($\chi = 2.428$, $p < 0.05$). In other words, funds having a sequence number of 2 or above performed significantly better than the first fund raised by a PE firm. This finding, i.e., that first-time funds on average generate lower returns than funds with higher se-

quence numbers, supports earlier research (Hochberg *et al.*, 2007; Phalippou and Gottschalg, 2009).

Table 5.5. Wilcoxon Mann-Whitney test of first vs. subsequent PE fund performances

Adj. performance		First funds	Sub funds	TOTAL	Mann-W. z-value
BO	Mean	1.46	1.52	1.50	
	S.D.	0.73	0.72	0.71	0.194
	N	7	20	27	
VC	Mean	0.60	0.82	0.59	
	S.D.	0.60	0.82	0.60	0.144
	N	27	19	46	
All	Mean	0.78	1.18	0.99	
	S.D.	0.71	0.84	0.80	2.428*
	N	34	39	73	

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10

When shifting the level of analysis from the fund level to the PE firm level, i.e., evaluating the 34 PE firms included in the dataset, similar evidence was identified. The data indicates that a PE firm that has managed an unsuccessful first-time fund will rarely succeed in raising a second fund. Of all included PE firms, 16 raised a subsequent fund within the time frame for this study. The average period-adjusted performance for first funds followed by a second fund was 1.27 times the invested capital, while PE firms that did not raise a second fund delivered on average only 0.48 times the invested capital. A Wilcoxon Mann-Whitney test showed that the difference was significant ($\chi = -3.608$, $p < 0.001$). This result also has support in previous studies (e.g., Laine and Torstila, 2004).

5.4.3 PE fund size

One factor often identified as being associated with better performance, as addressed in Section 2.3.5, is fund size. Larger capital bases are considered beneficial to both VC- and BO-focused management teams due to multiple reasons, including economies of scale, positive signaling effects, and improved readiness to handle downturns (e.g., Nikoskelainen and Wright, 2007; Phalippou and Gottschalg, 2009).

Given that neither the fund size nor the fund performance variables in the current dataset were normally distributed, a Wilcoxon Mann-Whitney test was applied to investigate possible links between fund size and fund performance. However, no such correlation could be identified for either of the fund types, i.e., VC or BO funds. This finding was interesting since it contradicts a rather broadly supported hypothesis within the PE literature (ibid.). A few studies, however, have indicated potential down-

sides of managing overly large funds, proposing that the optimal size of PE funds takes on a curvilinear shape (Gompers and Lerner, 1999b; Phalippou and Gottschalg, 2009).

5.4.4 PE fund focus

As discussed in Chapter 2, a PE fund is normally focused on a certain company maturity phase, type of industry, and/or geography. Earlier research has suggested that the type and level of specialization may impact fund performance.

One well-supported notion in existing PE research is, as discussed in Section 2.3.5, that *BO funds in general outperform VC funds* (Ljungqvist and Richardson, 2003; Driessen *et al.*, 2008; Phalippou and Gottschalg, 2009). That the current data also show such differences was already apparent in Figure 5.10 and Figure 5.11. In terms of adjusted performances, BO funds delivered 1.50 times invested capital (sd. 0.71), while VC returned a significantly lower 0.69 of the investments (sd. 0.70). A Wilcoxon Mann-Whitney test (see Table 5.6) showed that the difference between the groups was significant (z = -4.612, $p < 0.001$). The actual average performance for the VC funds and BO funds in the dataset were, respectively, 3.08 times and 1.43 times the invested capital. In other words, the current data also confirm the widely supported view that BO funds in general tend to generate better returns than VC funds.

Table 5.6. Wilcoxon Mann-Whitney test of BO vs. VC fund performances

Adj. performance	N	Mean	S.D	Mann-W. z-value
BO funds	27	1.50	0.71	-4.612***
VC funds	46	0.69	0.70	

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10

Another variable that has also been put forward as affecting PE fund performance is *phase focus*. In the current study, this variable ranges from 1 to 4 and measure the company phase towards which a specific PE fund is oriented. If the targeted portfolio companies are within an early-stage phase, the variable is low (1), while the opposite holds true for a mature cash-flow-positive phase (4). The correlation table in Appendix 13 shows a significant positive correlation ($p < 0.001$) between later phase focus and performance, which supports earlier studies (Manigart *et al.*, 2002; Das *et al.*, 2003).

Also, the *Specialist focus* variable is significantly correlated to PE fund performance (see Appendix 13). This binary variable measures whether the fund has a specific industrial or technology focus for its investments, or if it is a generalist fund. Earlier VC as well as BO studies have found positive links between increased specialization and fund performance (Das *et al.*, 2003; Gompers *et al.*, 2009). For the current data, though, this variable shows a significant negative correlation with fund performance, indicating that less specialization correlates with higher performance. However, the *Specialist focus* variable also correlates significantly negatively with *BO focus*, and given

that all BO funds in the current dataset have a generalist profile, the specialist variable is likely a converted indication of BO focus and the corresponding performance.

Finally, the extent to which *geographical focus* correlates with performance was investigated. There is some evidence in the early European VC literature that an overly narrow geographical focus has a negative impact on fund performance (Manigart, 1994). For the current dataset, though, no correlation between geographical preferences and PE fund performance could be identified.

5.5 Summary

This chapter presented three analyses of the Swedish private equity market. First, a description of the Swedish PE fund market's formation and evolution over a period of 20 years was provided. Second, a high-level analysis of performance heterogeneity among PE investor types was outlined. Third, an analysis of performance determinants for PE funds was presented. These analyses have all made use of the quantitative data collected within the framework of this dissertation, and they contribute to the overall enhanced understanding of the field of PE fund investing. Summaries of the results are presented in separate subsections.

5.5.1 The Swedish PE industry 1983-2003

Similar to most other markets, institutional investors have played an important role as capital providers to the Swedish PE industry. In addition, a vast majority of all the investments made into Swedish PE funds, both in terms of number and amount of capital, has been made by professional investment firms, followed by pension funds and then insurance companies. Swedish institutions have dominated the market, representing 36 percent of all PE fund investments made. However, a shift over time in various institutions' activity levels and fund investors can be noted (see Figure 5.12 and Figure 5.13).

When the Swedish PE industry was young and still evolving, banks, together with insurance companies, were the most active investors in the Swedish market, both in terms of investments made and amounts invested into the asset class. In the mid-1990s, the industry expanded significantly. The total level of capital invested into Swedish PE funds by institutional investors between 1994 and 1997 was five times higher than the invested amount throughout the period 1983 to 1993. While banks and insurance companies continued to be large fund investors, pension funds grew in importance toward the end of the 1990s, together with asset managers and PE fund of funds. Also corporate investors were rather active as PE fund investors around the year 2000.

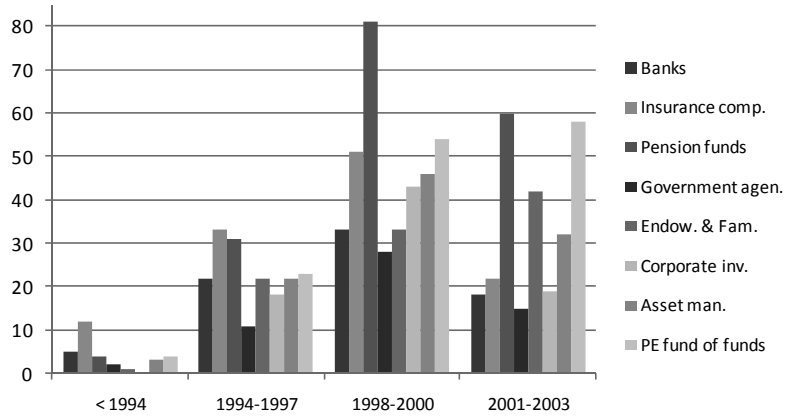


Figure 5.12. Number of investments made into Swedish PE funds 1983-2003

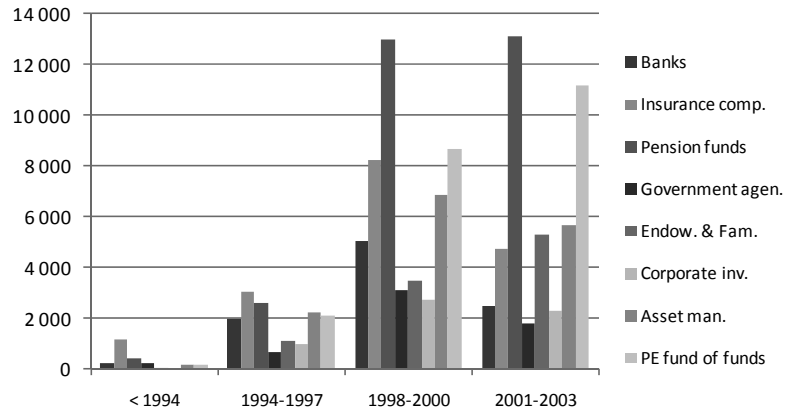


Figure 5.13. Total amount invested into Swedish PE funds 1983-2003

Toward the end of the century, international institutions began to enter the Swedish market in significant numbers. During this period in time, the industry virtually culminated in terms of number of established funds, capital levels and number of fund investments – all driven by the large interest in VC fund investing. However, after the millennium shift, the market declined dramatically due to the trend away from venture capital. Banks, insurance companies, and, not least, corporate investors, all made significantly fewer investments and invested less total capital into PE funds at the beginning of the 21st century. Pension funds decreased their number of investments, but grew in monetary terms with an expanded interest in buyouts. Additionally, PE fund of funds intensified their Swedish fund investment activities in the period, both in terms of the total number of investments and in Swedish kronor.

There has been a quite substantial difference between various investors' propensity to invest in VC versus BO funds. The Swedish VC market was to a large extent initiated by governmental initiatives at the beginning of the 1980s. It is interesting to note, though, that while local government agencies and corporate investors made more investments into VC funds than into BO funds, the difference is not large. Indeed, measured in monetary terms, the investment levels are more or less the same. That is, given that these types of investors tend to choose contributions in terms of economic growth or technological innovation rather than strictly focusing on monetary returns (see Chapter 2), a more distinct focus on VC investments would have been expected. Instead, local pension funds have been the most active VC fund investors, followed by local insurance companies. Another interesting observation is that while all types of institutions seemed to leave, or heavily reduce their investments in, venture capital after the new millennium, local LPs reduced their activity levels more than the international investors did.

Turning to the BO segment, private Swedish institutions have had important roles as initiators of this industry; some of the more well-known PE firms started as in-house projects in banks, insurance corporations, or investment companies. These organizations continued to be important investors in upcoming funds, as well. Having said that, the BO firms also early on managed to gain the interest of international LPs. Throughout the period 1983 to 2003, international PE fund of funds made the vast majority of the Swedish BO fund investments, followed by local pension funds and then by local insurance companies. The BO fund market was not hit by a downturn during this study period, as was the situation for the VC firms[26]. Instead, the interest in investing in BO funds simply expanded over time, as shown in the increased fund sizes and numbers of investments made. It is interesting to note, though, that the number of investments made by Swedish institutions into BO funds actually decreased over time and instead, international LPs increased their activity levels.

One final comment: this is the first time that the rise and development of the Swedish PE industry has been recounted from an institutional investor perspective, to my knowledge. In that sense, it represents new knowledge.

5.5.2 Summary of performance heterogeneity across PE fund investors

A high-level study, based on univariate analysis, was made of performance heterogeneity across the 334 institutional investors investing in Swedish PE funds between 1983 and 2003. PE fund of funds, family offices/foundations and pension funds seemed to be the institutions that have enjoyed the highest returns from their investments in

[26] The most severe blow against the BO market happened in fall 2008 as a result of the global financial crisis; this transpired after the period of study.

Swedish PE funds during this period. By contrast, PE firms, corporate investors and government agencies have underperformed other investors. These results both confirm and contradict earlier research, which supports the view that the types or origins of investors are far from being the only explanations behind variations in performances across PE fund investors. Instead, factors such as organization-specific characteristics, timing and investment strategies are likely to have equally strong, or even stronger, impacts on returns. Hence, a multivariate analysis of performance determinants for PE fund investors provides a more comprehensive understanding of the phenomenon being studied. This issue is addressed in the hypothesis-testing study outlined in Chapter 8 and presented in Chapter 9.

5.5.3 Summary of PE fund performance determinants

The third study in this chapter investigated a number of suggested PE fund performance determinants. In univariate statistical analyses, links between various factors and PE fund performance were tested. The analysis showed that:

- There is a clear period effect – funds raised up to the year 1997 in general perform better than funds raised between 1998 and 2003. This result supports earlier findings.
- Adjusted for period effects, subsequent PE funds do not in general perform better, or worse, than previous funds, a result that contradicts existing research. Having said that, subsequent funds generate on average significantly better returns than first-time funds. This is irrespective of whether the funds are BO- or VC-focused. The result supports previous findings.
- PE firms that have delivered poor returns in their first fund run a large risk of not being able to raise a second fund.
- BO funds have on average generated significantly better returns than VC funds. The result once again confirms a well-established view about performance differences between the two asset classes.
- Fund size does not seem to have any effect on the returns a PE fund can generate. This was a somewhat surprising result, given that there is relatively broad support in the PE literature for the notion that larger funds are associated with superior performances.
- Similarly, geographical focus does not appear to affect fund performance either. The result contradicts earlier findings, although the factor has not been studied to any great extent previously.

The next chapter will continue to offer discussions and analyses of findings emerging from the empirical data collection. In this case, the data arrives from in-depth interviews with 36 institutional investors, providing their perspectives and opinions about PE fund investing in general and about investment strategies more specifically.

CHAPTER 6

Analysis of PE fund investors and their investment strategies

This chapter presents results from in-depth interviews with 36 institutional investors who invest in private equity funds. The purpose with this qualitative study is to explore heterogeneity in attitudes, approaches, and, especially, investment strategies related to PE fund investing across different investor categories. The investors are divided into four groups based on their respective organization-specific type: (i) asset managers and PE fund of funds, (ii) banks, insurance companies and private pension funds, (iii) family offices/foundations and public pension funds, and, (iv) corporate investors and government agencies. The analysis seeks to provide a deeper understanding about how differences in organizational characteristics may affect institutional investors' motives for investing in private equity, ways of working, satisfaction with investment performances, and their respective choices of investment strategies.

6.1 Introduction

This chapter aims to provide a broad understanding of institutional investors' opinions and perceptions about private equity as an asset class. Specifically, it seeks to identify how differences in organizational characteristics may affect investment strategies. This is done by presenting the results and analyses emerging from in-depth interviews with 36 individuals working at 36 large institutions located primarily in Sweden and in the UK[27].

The organizations included in this qualitative study represent a broad spectrum of institutions in terms of variations in types, sizes, investment focuses, experiences, etc., as shown in Table 6.1. The largest group in the dataset consists of PE fund of funds, which represent close to 20% of the institutions, followed by public pension funds at 17%, and then corporate investors, which represent 14% of the organizations. 26 of the interviewed institutions were Swedish, while the others originated from the UK (7), the US (1) and from other European countries (2).

[27] For details about how organizations and respondents were chosen, how interviews were carried out, and how the analysis was conducted, see Section 4.3.

Table 6.1. Overview of institutional organizations participating in the qualitative study (in total: 36)

	AVG	MED	MIN – MAX	OBS
TYPE OF INSTITUTIONAL INVESTOR				
Asset managers				5
Banks				2
Corporate investors				5
Family offices & foundations				2
Government agencies				3
Insurance companies				3
PE fund of funds				7
Private pension funds				3
Public pension funds				6
ASSETS UNDER MANAGEMENT				
(billion)	273 SEK	18 SEK	0.2 – 4 500 SEK	36
ASSET ALLOCATION (excl. investors with 100% PE focus)				
Fixed income	48.1%	41.0%	5.0 – 93.0%	19
Stocks	37.8%	40.0%	6.0 – 72.0%	19
Alternative assets *whereof PE*	14.3% *4.2%*	9.0% *2.0%*	0.1 – 62.0% *0.1 – 46.0%*	19 *23*
INVESTMENTS & ORGANISATIONS				
No. of PE fund investments	67	13	1 – 550	35
No. of Swe PE fund investments	10	6	1 – 51	36
No. of PE professionals	7	2	0 – 58	35
Experience (years in PE)	13	12	1 – 29	36

Figure 6.1 shows the assets under management for 33 of the 36 institutional investors (the three largest organizations are excluded in the graph to increase readability). Taken together, the institutions in the study manage more than 9,800 billion SEK, i.e., over 1,000 billion EUR. On average, they control 273 billion SEK, with total funds under management ranging from 200 million SEK to 4,500 billion SEK. This means that the amount of capital varies considerably between the institutions. While the five largest organizations in the dataset on average manage 1,600 billion SEK, the number for the remaining 31 organ-

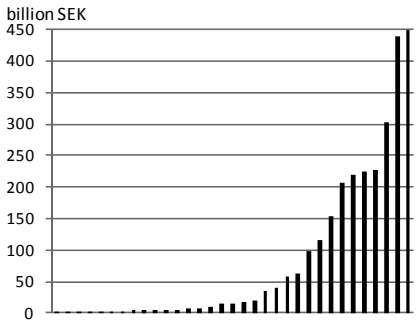


Figure 6.1. Managed assets by institutional organizations participating in the qualitative study (33 of 36 org.)

izations amounts to 60 billion SEK. The median investor manages 18 billion SEK.

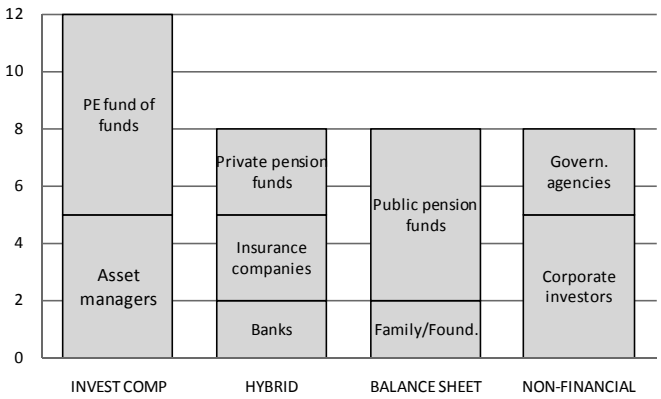
There are also large differences in the extent to which the various institutional organizations focus on private equity investing. Of the 36 institutions, 36 percent are more or less solely dedicated to investments in private equity. This includes not only the PE fund of fund investors in the dataset, but also a few government agencies and one public pension fund. For the remaining 23 institutions, private equity represents just one possible investment vehicle amongst several other types of asset classes, such as fixed income, public stocks or other alternative assets. The allocation schemes between these investors are far from uniform. For example, the proportion of fixed income types of securities in the investors' portfolios ranges from five to 93 percent, while investments in public stocks represent everything from six to 72 percent. The amount of capital set aside to alternative assets, including hedge funds, real estate, infrastructural funds, and private equity, also differs rather dramatically between the institutions, ranging from 0.1 to 62 percent.

However, the proportion of capital invested in private equity seems in comparison to be relatively similar for most investors. After excluding one extreme outlier, allocations to private equity on average amounted to 2.3 percent, with a median at 2.0 percent. In other words, the institutions in the dataset that invest in various financial assets allocate in general just above two percent to private equity.

The following subsections will present results and related analyses for this qualitative study. Since the purpose of the study was to provide a broad and encompassing perspective on private equity fund investing, the 36 study objects were split into four types of investors. Thereby, more complex analyses were made possible where expected, but also, less apparent findings became more readily visible. Throughout the chapter, quotes from the interviews will be presented. For a list of the respondents referred to in the interview excerpts, see Appendix 6. Before presenting the results, however, the following subsection provides a description of how the material was divided into four groups.

6.2 Four types of investor groups

Following earlier research on differences across institutional PE fund investors (Barnes and Menzies, 2005; Mayer *et al.*, 2005; Schertler, 2005; Lerner *et al.*, 2007), the material was classified according to investors' respective sources of capital (see Figure 6.2).



No. of organizations	12	8	8	8
Geographical origin	25% Swe	100% Swe	100% Swe	87% Swe

Figure 6.2. Types of institutional organizations in each subgroup (the qualitative study)

The first group of 12 organizations consists of professional 'investment companies', which on a full-time basis provide professional management of financial assets on behalf of their clients. These investors are obviously themselves dependent on raising external capital in order to survive. The group includes asset managers and PE fund of funds. The second set of investors operates within large financial institutions and typically invests capital arriving from two distinct sources. That is, they invest capital from the balance sheet of their parent organizations, but they also manage funds on behalf of external entities (cf. Barnes and Menzies, 2005). This may include investment teams within banks that invest the parent bank's own capital, as well that of as their clients. Thus, this group is referred to as 'hybrid' investors. A total of eight institutions belong to this cluster, including two banks, three insurance companies and three private pension funds. The third group of investors manage only their owners' capital by investing directly from the balance sheets, and thus will here be referred to as financial 'balance sheet' investors (cf. Barnes and Menzies, 2005). The dataset contains eight institutions belonging to this group: two families/foundations and four public pension funds. None of these investors need to raise capital externally for their activities; instead they act on behalf of one specific principal, be it the government (in case of public sector employees) or a wealthy family/foundation. The fourth and final group includes organizations that are not financial institutions, such as government agencies and corporate investors. These types of organizations invest in private equity not only for financial reasons, but also consider other factors above and beyond commercial success, such as spurring job creation or technological development (cf. Chapter 2). The group consists of eight organizations, and will hereafter be referred to as 'non-financial' investors.

6.3 Characteristics and motives

There are large variations between the four groups in terms of assets under management, the level of funds set aside for private equity investing, the dedication to the asset class, and also in motives for investing in private equity. These differences will be discussed in this subsection (for a summary, see Table 6.2).

Table 6.2. Summary of characteristics and investment motives for the various investor groups

	INVESTMENT COMPANIES	HYBRID	BALANCE SHEET	NON-FINANCIAL
Assets under management [1] (SEK)	Span: 0.2-4.5' bil. Avg.: 597 bil.	Span: 9-671 bil. Avg.: 151 bil.	Span: 2.3-440 bil. Avg.: 175 bil.	Span: 0.2-36 bil. Avg.: 7 bil.
Capital for PE fund inv[1] (SEK)	Span: 0.1-160 bil. Avg.: 43.1 bil. Med: 12.8 bil.	Span: 0-6.4 bil. Avg.: 1.9 bil. Med: 1.0 bil.	Span: 0.1-19.6 bil. Avg.: 5.0 bil. Med: 2.1 bil.	Span: 0.1-36 bil. Avg.: 5.3 bil. Med: 0.6 bil.
Allocations to PE fund inv[1]	7 LPs: 90-100% Oth avg.: 12.3%	Avg.: 1.6%	1 LP: 100% Oth avg.: 1.8%	5 LPs: 100% Oth avg.: 3.6%
Done PE fund inv[2]	Span: 0.2-44 Avg.: 12.2 4% Swe	Span: 0.5-4 Avg.: 1.5 48% Swe	Span: 0.4-14 Avg.: 3.4 49% Swe	Span: 0.1-23 Avg.: 3.3 18% Swe
Number of inv professionals[1]	Span: 2 -58 Avg.: 13.2	Span: 0.1-8 Avg.: 2.0	Span: 0.2-15 Avg.: 3.0	Span: 0.2-21 Avg.: 6.0
Motives for inv in PE funds (in order)	Exp. high returns Attractive risk-return Build brand	Exp. high returns Portfolio divers. Attractive risk-return Build brand New inv opport.	Exp. high returns Attractive risk-return Portfolio divers.	Exp. high returns Good citizenship Portfolio divers. Building brand Strategic importance

[1]At the time of the interview, i.e., spring 2008. [2]Average number of PE fund investments done per year since foundation.

6.3.1 Assets under management

In the private equity literature, larger fund sizes are considered to capture several benefits such as economies of scale, strong signaling effects, positive learning outcomes, and better performance (e.g., Gompers and Lerner, 1999b; Hochberg *et al.*, 2007; Metrick and Yasuda, 2010). Along the same lines, size has also been suggested as a success factor for PE fund investors. While still scarcely researched, Da Rin and Phallippou (2010) present preliminary evidence that investor size in terms of assets under management might be a determinant of future performance.

There are substantial differences in size between the four groups in the dataset. The group 'investment companies' has by far the largest amount of capital under management, amounting to, on average, 597 billion SEK in comparison with on average seven to 175 billion SEK for the other three groups. This difference is even

more apparent when comparing capital set aside for PE fund investments. The 'investment companies' on average allocate 43.1 billion SEK to such investments, which is ten times the average for the other institutions. The second largest group of private equity investors in the dataset is the 'non-financial' organizations, which set aside on average 5.3 billion SEK to the asset class. However, this latter group consists of one extreme outlier, and if excluded, the remaining investors only allocate on average 0.9 billion SEK to private equity. The 'balance sheet' and the 'hybrid' investors allocate on average 5.0 billion SEK and 1.9 billion SEK to the asset class, respectively.

6.3.2 Dedication to PE investing

The investors in this study differ rather radically in their dedication and commitment to private equity investing. This is demonstrated, in part, by the respective investors' capital *allocations to the asset class*. On average, the investors in the dataset allocate 38.2 percent of their capital to private equity. As expected, the 'investment companies' set aside the largest part, whereas the seven PE fund of funds invest only in this asset, as expected. The remaining five investors in this particular group allocate on average 12.3 percent to private equity.

Many of the 'hybrid' and 'balance sheet' investors rely on Asset Liability Modeling (ALM), which guide them to their 'optimal' ratio of various financial assets. ALM is a tool used to explore risks and rewards in terms of both assets and liabilities by quantifying the risk-reward trade-offs. The 'hybrid' investors tend to follow a rather traditional allocation strategy, in general striving to build portfolios containing 40 percent fixed income instruments (e.g., government bonds), 50 percent variable return securities (mainly publicly traded stocks) and 10 percent alternative investments, whereof 1.8 percent is in private equity. The institutions in the 'balance sheet' group in a similar way set aside on average 50 percent to investments in fixed income, 38 percent in stocks and about 12 percent in alternative investments, including 1.6 percent to private equity. That is, the 'balance sheet' and 'hybrid' investors, all Swedish institutions, appear rather modest in their allocations to private equity. Earlier reports show that European institutions, mainly insurance companies and pension funds, allocated about two to five percent to private equity in the period 1995 to 2005, while their US peers set aside five to seven percent to the asset class during the same period (Herrero, 2007; Russell Research, 2009. See also Section 2.2.3). Hence, the Swedish pension funds, banks, insurance companies and family offices included in this study tend to allocate less capital to private equity compared to their international peers. However, there are indications in the data that a few of the investors are eager to increase their allocation levels to private equity:

> *"I believe we could allocate considerably more money to private equity investments.* [...] *Take Yale, for example: they allocate more than 20% to hedge funds and 20% to private equity. OK, they are extreme and have very long investment horizons. But we could definitely allocate more to alternative investments, and especially to private equity, given the historically high returns."*
>
> (Respondent #R28, Bank)

Of the eight organizations included in the 'non-financial' group, five are fully dedicated to private equity investing. The remaining three, all corporate investors, set aside on average almost four percent to the asset class.

The *activity levels* of private equity investors also vary between the institutions. Not surprisingly, the institutions belonging to the 'investment company' group make on average far more PE fund investments per year compared with the others. This group of investors carries out on average 12.2 investments each year, while the 'balance sheet' and 'hybrid' group of institutions make only 3.4 and 1.5 investments yearly, respectively. The 'non-financial' type of organizations arrives at a yearly average of 3.3 PE fund investments. However, this latter result is somewhat skewed due to one large European governmental type of investor. If excluding this investor, the remaining organizations in the 'non-financial' group invest in only 0.5 PE funds per year on average.

The PE literature usually suggests that investing in private equity is no simple task due to the high levels of secrecy and uncertainty that are commonplace in the market, together with the long lead times (Bance, 2004; Müller, 2008. See also Section 2.2.5). That is, evaluating private equity fund managers is considered a more complex task than benchmarking managers of quoted companies or other vehicles for which publicly information is available. Hence, investing in private equity is regarded as a much more resource-intensive activity than investing in quoted securities. Whether the various types of institutions in the study have set up their own *dedicated private equity investment entities* or have chosen other ways to manage their PE portfolios differs on a case-by-case basis. The 'investment companies' have by far the largest pools of internal resources dedicated to private equity investing, with on average 13.2 PE investment professionals on staff. Although the spread is large within the group, none of the 'investment companies' have fewer than two full-time staff to manage the PE fund investments. The 'balance sheet' and 'hybrid' investors together have an average of 2.5 investment professionals per organization. However, after excluding two large institutions with, respectively, eight and 15 full-time investment professionals, the remaining organizations in these two groups have an average of only 1.2 employees dedicated to the asset class.

The 'non-financial' group shows large variations in the number of dedicated resources for private equity investing. The government agencies have relatively large organizations, with on average more than 14 persons committed to private equity,

investing both in PE funds and also directly into portfolio firms. In a vast majority of the corporate organizations, however, private equity investing is typically managed on a part time basis by the CFO or one of her co-workers.

During the interviews, it also become apparent that the *knowledge levels* about the asset class, e.g., the possession of a deep understanding of its fundamental characteristics, current market trends, prevailing terms and conditions between LPs and GPs, etc., varied considerably among the investors. Once again, it was the 'investment companies' that during the interviews demonstrated the deepest understanding about private equity as an asset class. The 'balance sheet' investors appeared more knowledgeable about private equity fund investing than did the 'hybrid' and 'non-financial' investors. The 'hybrid' investors, in particular, came across in the interviews as those having the most limited understanding about this particular asset. This was not overly surprising, given that these institutions in general have substantially fewer resources allocated to PE investing and make the fewest PE investments per year of all groups. The 'hybrid' institutions appeared to be well aware of their limited knowledge. Indeed, a few actually considered their more distant approach to be healthier. They argued that being too devoted to one particular asset class by having dedicated investment professionals with strong personal incentives to continue to invest in the area could potentially be harmful to the organization:

> *"While these individuals* [investment managers at large LPs] *have a far better understanding about private equity than we do, you need to remember that they actually carry a lot of responsibility for the bust around the year 2000. They were looking after their own interests – eager to keep their positions as investment managers. We were actually a bit confused about why* [LP X] *continued to support funds that apparently did not perform, but they chose to stay on until the bitter end, hoping for a miracle. For me, it's different, I have no personal interest in investing in private equity – I am only interested in returns."*
>
> (Respondent #R18, Private pension fund)

6.3.3 Motives for investing in PE funds

According to finance theory the motive for investing in alternative assets, including private equity, is to diversify investment portfolios with securities providing high risk-adjusted returns and low correlation with other assets (Markowitz, 1952. See also Section 2.2). Further, the investors in this study confirm that an expectation of *high returns* is the single most important reason to invest in the asset class for all groups (mean score 3.5 on a scale 1-4):

> *"I would love to say that we only invest in people with high ethical and moral standards – you know: guys that you enjoy having a beer with. But honestly, some of the people we have invested in are just disgusting. But they deliver great returns. And that is all that counts."*
>
> (Respondent #R10, PE fund of funds)

There are, however, differences between the investors, where for example the 'investment companies' seem to consider returns to be of higher importance than the case for the 'non-financial' organizations (mean score 4.0 versus 2.9). The issue of whether or not the investors consider that their return expectations from investing in private equity actually have been met will be discussed in Section 6.6. Furthermore, the three groups 'hybrid', 'balance sheet' and 'non-financial' institutions all considered *portfolio diversification* to be a central reason for investing in private equity. However, the 'investment companies' argued that the asset class has, in contrast to theory, rather high correlation with traditional investments. That is, investing in private equity in order to obtain more diversification of the overall financial portfolio was considered pointless. An observation also made in existing research (e.g., Moskowitz and Vissing-Jørgensen, 2002) and in practitioner-oriented reports (e.g., Shanahan and Marshall, 2010).

In addition to the financial motives behind private equity investing, a few supplementary reasons were mentioned during the interviews. Although all institutions maintain that they invest in the asset class within expectations of good returns, some investors also have additional goals for their investment activities. Accordingly, the 'non-financial' investors put forward *good citizenship* as the second most important motive behind private equity investing. This point was particularly pronounced in discussions with the government agencies, representatives of which argued that venture capital investments in particular are considered to have positive effects on job creation and economic growth (cf. Lerner *et al.*, 2007; Phalippou and Gottschalg, 2009). The corporate investors claimed that private equity investing, and again specifically in VC-focused funds, enables them to keep an eye on new *technological developments* of strategic importance to the parent organization, which is in line with previous research (Maula, 2001):

> *"*[The LP] *works with strengthening* [the mother organization's] *relation to new technology and services by investing in companies and projects of technological and commercial interest."*
>
> (Respondent #R16, Corporate investor)

Earlier research suggests that public pension funds also face political pressure to invest in local private equity funds (Lerner *et al.*, 2007). This notion was, however, strongly rejected by the respondents representing the six public pension funds in this study. Instead, they argued that the promise of financial returns is superior to all other motives for investing in the asset class. Another suggested reason to invest in private equity is to establish commercial relationships with PE fund managers. For example, banks might diverge from maximizing returns on PE investments in order to facilitate future debt agreements with PE portfolio firms (Hellmann *et al.*, 2004). Neither of the

two banks in the present study indicated such a motive for their private equity activities.

What did come forward, though, was the notion that *learning* was a reason for some institutions to invest in PE funds, which has also been suggested in earlier studies (Phalippou and Gottschalg, 2009). By participating in PE fund investing, investors may obtain tacit knowledge useful in future investment situations – into PE funds or directly into portfolio companies. A few investors also mentioned *improving firm image* as a reason to invest in private equity. That is, investing in private equity may provide the investor with a positive corporate image, and hence help to enhance organizational reputation:

> *"It was also a matter of image. We got such a high recognition in the press during these years due to our private equity investments, which made us look good to our members."*
>
> (Respondent #R17, Corporate investor)

Finally, there are also clear indications in the material that *herd mentality* has been one strong driver for private equity investing. A few of the respondents claimed that the decision to invest in private equity was primarily due to the fact that other, typically larger and more reputable, industry peers had entered the market:

> *"We saw what* [LP X] *was doing, and we just decided to follow them; as we often do."*
>
> (Respondent #R23, Private pension fund)

This behavior was especially noticeable in situations with strong booms, such as the 'dot-com' era around the year 2000 and when the buyout market exploded in the mid-2000s. This is a behavior that has been identified and described previously in the PE literature (Gompers and Lerner, 1999b).

6.4 Investment strategies and criteria

When investing in private equity, investors outline more or less sophisticated allocation strategies for what types of PE investments to include in their financial portfolios. The discussions about investment strategies were of specific interest in the interviews, given the more specific aim of the dissertation to investigate links between those strategies and the investors' returns from PE fund investing. In this area, entry order strategies are particularly important. This subsection discusses variations in terms of investment strategies and areas of focus identified by the four groups of institutional PE investors (for a summary, see Table 6.3).

Table 6.3. Summary of investment strategies and criteria for the various investor groups

	INVESTMENT COMPANIES	HYBRID	BALANCE SHEET	NON-FINANCIAL
Type focus[1)]	VC: 0-25% Avg. 13% BO: 75-100% Avg. 87%	VC: 0-30% Avg. 8% BO: 70-100% Avg. 92%	VC: 12-100% Avg. 44% BO: 0-88% Avg. 56%	VC: 0-100% Avg. 65% BO: 0-100% Avg. 35%
Geographical focus[1)]	Nordic: N/A EU: 51% RoW: 24%	Nordic: 63% EU: 23% RoW: 14%	Nordic: 54% EU: 22% RoW: 24%	Nordic: 79% EU: 19% RoW: 2%
PE cathegory[1)]	Direct[2)]: 5% PE fund[2)]: 94% FoF[2)]: 1%	Direct: 2% PE fund: 88% FoF: 10%	Direct: 7% PE fund: 69% FoF: 24%	Direct: 35% PE fund: 65% FoF: 0%
Interest in first-time funds	Pos: 33% Neu: 25% Neg: 42%	Pos: 17% Neu: 33% Neg: 50%	Pos: 43% Neu: 0% Neg: 57%	Pos: 38% Neu: 38% Neg: 25%
Most important inv criteria	Team Past performance Terms and conditions	Team Past performance Existing/Lead LPs	Team Past performance Existing/Lead LPs Terms and conditions	Team Past performance Existing/Lead LPs

[1)]At the time of the interview, i.e., spring 2008. [2)]Excluding one extreme outlier.

6.4.1 Investment strategies

All private equity funds have a pre-defined investment focus: targeting companies within a certain development phase, from a specific geographical area, and sometimes, within a particular industry. For example, while one private equity fund focuses on start-up firms located in a Nordic country within the IT or telecom sectors, another fund makes buyouts of mature mid-sized entities from corporations in northern Europe in all industries except banking. Furthermore, private equity investing may be carried out in three major ways: (i) by investing directly into portfolio firms, (ii) by investing in PE funds, or (iii) by investing in PE fund of funds. Consequently, institutional investors will typically build mixed portfolios of PE investments in terms of focuses and types, based on strategies set out in more or less sophisticated allocation schemes. Of all the institutions in this study, the 'investment companies' seemed to have the most elaborate and coherent investment strategies for their private equity activities:

> *"Asset allocation has a significant impact on investment performance and has always been a fundamental element of* [the LP's] *investment strategy. Our systematic asset allocation process identifies and targets successful market segments and investment themes of the future while applying appropriate levels of diversification.* [The LP's] *asset allocation is based on proprietary research and a deep understanding of market trends."*
>
> (Respondent #R12, PE fund of fund)

However, the question of which overall investment strategy to pursue was an issue of debate among the 'investment companies'. Two strong opinions came forward in the material. Some investors in this group consider a rigid 'top-bottom' strategy to be the most advantageous way of investing in private equity:

> *"*[The LP] *applies a rather rigid top-down approach when investing in private equity to maintain performance and manage risk. This top-down analysis includes research on the overall economy, industry sectors, and the different segments of private equity, such as venture capital markets or distressed securities."*
>
> (Respondent #R12, PE fund of fund)

Others argue that a more opportunistic 'bottom-up' investment strategy is preferable when investing in this type of asset, where allocation schemes are relied upon as general guidelines:

> *"Several of the traditional fund of funds build some kind of diversification matrix. We instead go bottom-up to get the best performance. For example, if I do not like a particular Spanish buyout fund, I would never invest in one even if my allocation scheme said I should. Having said that, I would never put all our eggs in one basket."*
>
> (Respondent #R9, PE fund of fund)

While the majority of the 'hybrid' and 'balance sheet' investors tend to use advanced ALM modeling to set asset distribution schemes for all other types of financial assets, as discussed previously, allocations within the private equity asset class tend to be pragmatic and follow less rigid rules:

> *"We do not want to settle a firm allocation plan* [for private equity]*; instead, we tend to be more opportunistic. You know, we like to be able to invest in good funds when they appear. Only really large LPs, such as AlpInvest, can afford to fine-tune their approach using some type of index."*
>
> (Respondent #R28, Bank)

When deciding the allocation strategy for a portfolio of private equity fund investments, the central question to most private equity fund investors is how to determine

an optimal mix of *venture capital* versus *buyout funds* in the portfolio. As outlined previously, BO funds have in general generated higher returns than VC funds (Ljungqvist and Richardson, 2003; Phalippou and Gottschalg, 2009. See also Section 5.4.4). On the other hand, a few VC funds have by far outperformed all other types of investments (Schmidt, 2006). That is, the question of whether to invest in BO or VC funds is also a matter of risk-taking. Furthermore, performance from PE investing is found to be cyclical, where funds raised in boom times typically generate lower returns as compared to those set up in down periods (Gompers and Lerner, 2000. See also Section 5.4.1). In addition to the financial aspects, as discussed, investors may have additional motives for investing in a certain type of fund. For example, venture capital are considered to have a positive impact on innovation, job creation and hence on societal development (e.g., Davila *et al.*, 2003), which obviously are important to some types of PE fund investors. Not surprisingly, variations in phase focus are apparent in the data, as well.

At the time of the interviews, i.e., in spring 2008, a majority of the investors had built portfolios dominated by buyout funds. The lower VC allocation levels are partly explained by the fact that BO funds by nature are larger than VC funds. But it is also clear that low VC fund returns have scared investors away. After the 'dot-com' crash around the year 2000, many fund investors experienced heavy losses from their venture capital investments and thus decided to more or less abandon the asset class. This seems to be especially true for the group of 'hybrid' investors in the dataset, i.e., banks, insurance companies and private pension funds. On average, this group allocated 92 percent of their private equity capital to buyout fund investments, which is in line with earlier findings (Mayer *et al.*, 2005; Hobohm, 2009). Poor returns together with difficulties gaining access to the best performing VC funds were put forward as the main arguments for why 'hybrid' investors tend to opt of from venture capital investments:

> *"VC is actually pretty simple. You know which venture capitalists are the best. In their funds, however, you will never get the desired share. But if you instead try to go for the second-best VCs, where you might get a seat at the table, it will require a great deal of time and resources to actually find them. Hence, it's better to use the time making buyout fund investments."*
>
> (Respondent #R29, Insurance company)

The 'investment companies' also had a heavy focus on buyouts, setting aside on average 87 percent, and hence only allocating 13 percent to VC funds. However, these investors showed somewhat more interest in venture capital, and indicated that they may pursue such investments in the future. Some of them referred to what they consider to be cyclicality in private equity, stating that returns from VC fund investing may take off again. So far, however, the 'investment companies' were not overly impressed by the risk-return characteristics of venture capital:

> *"In total, we allocate 15-20% to VC, although only 10% in Europe. However, VC has not been particular successful in the US, either. The reason why we have had better returns in Europe is because we have proportionally less VC in the European portfolio. We discuss VC a lot. Given the risk, the returns should be 4-5x, but that does not happen."*
>
> (Respondent #R12, PE fund of fund)

A few of the 'investment companies' also argued that investing in VC funds is especially difficult and complex, which puts high demands on the organization. And given that investments into VC funds typically are smaller given smaller fund sizes, the cost-benefit equation becomes too uneven:

> *"We would never do venture capital* [investments]. *It requires so much more analyzing and specialized knowledge. It takes time and, in general, the returns have been poor."*
>
> (Respondent #R33, PE fund of fund)

Finally, as expected, the 'non-financial' investors in the dataset devote a major part of their capital to VC investments, i.e., on average 65%, which is in line with earlier research (Mayer *et al.*, 2005). As discussed, the government agencies argue that they are seeking not only good returns from their private equity investments, but also to promote activities that create jobs and contribute to economic growth. Corporate investors, meanwhile, maintain that they seek to support innovations in line with the objectives of their parent organizations.

Also, when it comes to *geographical focus* for the investments, differences between the four groups can be noticed. Earlier research shows that while the geographical location of a PE fund tends not to be important for pension funds, corporations and insurance companies, it may play a vital role in the selection process for banks and government agencies (Schertler, 2005). The line of reasoning is that the latter groups may be interested in developing relationships with clients or supporting national growth and hence are primarily interested in local investment activities. In the current material, there is a clear inclination among the Swedish institutions to predominantly invest locally. That is, besides the group of 'investment companies', which mostly consist of international institutions, a vast majority of the other institutions prefer to invest in the Nordic countries. However, differences are also notable here. The 'hybrid' investors allocate 63% of their investments to Nordic-based funds. The 'balance sheet' investors, on the other hand, allocate almost half of their private equity capital to investments outside the Nordic region. As expected, the 'non-financial' group of investors tends to invest only domestically. One argument for preferring local investments concerns the challenges associated with evaluating fund managers that are remote from the home market, especially for VC funds:

> *"We have a focus on Sweden and to some extent on the rest of the Nordic* [countries] *for our PE investments. Outside this region we make very few investments, and if so only through fund of funds. It would be too expensive to evaluate non-Nordic teams since we have limited networks outside our home market.* […] *Only in Scandinavia do we have some kind of insight about the GPs."*
>
> (Respondent #R34, Corporate investor)

Yet another allocation strategy considers the proportion of investments into *various types of PE investments*, such as: (i) directly into portfolio firms, (ii) in private equity funds, or (iii) in PE fund of funds. A few of the government agencies and corporate investors dedicate significant resources and capital to make investments directly into portfolio firms. On average, the 'non-financial' group set aside 35 percent of their capital to portfolio firms and the remaining 65 percent to private equity fund investing. Some of the 'hybrid' and 'balance sheet' investors used to make investments into portfolio companies, but have stopped due to resource constraints and also to avoid competing with their own GPs.

However, recently, a new type of direct investment opportunity has emerged, namely, the possibility to co-invest in portfolio firms together with GPs. Such co-investments are considered advantageous since they enable investors to take larger capital bets while still keeping the number of GP relationships manageable. The latter has become critical to large fund investors, since organizational size and thus costs are both closely related to the number of PE firm relations. Being a passive co-investor would be in line with the parameters of limited partnership agreements, while also letting the LPs 'free ride' on the GP. Another attractive component of co-investing is that investments can be made without paying extra fees. Hence, co-investments are considered interesting investment options to several of the investors in the study:

> *"Up until now, we have not made any co-investments since no interesting opportunities have appeared so far. But it is in the cards. This approach gives better returns and the fees go down.* […] *We would not, however, make any direct investments into private companies ourselves – it would not be appreciated by our GPs."*
>
> (Respondent #R1, Asset manager)

Besides investing in private equity funds, which were the main private equity investment vehicle for the investors in the dataset, eight institutions also considered PE fund of funds as interesting complements to their PE portfolios. A few arguments for making investments into PE fund of funds were suggested during the interviews. First, investing in fund of funds may be a way to gain access to superior funds, such as top-quartile US venture capital funds, which otherwise would not be available to the investor. Second, geographical proximity was put forward as critically important when investing in an industry, such as private equity, that is characterized by high levels of

uncertainty and where in-depth understanding about the targeted market and access to local networks therefore were considered crucial (cf. Section 2.2). Thus, some institutional investors choose PE fund of funds as intermediaries when investing in areas distant from their home market. Third, others argue that they only have the resources to manage a limited number of PE firm relationships, and consequently, they use PE fund of funds to broaden their capacity:

> *"We do direct investments in Nordic buyout and venture capital funds. We also have capacity to go directly into mega pan-European buyout funds. However, getting access to US VCs requires intermediaries, i.e., fund of funds. We do not do any direct country-specific buyout fund investments in Europe or in the US. It takes too many resources. Only if the funds are larger than one billion dollars does it make any sense to enter."*
>
> (Respondent #R2, Public pension fund)

Another strategic decision when investing in private equity is to what extent fund investors are willing to invest in the *first fund* set up by a new management team. This is a question that is obviously of key interest to this dissertation. The primary reason for investing in such funds, put forward in the interviews, is that if the fund is successful, LPs that did not participate may not be invited to invest in the next fund:

> *"If the GP does reach superior returns, other LPs run the risk of not getting a seat in the next fund."*
>
> (Respondent #R29, Insurance company)

Other advantages of investing in such funds were also proposed, including the strong incentives for first fund managers to succeed:

> *"The advantage of a first-time fund is that the incentive to succeed is so high. They have to be successful or otherwise they will never get a second chance."*
>
> (Respondent #R29, Insurance company)

The 'investment companies' tended to be rather positive to a certain proportion of first-time fund investments. They presented two additional arguments in favor of investing with newly formed PE firms. First, according to this group of investors, some of the best-performing PE funds ever introduced were first-time funds. Second, successful PE teams tend to raise larger funds over time. Hence, institutional investors interested in small to medium-sized PE funds are more or less forced to occasionally invest in first-time funds:

> *"Small teams get bigger. The best teams are initially pretty small. However, after great performance, GPs tend to raise larger and larger funds – and suddenly they cannot provide the same profits. Therefore, the best strategy is to capitalize outstanding start-up PE teams, stay with them for 2-3 funds and then leave."*
>
> (Respondent #R10, PE fund of fund)

As expected, all of the government agencies in the study were prepared to invest in first-time funds as a way to mitigate market failures.

However, investing in new teams is also considered risky. While 30 percent of the investors in the study said that they would consider investing in first-time funds, 42 percent stated that they would not. The 'balance sheet' investors claimed that they are willing to do a few first-time fund investments, although they have become more restrictive over time. Further, only first funds managed by teams with previous experience from the private equity field would be taken into consideration. This view is shared by the 'hybrid' investors, who emerged in the dataset as the group most reluctant to invest in first-time funds. Also, the 'investment companies' only accept new PE firms with extensive previous experience from private equity investing; spin-outs from well-known PE firms are preferred:

> *"We could do first-time fund investments, but only if the team members have considerable previous private equity experience and have worked together before."*
>
> (Respondent #R29, Insurance company)

6.4.2 Investment criteria

The next area of interest in the interviews concerned criteria used for evaluating investment opportunities. When selecting a GP, investors evaluate the investment strategy and focus of the funds, the fund's competitive advantages, organizational structure and practices, and, not least, its performance track record (cf. Shanahan and Marshall, 2010). In line with previous research (Fried and Hisrich, 1989; Barnes and Menzies, 2005), the most important fund selection determinant to all investor groups in the present study concerns the *management team's* strengths (mean score of 3.8 on a 1-4 scale). That is, the importance of selecting high-performing managers is considered crucial, given the large heterogeneity in fund performance that has been discussed previously. The types of skills and experiences that are desired, however, seem to vary. For example, some of the investors argued that financial skills are of top priority, while others put forward the notion that industrial experience is more important:

> *"Teams are absolutely critical. I want buyout teams with relevant industrial experience that have held operational management positions. Financially competent people count thirteen on a dozen."*
>
> (Respondent #R24, Private pension fund)

A concluding remark indicated that needed skills vary depending on the fund's characteristics and focus:

> *"Teams are extremely important – for VC as well as for buyout investments. But you would look for slightly different things in each case. For example, financial competence is an extremely important skill when investing in buyouts. On the other hand, when it comes to venture capitalists, an entrepreneurial background is very important."*
>
> (Respondent #R2, Public pension fund)

When evaluating teams, fund investors seemed particularly to care about to what extent the managing team had worked together before and if they jointly had contributed to previous successes. That is, they seemed to prefer consistency and continuity rather than dependence on one or two key individuals:

> *"Team evaluations have a large impact on our final investment decision. We evaluate several components. Is the GP run in a democratic way? If not, trouble is likely to come. How strong is the team together – is it a one-man show? We always assess the performance of each team member – how have they contributed in the past and are they likely to continue to contribute?"*
>
> (Respondent #R13, PE fund of funds)

The second most important reason to accept, or refuse, a PE fund investment proposal was *past performance* (mean score 3.5 on a 1-4 scale), a result in line with previous findings; PE teams that have a proven capability to generate superior returns in one PE fund, are expected to do so in subsequent funds (Kaplan and Schoar, 2005; Diller and Kaserer, 2008)[28]. However, the institutions do not automatically look for PE teams with absolutely outstanding performance with one fund; instead, they look for teams that have delivered good returns consistently over time:

> *"A return of 10x generates questions about whether it was pure luck – consistent performance of 3-4x is much better."*
>
> (Respondent #R11, Asset manager)

[28] Note, however, that this was not clear from the analysis of the PE funds in the quantitative dataset collected within the framework for this dissertation, as discussed in Section 5.4.2.

Thereafter, the major criteria used when evaluating PE funds tended to diverge among the investor groups. To the 'investment companies', and also to some extent, to the 'balance sheet' investors, *terms and conditions* between LPs and GPs were considered of vital importance. The investors stressed the importance of agreements that should adhere to standard market levels for fees, carried interest, hurdle rates, etc. (cf. Barnes and Menzies, 2005). However, a rather widespread dissatisfaction with the currently high compensation levels in the industry emerged in the interviews. Representatives of these institutions felt that increasing fee levels, considered a result of successful PE teams' tendency to over time raise larger funds while still keeping the same fee percentages, may put the alignment of interests between LPs and GPs at risk:

> *"We do not want the team to get rich on fees, but rather, on returns. But you just have to buy the terms today. Besides that, it feels completely wrong that* [person X] *gets rich on fees. I mean,* [PE firm X] *still has 1.25% in management fees despite the fact that their funds today have mega sizes."*
>
> (Respondent #R6, Public pension fund)

A few respondents, though, did not consider the fees to be excessive, arguing that management teams of successful private equity funds actually deserve high compensation levels:

> *"It pays to invest money in the right people. We are not able to attract such competence to our organization. But skills cost, so it's fair to pay for them."*
>
> (Respondent #R26, Public pension fund)

Another criteria used when evaluating PE funds that was put forward in the interviews concerns the *status of other LPs*. Those institutions within the 'hybrid', 'balance sheet' and 'non-financial' groups argued that the prominence of existing, or lead, investors is definitely a factor taken into consideration when making investment decisions (mean score 2.9 on a 1-4 scale):

> *"There must be some other LPs prepared to invest that you can trust and rely upon. Since I'm the only one at* [the LP] *working with private equity investments, which, in addition, is a minor part of my responsibilities, I need to cooperate with other LPs with sufficiently large PE organizations. Such LPs have significantly greater expertise on private equity compared to us."*
>
> (Respondent #R18, Private pension fund)

Most of the 'investment companies' did carefully point out that other fund investors' views or behaviors are of no interest to them. That is, they asserted that they would

never consider what others are doing but would instead make their own judgments. One of the larger and more influential investors in this subgroup, however, states:

> *"Saying that it is uninteresting to listen to what others have to say about a fund is nonsense. Of course you think twice if no one else is interested in the fund you are presently evaluating."*
>
> (Respondent #R12, PE fund of funds)

The observation is interesting, and it supports the notion that actions undertaken by organizations perceived as having a good reputation on the market will impact other organizations' behaviors. This to some extent contradicts the finding of Groh and Von Liechtenstein (2011) who in their study found that commitments from other well-reputed LPs was not considered to be an important criterion. They authors did show, however, that the criterion was somewhat important to smaller investors.

6.5 Working procedures

While the previous section discussed what institutional investors do, the next area of interest concerns how they do it. That is, this section will analyze the working procedures utilized by institutional investors in the selection and governing of private equity funds. Hence, this subsection will present identified differences and similarities among the four groups of institutional investors within the areas of decision making, fund evaluation, governance of funds, and cooperation with other LPs (see Table 6.4 for a summary of discussed statistics).

Table 6.4. Summary of working procedures for the various investor groups

	INVESTMENT COMPANIES	HYBRID	BALANCE SHEET	NON-FINANCIAL
Decision of (i) investment criteria, (ii) investments	(i) & (ii) 50% board, 50% partners	(i) 86% board, 14% mgmt. (ii) 67% board, 33% mgmt.	(i) 100% board (ii) 57% board, 43% mgmt.	(i) 100% board (ii) 88% board, 12% mgmt.
Due diligence	Full own: 92% Light own: 8% No DD: -	Full own: 50% Light own: 17% No DD: 33%	Full own: 71% Light own: 29% No DD: -	Full own: 38% Light own: 50% No DD: 12%
Governance & control[1)]	Adv board: 75% Inv board: -	Adv board: 38% Inv board: -	Adv board: 67% Inv board: -	Adv board: 75% Inv board: 38%
Interest to co-operate with other LPs (scale 1-4)	2.3	2.4	2.6	1.9

[1)]Percentage of investors having advisory boards or investment boards

6.5.1 Decision making

One topic discussed during the interviews, and one that seems not to be well covered in the existing literature, concerns how decisions about private equity investing are made at the LP level. The fund investors were asked to describe how decisions about overall investment criteria and individual fund investments were undertaken within their organizations. Two major groupings emerged from the material. On the one hand, the 'investment companies' described themselves as having rather delegated decision mandates, while on the other hand, the three remaining groups of investors tended to have more centralized decision-making processes. For these latter groups, decisions about what criteria to apply for PE investing were set by the organizations' board of directors in 96 percent of the cases. Decisions about specific investments, i.e., whether or not to invest in a particular fund, were taken on by either a board of directors or at the CEO level. The high risk profile of the asset class was put forward as a major reason for the centralized decision-making processes in the three groups. However, several less financially rational motives were also suggested:

> *"The long investment horizon* [of private equity] *is obviously one reason for the board of directors to get involved, but there are also other reasons. Boards seem to love the environment of private equity – not least to be in close contact with other 'high flyers' in the industry. Even today, our board of directors, although we have decided to stop investing in private equity, continues to ask questions about the few remaining investments we have. No other single investment would receive such a high degree of attention from the board."*
>
> (Respondent #R30, Public pension fund)

Investment professionals working in any of the 'investment companies' seemed to have more influence on overall strategy as well as on specific investment decisions compared to the others. About half of these investors made decisions about investment criteria and specific fund investments on a partner level. Given that many investment companies, not least PE fund of funds, are owned by individual partners, the result is not surprising.

6.5.2 Due diligence processes

After elaborating upon criteria that need to be fulfilled in order to attract interest from PE fund investors, an adjacent area of interest is how to ascertain whether a fund has the potential to meet set expectations. That is, to determine how institutional investors carry out due diligence assessments of funds and their managers. Such processes involve investigation of the capabilities of the management team, performance records, investment strategies, and potential legal issues. Due to the opaque nature of the asset class, not only in terms of the general lack of information but also in terms of the challenge of comparing performance between funds, evaluating private equity funds is considered a difficult task (see sections 2.2 and 2.3.4):

> *"If I gave you all of the information we have about our funds and you could sit here for days and read it, you would still not be able to tell which of two funds had performed better. What I mean is that there are so many different wordings, time horizons, etc, and placement agents are so well-trained in presenting them, that any fund could be dressed up to look like a top-quartile fund."*
>
> (Respondent #R13, PE fund of funds)

Earlier research suggests that institutional investors tend to follow comprehensive and structured procedures when selecting which fund to invest in (Barnes and Menzies, 2005). This study, however, pointed at heterogeneity in evaluation practices across institutional investors. Again, the 'investment companies' emerged as the ones carrying out the most comprehensive and systematic due diligence processes. According to these investors, evaluation of hitherto unknown private equity management teams is a continuous and long-term process where highly structured formats and procedures are followed. Several of these investors referred to thick investment memoranda containing 50 to 60 pages with detailed analyses about potential PE fund investments. Before entering a new investment area, such as a new type of PE instrument or a new geographical region, the analyses go even deeper. Fund managers, and especially their ability to generate continuous streams of good returns, are in many cases observed and evaluated for years before the 'investment companies' are prepared to invest:

> *"We apply a disciplined investing approach based on rigorous in-depth analyses where we follow teams for years, from sketchy concepts to final investment proposals."*
>
> (Respondent #R8, Asset manager)

Hence, a vast majority of the 'investment companies', i.e., 92 percent, stress that they carry out comprehensive investments evaluations in-house and would never rely on a third party for such an important activity:

> *"We would never piggyback on another investor in a DD process; we always undertake our own, and we spend a lot of time on it."*
>
> (Respondent #R1, Asset manager)

This is in line with indicative results presented by Da Rin and Phallippou (2010) suggesting that large investors engage in more intense due diligence assessments, are more likely than other investors to refuse to re-invest in a fund, and are less likely to free-ride on other investors' fund evaluations. Also, the 'balance sheet' institutions clearly declared that they always carry out their own due diligence and do not rely on others. About 71% of them claim that they make very careful and detailed evaluations of potential fund investments, while the remaining conduct somewhat less involved analyses. Many of the 'hybrid' investors, though, seem to choose another strategy when

evaluating funds. While only half of them say that they carry out their own comprehensive due diligence, one-third of these institutions rely fully on evaluations made by other LPs. That is, their investment decisions are based on opinions put forward by other institutional investors:

> *"*[The due diligence] *is not so thorough; it's like buying a pig in a poke. We talk with other investors. One has to rely on others. We would never invest if the other LPs are unknown."*
>
> (Respondent #R32, Bank)

From the 'non-financial' group of investors, two themes emerge. First, the group of government agencies performs very thorough investment evaluations. These respondents, together with the 'investment companies', demonstrated the highest knowledge about the field on both an overall market level and in terms of details such as legal and structural issues and compensation terms. Second, the group of corporate investors conducts relatively minimal due diligence investigations of presumptive fund investments.

6.5.3 Governance and control

Another area of interest in the interviews concerns how investors exercise governance and control of the funds they have invested in. There are two common formal groupings, or meeting points, for fund investors and fund managers; investor committees and advisory boards. The first type of group typically provides guidelines, supervises fund operations and makes decisions on specific investment proposals (Sahlman, 1990). Advisory boards, on the other hand, do not have any operational responsibilities but are expected to provide access to deals or to contribute with technical expertise or financial competence (ibid.). These forums may also be used for discussing portfolio valuation, handling potential conflicts of interests, and constituting a place for exchanging information. Institutional investors may also have more informal relations with their fund managers on a regular basis.

As discussed in Chapter 2, the prevailing organizational form for private equity funds today is the limited partnership structure, which has important tax and legal considerations for the parties. In order to qualify for such a model, the partnership must meet a few conditions. One of the more important criteria is that LPs are not allowed to participate in the active management of a fund. Hence, most institutions in this study avoid getting involved in any operational fund activities and would not take a seat in any investor committee or in a similar type of decision-making body, which is in line with previous research (Lerner and Schoar, 2004). Many of the institutions are, however, eager to maintain close contact with their GPs in order to continuously gain access to detailed information. The purpose is to ensure better monitoring of the

existing fund, facilitate future re-investment decisions and to further develop personal relationships (cf. Müller, 2008). Again, variations in the material were apparent.

Both the 'investment companies' and the group of 'balance sheet' investors were keen on having seats on advisory boards. The major reason put forward was to get better access to information. Otherwise, these institutions stressed the importance of LPs only having passive roles in order not to put the limited partnership agreements at risk. A few of the 'balance sheet' investors mentioned that they used to take on considerably more active roles when the industry was young and immature, and other structures were in place, an approach which they do not see a need for anymore:

> *"We used to have seats on investment committees, you know, when the market was immature. Today, we do not see a need to be involved in operational issues. Instead we favor the discretionary way of working, when the GPs take full responsibility for the investments."*
>
> (Respondent #R20, Public pension fund)

Having said that, a few of the 'balance sheet' investors argued that in case a fund runs into trouble, LPs would still be forced to step in and work closely with the fund managers, regardless of the legal terms agreed upon between them:

> *"One thing we have learned is that the LP/GP relation should be discretionary where the responsibility for investments is fully held by the GPs. Unfortunately, however, my experience is that when a fund gets into trouble, the LPs get involved, whether they like it or not."*
>
> (Respondent #R30, Public pension fund)

The investors within the 'hybrid' group were reluctant to even participate in advisory boards, a practice they considered to be time-consuming and needless:

> *"It's not important to have seats on advisory boards.* […] *Since you have such a limited ability to influence important matters* [on such boards]*, it's just a waste of time and resources."*
>
> (Respondent #R29, Insurance company)

The 'non-financial' investors, however, had a very strong interest in working closely with the fund managers. A major argument for this was that since they often invest in first-time funds run by management with limited experience in private equity investing, the investors believed that they could actually contribute to the success of the funds by sharing know-how. Hence, 75 percent of the 'non-financial' investors would demand seats on advisory boards:

> *"We do whatever we can to get a seat on the advisory board, because we see ourselves as standard-setters. When investing in VC funds, we always get a seat. It is more difficult in BO funds, since our tickets are typically too small to allow for a seat."*
>
> (Respondent #R31, Government agency)

In addition, contrary to all other institutions in the material, close to 40 percent of these investors were in favor of participating in investment committees, often with the argument that their regulations stipulate an active ownership style:

> *"*[The LP] *is an active investor and makes investments only where we see possibilities for us to influence processes. We cannot justify an investment to our board of directors if we do not have a direct impact on the operational activities."*
>
> (Respondent #R16, Corporate investor)

Many of the other respondents, though, were negative toward, and would even refuse to invest in, funds in which other fund investors participate in investment decisions:

> *"We make thorough* [due diligence assessments] *of the GP team and the fund we invest in – but not on other LPs."*
>
> (Respondent #R11, Asset manager)

> *"We cannot accept the notion that LPs might make decisions on investment committees, since that would jeopardize the legal situation for all involved LPs."*
>
> (Respondent #R13, PE fund of funds)

The respondents were also asked whether they felt they *contributed any value besides capital* to their fund managers. While all investors were unanimous in their view that capital infusion is the single most important contribution, a few positive side-effects were mentioned. A high proportion of the respondents, i.e., 65 percent, believed that an investor, just by committing to invest in a fund, sends positive signals to the market that will create benefits for the GP. In other words, the perceived quality of the fund, and consequently its management team, will be improved once it has been accepted by an investor – and more prominent institutions obviously send stronger signals. Such certifications are considered especially important in discussions with other vital stakeholders, including additional fund investors, potential investee firms or debt providers. Signaling effects were considered especially valuable for new and unknown PE teams:

> *"Many GPs are open to having* [the LP] *onboard as an investor. The brand is well known and we have a long-term perspective. We have been doing PE investing for quite some time and our organization is considered to be highly professional."*
>
> (Respondent #R2, Public pension fund)

The 'non-financial' group of investors, and a few of the younger 'investment companies', maintained that LPs may contribute with some kind of general private equity know-how and eventually also with useful contacts, especially to recently founded or small management teams:

> *"Capital is a commodity and LPs need to differentiate themselves. Non-financial added value can be a competitive advantage. To smaller teams, the ability to add value is important. We spend at least 15-20 minutes per day to support ours GPs."*
>
> (Respondent #R10, PE fund of funds)

The more experienced 'investment companies' were more cynical and did not believe that LPs add any value besides capital (excluding some positive signaling effects, as discussed):

> *"There is a lot of bullshit when LPs say they provide added value. GPs just want the money."*
>
> (Respondent #R12, PE fund of funds)

6.5.4 Cooperation with other PE fund investors

The respondents were asked about to what extent they cooperate with other LPs. The 'investment companies' claimed that they have sporadic contacts with other private equity fund investors with respect to conferences or similar events where informal discussions take place. These institutions, though, emphasized that they do not participate in any type of formal coalitions of limited partners, e.g., as members of ILPA[29]. It was apparent during the interviews that the younger and more inexperienced investors in the group of 'investment companies' tended to be more interested in cooperating with other LPs. They were especially keen on learning from institutions that have lengthy experience with PE fund investing. The older and more experienced fund investors, however, seemed to be reluctant to cooperate with others:

> *"LPs are not known for being great at cooperating – they are like a herd of cats".*
>
> (Respondent #R8, Asset manager)

All 'balance sheet' investors were interested in cooperating with other fund investors and stressed the importance of more formal cooperation through organizations such as ILPA. Also, the investors within the 'hybrid' group put forward the importance of having regular informal contacts with other LPs:

[29] ILPA=Institutional Limited Partners Association, an informal networking group of LPs.

> *"Cooperation with other LPs is crucial. During the annual GP meetings, it's the contacts with other LPs that are the most valuable. There are always new things to learn. How other pension funds think about private equity is obviously of special interest to us."*
>
> (Respondent #R24, Private pension funds)

The 'non-financial' investors could be split into two distinct groups with widely differing views. These groups consisted of, on the one hand, the government agencies that were keen to cooperate with other institutions, and on the other hand, corporate investors that see other fund investors mainly as competitors.

6.6 Satisfaction with returns and future outlook

Finally, the respondents were asked to indicate how satisfied they have been with the returns from their private equity investments and whether they had decided to make any changes in future allocations to the asset class. Motives for reducing allocations to private equity, or even to stop investing in it, were also discussed during the interviews. For a summary, see Table 6.5.

Table 6.5. Summary of return satisfaction and future outlook for the various investor groups

	INVESTMENT COMPANIES	HYBRID	BALANCE SHEET	NON-FINANCIAL
Satisfaction with returns (scale 1-4)	2 LPs: Too early Oth avg. : 3.7	Avg. : 3.6	1 LP: Too early Avg. : 2.6	Avg. : 2.3
Change in future PE allocation	Incr: - Same: 92% Decr: 8%	Incr: 50% Same: - Decr: 50%	Incr: 38% Same: 25% Decr: 37%	Incr: - Same: 75% Decr: 25%
Motives for reducing/stop investing in PE		Low liquidity Heavy resource demand	Low liquidity Heavy resource demands Too high fees	Low liquidity Heavy resource demand Too high risk

6.6.1 Return satisfaction

The four groups of investors exhibited differences in terms of the extent to which they were satisfied with the performance of their private equity investments. The 'investment companies' were in general very satisfied with fund returns (mean 3.7 on a 1-4 scale). Only one of the investors in this group planned to decrease allocations to the asset class, while the others will continue to set aside the same proportion as before. More than half of these investors are PE fund of funds, which means that all their capital is invested in private equity. These investors may be prone to advocate the asset class given that they are themselves fully dependent on it. The majority of the 'hybrid' investors were also in general very satisfied with their proceeds from private equity

investing (mean 3.6 on a 1-4 scale). Half of the investors in the group were prepared to increase allocations to private equity, while the other half planned to decrease investments into the asset class.

Among the investors belonging to the 'balance sheet' group, the satisfaction with private equity performance was considerably lower compared with the previously mentioned investors (mean 2.6 on a 1-4 scale). Of the 'balance sheet' investors, 43% were disappointed or very disappointed with returns. Still, fewer of the investors in this group planned to decrease allocations to private equity than was the case for the group of 'hybrid' investors. However, many of these investors intended to change allocation schemes within their private equity portfolios by further decreasing the proportion of VC investments. The 'non-financial' institutions, finally, represent the group of investors that were the most dissatisfied with financial returns arriving from PE investments (2.3 on a 1-4 scale). Given their overreliance on venture capital investments, the result is not surprising. Still, only two out of these eight institutions, both of which were corporate investors, had decided to reduce their investments into private equity.

A final comment about performance satisfaction concerns time of entry. It became apparent that the institutions who had entered the market around the 'dot-com' boom seemed to be more disappointed with returns than other investors, while institutions that had started to invest in the asset class well before the boom were more satisfied (cf. Gompers and Lerner, 2000). Also, fund investors entering the market after the 'dot-com' bust had rather positive expectations about returns.

6.6.2 Motives for reducing/end private equity investing

As mentioned, only one of the 'investment companies' planned to reduce capital allocations to private equity, while such considerations were more broadly expressed by investors in the other groups. The arguments for lowering the amount of capital set aside for the asset class, or even withdrawing completely, were relatively similar in these three groups. One primary reason to avoid future PE fund investments was the *long investment horizons* of this asset class, which have negative implications for liquidity:

> *"PE investments are not necessarily an optimal type of investment for a re-insurance company. An insurance company of our type should in principal be able to convert the capital into liquid assets within a day. Private equity, characterized by long holding periods, is consequently not the most appropriate type of asset for us. For life insurance companies, the situation is far different."*
>
> (Respondent #R32, Insurance company)

Another motive behind reconsidering further PE investments was the perceived large *requirements put on the investment organization*. Investing in a complex asset class such as private equity is considered to require rather significant personnel resources with

relevant competencies and experience. Hence, a few investors claimed that they did not have, or were not interested in building, the necessary organizational resources and skills needed to invest in private equity:

> *"The reason why we decided to stop investing in private equity is not that we do not believe in the asset class; rather, the opposite is true, in fact. But 1.5 headcounts cannot possible manage such a difficult asset class. PE fund of funds could have been an alternative, but investing in fund of funds also requires purchasing skills."*
>
> (Respondent #R23, Private pension fund)

> *"Investing in private equity requires significant personnel resources. Evaluation of potential investments and ongoing governance and control of the funds put high demands on an organization. From time to time, the funds run into problems and then LPs need to take on active roles. Also, reporting and valuation are significantly more complex compared to other assets. With our limited capital, it is not efficient to invest in the asset class. To larger organizations with more capital under management, the situation is different."*
>
> (Respondent #R34, Corporate investor)

In addition, *high fees*, *bad experiences from VC investing* and perceived *extraordinary risks* associated with the asset class were put forward as reasons why a few investors had decided to lower their investment levels for, or to leave, the investment area.

6.7 Summary

In this chapter, a study investigating institutional investors' views about PE fund investing was presented based on findings arriving from interviews with 36 investors. To obtain wide variations in the material and thus a broader understanding of the issues at hand, the institutions were split into four groups based on how they were financed: 'investment companies', 'hybrid' investors, 'balance sheet' investors, and 'non-financial' investors. In line with earlier research, this study shows that LPs' attitudes and approaches toward PE fund investing differs to a significant extent based on their respective financial origins (Barnes and Menzies, 2005).

The 'investment companies' came across as the most sophisticated group of investors, with a strong devotion to the asset class. They had significant pools of capital set aside for PE investing and made by far the largest number of investments per year. In addition, these investors had organizations consisting of investment professionals fully dedicated to managing their PE operations. The 'investment companies' primarily targeted BO funds at the time of the interviews, but kept the doors open for future VC investments. They were prepared to undertake investments in first-time funds with the

primary motive of ensuring access to future funds run by superior GP teams. The 'investment companies' were in general very satisfied with returns.

The 'hybrid' investors had chosen an entirely different approach to private equity investing. They set aside relatively limited levels of capital to the asset class and hence make only a few investments per year. Furthermore, these investors typically have no dedicated resources for PE equity investing but instead rely heavily on other LPs for due diligence and governance of funds. That is, by 'piggybacking' on investors they considered knowledgeable and prominent, the 'hybrid' investor may take part in PE fund investing despite having limited know-how of her own. These institutions had a low risk preference by investing more or less only in BO funds and only in subsequent funds raised by experienced GP teams. They were also in general very satisfied with returns.

The 'balance sheet' investors had more capital available for PE investing compared to the previous group and also more human resources dedicated to investing in the asset class. In addition, the 'balance sheet' institutions appeared considerably more knowledgeable and professional in their way of working with private equity, including developing investment strategies, evaluating and monitoring investments, formally cooperating with other LPs, etc., compared with the 'hybrid' investors. The 'balance sheet' institutions also had a broader scope, targeting not only BO funds but also VC funds, not only PE funds but also PE fund of funds, and were also open to investing in first-time funds. The 'balance sheet' investors were not overly satisfied with returns from private equity investing.

The final group of investors was the 'non-financial' organizations, which have additional goals for their investment activities other than purely financial motives. These investors had rather limited levels of capital under management but a strong devotion to the asset class with relatively large investment organizations. They primarily targeted venture capital investments, did not invest only in PE funds but also directly into portfolio firms, and were definitely willing to invest in first-time funds in order to support new ventures and the development of new technology. The 'non-financial' investors did not consider the financial returns from PE investing to be particularly impressive.

Table 6.6 provides a summary of the results discussed in this chapter.

Table 6.6. Overview of heterogeneity across investor groups in the qualitative study

INVESTMENT COMPANIES	• PE fund of funds and asset managers (# 12). Invest third-party capital • 25% Swedish, 75% international • Large PE investors – highly devoted to the asset class AVG: Capital for PE: 43.1 bil. SEK, PE funds/y: 12.2. Inv prof.: 13.2 • PE focus: Primarily BO funds (87%), European (51%), PE funds (94%), ok with 1st time funds • Investment criteria: Strong team, good past performance, acceptable terms & conditions • Comprehensive and thorough due diligences • Active professional discretionary investors • Very satisfied with returns from PE investing
HYBRID INVESTORS	• Banks, insurance companies and private pension funds (# 8). Invest own and third-party capital • 100% Swedish • Small PE investors – low devotion to the asset class AVG: Capital for PE: 1.9 bil. SEK, PE funds/y: 1.5. Inv prof.: 2.0 • PE focus: BO funds (92%), Nordic (63%), PE funds (88%), later funds • Investment criteria: Strong team, good past performance, prominence of other LPs • Often light or no own due diligences – typically rely on other LPs • Rather passive investors • Very satisfied with returns from PE investing
BALANCE SHEET INVESTORS	• Families/foundations and public pension funds (# 8). Invest own capital • 100% Swedish • Small/moderate PE investors – moderate dedication to the asset class AVG: Capital for PE: 5.0 bil. SEK, PE funds/y: 3.4. Inv prof.: 3.0 • PE focus: BO & VC funds (56%/44%), Nordic & rest of world (54%/46%), PE funds & PE fund of funds (69%/24%), ok with 1st time funds • Investment criteria: Strong team, good past performance, prominence of other LPs • Often comprehensive and thorough due diligences • Active and rather professional discretionary investors • Not very satisfied with returns from PE investing
NON-FINANCIAL INVESTORS	• Corporate investors and government agencies (# 8). Invest own capital • 87% Swedish, 13% international • Small/moderate PE investors – highly dedicated to the asset class AVG: Capital for PE: 5.3 bil. SEK, PE funds/y: 3.3. Inv prof.: 6.0 • Motives for PE investing: Financial goals and national growth/technological development • PE focus: Primarily VC funds (65%), Nordic (79%), direct & PE funds (35%/65%), positive to 1st time funds • Investment criteria: Strong team, good past performance, prominence of other LPs • Typically comprehensive and thorough due diligences • Active and often not discretionary investors • Rather dissatisfied with returns from PE investing

This study has provided a rich description of how institutional investors perceive the asset class of private equity, pointing at heterogeneity among investors in terms of characteristics and motives, investment strategies, working procedures, and satisfaction with returns, as summarized above. A few of the findings of particular interest to the development of the research model in the following chapter deserve to be mentioned again:

- The analysis identified a number of reasons for investing in private equity funds that have been described in earlier literature; including financial motives, good citizenship, technological development and learning (see Section 2.3.6). Two additional reasons were also identified: (i) improving firm image, i.e., building an improved reputation in the field, and (ii) herd mentality, i.e., following the behaviors of prominent organizations in the market.
- The group of investors in the study with: (i) higher PE investment skills and with dedicated PE investment teams, (ii) larger pools of capital set aside for PE fund investing, and (iii) larger proportions of BO versus VC funds within their investment portfolios seemed in general to be more satisfied with returns from PE fund investing than did the others. These findings support indications in earlier research about performance determinants for PE fund investors (see Section 2.3.6).
- However, another set of investors turned out also to be highly satisfied with PE fund returns although they did not fulfill criteria (i) and (ii) above. Instead, these investors had relatively limited knowledge about the asset class, did not have any dedicated PE resources, and invested rather limited amounts in this asset class. This group of investors had chosen a radically different investment strategy than that taken by the more skilled investors: they followed the behaviors of other institutional investors perceived as having a good reputation in the industry. This finding suggests there might be alternative investment strategies for successful PE fund investing.
- The 'non-financial' investors, i.e., the investors with additional goals for their investment activities other than only purely financial motives, were less satisfied with returns than were the others, which was expected and supports existing research.
- The discussions about whether or not to invest in first-time funds raised by newly established PE firms uncovered a few interesting observations: (i) the area constitutes an important part of a PE fund investor's investment strategy, (ii) investing in a first fund is considered to be risky given the limited knowledge about the capabilities of the new fund manager, but (iii) on the other hand, not investing in first funds may result in missed future opportunities in case the investor is not invited to participate in subsequent funds.
- The study also pointed at large differences between the VC and the BO fund segments. The investors appeared for some time to have had a limited interest in

investing in VC funds, referring to the high failure rates of VC funds and difficulties gaining access to the few top-performing VC funds.

A final and important remark is that the findings listed above all indicate strong connections to the theoretical constructs defined as central to this thesis, i.e., entry order, uncertainty, and reputation (see Chapter 3). Thereby, this study, while providing a rich description about private equity fund investing, also served as a tool for fine-tuning the hypothesis formulations, but, more importantly, constituted an important source for interpreting the results arriving from testing them. Accordingly, the specified research model that has been the guiding star for the hypothesis development will be presented next.

CHAPTER 7

Specification of the research model concerning entry order and performance

In this chapter, the theoretical model developed in Chapter 3 is operationalized by incorporating findings identified: (i) in existing PE research (Chapter 2), (ii) from the empirical studies about the Swedish PE industry's rise and development, performance heterogeneity across PE fund investors, and PE fund performance determinants, as presented previously (Chapter5), and (iii) from the broader qualitative study about PE fund investors and their investment strategies (Chapter 6). Taken together, these findings result in a specific research model, constituting the foundation for the upcoming hypothesis development about organizational characteristics, entry order and performance (Chapter 8). As such, this chapter may be seen as a bridge between theory and new insights on the one hand and the hypothesis-testing study on the other hand (Chapter 9).

7.1 Introduction

The purpose of the hypothesis-testing study is to test and analyze hypotheses oriented around organizational characteristics, entry order and performance. The integration of theoretical perspectives in Chapter 3 arriving from the two major entry order streams of research, i.e., the FMA and the imitation literatures, provided a general model that encompasses broad and general constructs. However, it is impossible to include all dimensions of the environment and organizational resources in one single empirical study. Researchers may also make different conceptualizations of the same constructs. Therefore, in order to facilitate a test of the model empirically, the concepts need to be specified and operationalized, and the model downsized accordingly.

This chapter presents: (i) the boundaries for the model in the present study in terms of macro characteristics and organization-specific resources, and (ii) a discussion of how theoretical constructs are operationalized. A list of the variables discussed in this chapter, with detailed descriptions of how they are measured and calculated, is available in Appendix 12.

7.2 Operationalization of theoretical concepts

Chapter 3 pointed out a few theoretical concepts of special importance to this dissertation, including: (i) first and late movers, (ii) uncertainty, and (iii) reputation. That these constructs are considered important to investors when investing in PE funds was also made apparent in Chapter 6. In addition, given that the model sets out to test (iv) performance, this concept needs to be elaborated upon as well. Hence, the way

that these four constructs will be operationalized in the present study will be discussed in the following sections.

7.2.1 First and late movers

Traditional FMA research classifies the first organizations entering into a new product or geographical market as 'first movers' and the others in the market as 'late movers', as discussed in sections 3.2.1 and 3.2.2. In these studies, categorizations of first and late movers are usually based on either: (i) the time elapsed since the entry of the first mover(s), or (ii) the numerical order in the sequence of entry; typically, the first 20 to 25 percent entrants are classified as 'first movers' and the others are relegated to the category of 'late movers' (Lieberman and Montgomery, 1988; Robinson *et al.*, 1992; Schnaars, 1994; Carow *et al.*, 2004). In this thesis, however, a somewhat non-traditional method of defining pioneers and followers is developed and applied. This model is based on an organization's inclination to invest in first or subsequent PE funds.

If it is successful, a private equity firm raises several funds. As indicated in the qualitative study (Chapter 6), the question of whether or not to invest in first-time funds is considered an important part of the investment strategy for PE fund investors. In this dissertation, institutional investors willing to invest in a considerable number of first funds are categorized as 'first movers', as they actually take on risks somewhat similar to those entering a new market. That is, they invest in new PE management teams having no experience in private equity and without the benefit of a track record – at least not at the firm level. Since this is a new application area for FMA theory, there is no earlier research that can provide guidelines of how to classify the organizations into groups of first and late movers. I determined that institutional investors that have made at least one-third of their investments into first-time funds will be referred to as first movers, and the others as second movers[30]. Hence, this study will also test whether or not such a classification is reasonable. The associated binary variable is termed *First mover* in the hypothesis testing. The reverse variable, *Second mover*, is also used in the statistical analyses. These entry order variables are used both as dependent and independent variables in the hypothesis testing.

7.2.2 Uncertainty

To operationalize uncertainty is considered impossible; at best, the perception of the construct may be operationalized. Research originating from the field of strategic management applies a wide range of measurements for 'risk', although the interpretation of the concept in the stream tends to be closer to Knight's (1921) definition of

[30] Other splits between first and second movers were also tested. No significant differences were identified when splitting the data based on ratios close to one-third.

'uncertainty' (see Section 3.2.3). Operationalizations of risk/uncertainty within the strategy literature include: variance of some performance measure, variance in return on equity or return on assets, variance in analyst forecasts of earnings, or stock return data by drawing on finance theory (for a review, see Bromiley and Rau, 2009). To finance scholars, methods of measuring risk are considerably more unified, and are based first and foremost on the theory of systematic and unsystematic risks as stipulated in the CAPM or similar portfolio models (see Section 3.2.3).

While risk, as defined by Knight, is quantifiable, it could be questioned whether uncertainty can be measured on a continuous scale. Rather, uncertainty may be looked upon as a more general condition. However, a broad stream of research arriving from strategy, entrepreneurship, and, more recently, finance, applies an ordinal scale to measure uncertainty, often varying between 'low', 'medium' and 'high' (e.g., Collins and Ruefli, 1992; Anderson *et al.*, 2009; McKelvie *et al.*, 2009). In other words, while an exact measurement of uncertainty cannot be made, measures of uncertainty typically incorporate some type of relative stance in comparison with industry competitors or other industries (ibid.).

In Section 3.2.3, various types of uncertainties were presented and classified into exogenous versus endogenous factors. Based on these classifications, four groups of exogenous and endogenous uncertainties were outlined, as presented in Table 7.1. The table presents comparisons between BO fund investing, VC fund investing and some sort of 'average' financial industry in terms of 'estimated' uncertainty. First, PE fund investors, like all other market actors, face general environmental uncertainties derived from political, macro-economic or social factors (Miller, 1992). In this thesis, it is assumed that such uncertainties are similar in type and extent to those that face any average firm operating in the financial market. Second, the private equity fund investment industry possesses some unique characteristics, as outlined in Section 2.2.5, such as: (i) a long-term and illiquid nature, (ii) the lack of transparent information, and (iii) difficulties in assessing interim values of funds. Taken together, this indicates that the PE fund investing area faces greater uncertainty than many other financial segments in these respects. Third, the respective fund investment areas, i.e., BO versus VC funds, possess clear differences in terms of uncertainty. Historically, returns from VC fund investing have showed significantly greater levels of volatility compared with returns from BO funds (see sections 2.3.5 and 5.4.4). Furthermore, the VC market has an inherently higher risk profile in comparison with the BO market given its target type of investments, i.e., early-stage firms as opposed to more mature companies. This indicates that the VC fund investment market is considerably more risky/uncertain than the BO market. Fourth, the endogenous types of uncertainties, in this case those associated with the institutional PE fund investors themselves, are expected to be in line with the internal uncertainties facing an 'average' financial organization on the market.

Table 7.1. Exogenous and endogenous uncertainty factors facing BO vs. VC fund investors. Comparison is made with an 'average' firm operating in the financial market

	Moderate uncertainty **BO FUND INVESTING**	High uncertainty **VC FUND INVESTING**
Exogenous: General environmental factors	→ **Similar uncertainty**	
Exogenous: Industry specific	Long-term and illiquid assets Lack of information Difficulties to assess interim values → **Higher uncertainty**	
Exogenous: Industry specific; individual sub-segments	Moderate return volatility Moderate uncertainty of underlying investment (i.e., mature PFs) → **Similar uncertainty**	High return volatility High uncertainty of underlying investment (i.e., early-stage PFs) → **Higher uncertainty**
Endogenous: Firm-specific	→ **Similar uncertainty**	

To summarize, in this thesis, the BO fund investment market is considered to be a sub-segment of the PE fund investment market characterized by moderate uncertainty, while the sub-segment VC fund investment market is considered to be characterized by high uncertainty.

7.2.3 Reputation

Similar to the previously discussed construct, measuring reputation is not a straightforward task since the concept is abstract and only attains some measure of reality from others in a social environment. That is, organizational reputation should be measured as stakeholders' perceptions, not factual representations (Walker, 2010). Prior research has, however, suggested a number of ways to operationalize reputation, including; corporate ratings put together by well-known ranking institutions and media (Deephouse, 2000; Deephouse and Carter, 2005), economic performance (Roberts and Dowling, 2002; Brammer and Pavelin, 2006), organizational size (Fombrun and Zajac, 1987; Zyglidopoulos, 2003), and market share (Fang, 2005). The venture capital literature has presented a range of ways to operationalize organizational prominence, including: the level of capital under management or amount of invested capital (Gulati and Higgins, 2003; Dimov *et al.*, 2007; Nahata, 2008), age (Lerner, 1994a; Gompers, 1996), network centrality in syndication networks (Sorenson and Stuart, 2001), number of successful IPOs (Lee and Wahal, 2004; Hochberg *et al.*, 2007), and number of investments completed (Hsu, 2004; Dimov *et al.*, 2007).

While investments into private equity funds have some similarities with investments made by PE firms into portfolio companies, there are also differences that affect the optimal operationalization of the reputation construct. For example, while the amount of capital under management likely is a reasonable measure of reputation

for venture capitalists, it is less useful when studying institutions investing in PE funds, given that allocation levels to this particular asset class tend to vary significantly between investors. That is, whilst a PE fund of fund allocates all its capital to private equity, other investors may only set aside a few percent to this type of investments. The age measure is also not considered a suitable proxy, given that an institutional investor who has only made a few fund investments over a long period of time would be unlikely to be perceived as prominent within the field of PE fund investing. Instead, operationalizing reputation in terms of deal experience, measured as the number of investments made, appears to be a reasonable proxy for reputation (Hsu, 2004; Dimov *et al.*, 2007). This measurement clearly incorporates past experience and hence a perception of capability, which is an important part of the concept's definition (Fombrun, 1996). It also takes into account the 'prominence' aspect of the reputation construct (Rindova *et al.*, 2005), since PE fund investors who make a lot of investments are well-known within the industry, as evidenced in the qualitative study presented in Chapter 6. Hence, the number of previously carried out PE fund investments is in this study used as a measurement for reputation. In the statistical analysis, this variable is referred to as *Done PE fund investments*, and states the total number of previously undertaken PE fund deals, not only those that are Swedish in origin, prior to each investment[31].

7.2.4 Performance

Performance could be measured in a number of different ways, in financial as well as in non-financial dimensions. Past FMA research has used various performance measurements, such as returns on assets (Yoo *et al.*, 2009), sales growth (Durand and Coeurderoy, 2001), survival (Mascarenhas, 1992; Robinson and Min, 2002; Min *et al.*, 2006), stock price effects (Carow *et al.*, 2004; Boyd and Bresser, 2008), and above all, market share (Mascarenhas, 1992; Coeurderoy and Durand, 2004; Bijwaard *et al.*, 2008). More FMA studies using appropriate measures of profits have been called for (Lieberman and Asaba, 2006), a request to which this thesis responds.

The standard practice in the private equity industry is to evaluate PE fund performance either as a 'multiple', i.e., the ratio of cash proceeds over cash investments, or as 'IRR', i.e., the annualized internal rate of return. Each of these measures has advantages as well as limitations (Fraser-Sampson, 2007). An important advantage of the IRR is that it considers the 'time value of money', meaning that it incorporates the time aspect of fund investments. On the other hand, the multiple is considered simpler to calculate and easier to interpret in comparison with the more complex IRR mea-

[31] In order to avoid a simple mechanical effect caused by the fact that the number of completed PE fund investments has an inherent correlation with time, the variable was adjusted by making it relative to the average number of PE fund investments made by all LPs active in the Swedish market during a specific five-year period.

surement. In this study the multiple ratio is used as the performance measurement. The reason for this is that comparable IRR data were difficult to obtain from the respondents, and hence the multiple ratio turned out to be a more robust and reliable variable. The multiples are reported net to investors, i.e., after payments to the managing PE firms. In the study, the aggregated performance is calculated and used, i.e., the overall performance multiple for each institutional investor from 1983 through 2003 for all of their investments (this equals total returns divided by total invested capital into Swedish-based private equity funds throughout the period)[32]. This dependent variable is simply referred to as *Performance*.

7.3 Other variables

In addition to the central constructs elaborated upon in the previous sections, the model also incorporates a number of other concepts that need to be operationalized.

7.3.1 Other independent variables

Besides reputation, the organizational variable discussed above, four other organization-specific constructs are included in the research model as independent variables: (i) size, (ii) experience, (ii) geographical proximity, and (iv) investment motive.

Size in this study is measured as the total level of capital an investor has under management, i.e., not only for PE fund investing but for all types of financial investments. The variable is referred to as *Assets under management*. The variable *Experience* measures how long the organization has been active as a PE fund investor prior to each investment[33]. In order to measure geographical proximity to the target market a binary variable, *Local*, was introduced. The variable indicates whether the institutional investor is a Nordic organization, i.e., whether it was founded in, and/or headquartered in, any of the Nordic countries.

Two overriding motives for investing in private equity funds emerged in Chapter 2 and Chapter 6: (i) to attain the best possible financial returns, or (ii) to achieve additional goals, such as spurring national growth or supporting technology development. Hence, the binary variable *Not only profit* was also incorporated in the research model and the hypothesis testing. Following earlier research (Lerner *et al.*, 2007;

[32] Two comments: (i) using aggregated returns when evaluating performances for PE fund investors is in line with previous research (cf. Lerner *et al.*, 2007), and (ii) in order to control for period effects, the performance variable was adjusted by making it relative to the average performance of all LPs active as PE fund investors during a specific period (for details, see Section 5.4.1).

[33] In order to avoid the simple mechanical effect caused by the fact that experience has an inherent correlation with time, the experience variable was adjusted by making it relative to the average experience level for all LPs active as Swedish PE fund investors during a specific five-year period.

Phalippou and Gottschalg, 2009), local governmental institutions and corporate multinational firms were categorized into the group of organizations having additional goals for their PE investing activities.

7.3.2 Interaction variables

A central part of the present study is to test interaction, or moderator, effects (which will become apparent in the next chapter). A moderator variable provides information regarding the conditions under which a cause or relationship is likely to be stronger (Aguinis, 2004). That is, the moderator effect occurs when the interaction variable changes the form of the relationship between another independent variable and the dependent variable. In the current study, to what extent a favorable reputation reinforces or even changes a specific entry order's effect on performance is of vital interest. Hence, an interaction variable was developed and included in the research model. The variable is referred to as *Second x Done PE fund inv*.

7.3.3 Control variables

Establishing and including the correct control variables is no easy task as effects and relationships may be unobservable. As discussed in Chapter 2, previous research shows that two of the most important and well-documented determinants of private equity fund performance are: (i) fund focus, i.e., whether the fund has a VC or BO focus, and (ii) temporal effects. These findings were also supported by the current data when tested in Chapter 5 (see Section 5.4). Given that the database was split into two parts, i.e., (i) only including investments in venture capital funds, and (ii) only including investments in BO funds, the issue of fund focus was resolved.

Temporal effects were controlled for in two ways: (i) by adjusting the performance metric for time effects (see Section 5.4.1 for details), and (ii) by using dummy variables indicating in which period the institutional investors entered the market. That is, the study aims to incorporate the effects of the so-called 'dot-com bubble and bust' periods. Hence, three binary variables were introduced measuring whether the institutional investor entered the market before 1998, *Start period 1*, between 1998 and 2000, *Start period 2*, or between 2001 and 2003, *Start period 3* (cf. Hege *et al.*, 2008). Only two of these variables were obviously used in the regressions.

7.4 Summary

After (i) limiting the theoretical model from Chapter 3 in terms of macro characteristics (i.e., only focusing on a context characterized by moderate and high levels of uncertainty) and organization-specific resources (i.e., size, experience, geographical proximity, investment motives, and reputation), and (ii) substituting the theoretical concepts that emerged in Chapter 3 with more researchable variables as outlined in this chapter, the research model depicted in Figure 7.1 was developed.

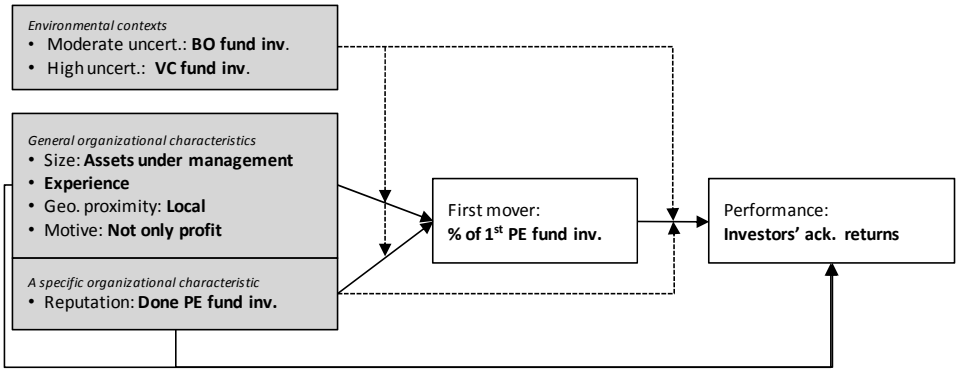


Figure 7.1. Proposed research model of organizational characteristics, entry order and performance

This research model will constitute the foundation for the hypothesis development that will be presented in the next chapter.

CHAPTER 8

Hypothesis development: Organizational characteristics, entry order and performance

Based on the research model outlined in the previous chapter, 16 hypotheses are developed and presented. The hypotheses deal with possible links between organizational characteristics, entry order and performance when investing in private equity funds, a financial asset class characterized by relatively high levels of uncertainty, but to various degrees depending on the type of fund.

8.1 Introduction

As discussed in Chapter 3, most FMA-based research has focused on "*datasets that contain only large, well-established businesses in mature markets, where survivorship bias and large-company bias are likely to exaggerate both the magnitude and the sustainability of entry order advantages*" (Makadok, 1998). However, the extent to which identified FMAs transfer to other industries and settings is still relatively poorly understood. Hence, there is a need to explore the existence and antecedents of first, and for that matter late, mover advantages in industries where sustainability is less directly connected to well-established firms and industrial maturity. This is particularly important in contextual settings where ambiguity is high and transparency is low – that is, when uncertainty is a prevailing environmental characteristic. Hence, emerging and fragmented industries with intangible products that are easy to imitate have been suggested as highly suitable empirical settings in which to further extend entry order theories (cf. Makadok, 1998; López and Roberts, 2002). The financial services industry, which in this study is represented by the PE fund investment market, aligns well with this description.

The research model outlined in the previous chapter, which is illustrated in Figure 7.1, constitutes the foundation for the hypothesis development. Based on research derived from the entry order streams of literature as outlined in Chapter 3 and existing PE studies discussed in Chapter 2, as well as from findings emerging from the empirical studies presented in Chapter 5 and Chapter 6, 16 hypotheses are developed. The hypotheses are split into three sets. The first set of five hypotheses concerns how organizational characteristics may affect performance in this specific empirical setting, i.e., a financial services industry characterized by relatively high uncertainty in many dimensions. This set contributes to increase the general understanding about the hitherto relatively unexplored area of private equity as an asset class. The hypotheses in the second set examine how different types of organizational characteristics may

impact entry order in situations of moderate or high uncertainty. The third set of hypotheses analyzes the links between entry order and performance, and also addresses whether a specific organizational resource such as reputation can alter the optimal entry order in a given environment.

8.2 Organizational characteristics' effects on performance

While this thesis sets out to develop and empirically test an extended model of entry order, it also has another equally important goal to increase the general understanding about performance determinants for PE fund investing. Clearly, organizational resources and capabilities also affect performance irrespective of entry order, or as Lieberman and Montgomery (1988) put it, "*Proficiency and luck also affect profits in ways that are unrelated to first-mover advantages*" (p. 49). Hence, the five hypotheses below address links between organizational characteristics and performance for organizations operating in a financial services industry with relatively high levels of uncertainty.

The first two hypotheses concern the links between size and performance as well as between experience and performance. These relationships are likely two of the more investigated areas in the fields of economics and strategic management. A large stream of research claims that organizational size has a positive effect on financial performance because larger firms in general benefit from economies of scale and scope (Porter, 1980). Similarly, longer experience in a field is expected to have positive effects on performance since more practice likely increases an individual's/organization's competence levels and hence its competitiveness (Dreyfus and Dreyfus, 1986).

A number of studies on mutual and hedge funds, i.e., financial segments that have many similarities to the present empirical field, have analyzed how size may impact performance. However, whether larger or smaller capital bases are preferable and lead to superior returns is somewhat unclear. For example, some studies report no significant difference between the net performance levels of small and large mutual funds (Grinblatt and Titman, 1989; Wermers, 2000), while research from the hedge fund industry indicates decreasing returns for larger funds (e.g., Getmansky *et al.*, 2004). As outlined in Chapter 2, the PE research field has also investigated relationships between size and performance. Similar to the findings from the hedge and mutual fund industries, the results are mixed. Having said that, the vast majority of these studies show positive links between PE fund sizes and performance for both BO and VC funds (e.g., Laine and Torstila, 2004; Phalippou and Gottschalg, 2009; Metrick and Yasuda, 2010). There are reasons to believe that this observation is transferable to the institutional PE fund investor level; i.e., PE fund investors that have more capital under management are assumed to achieve better returns since they enjoy economies of scale and can diversify portfolio risks (cf. Sharpe, 1964; Lintner, 1965). Hence, it is hypothesized that:

H1. *In a financial services industry characterized by moderate to high uncertainty, size will positively impact performance.*

The link between experience and performance has also been investigated in studies focused on the mutual and hedge fund industries. Here, though, there is a more widespread and uniform opinion that increased experience leads to superior outcomes (e.g., Fung and Hsieh, 2000; Nicolosi *et al.*, 2009). The major explanation provided for this is that individual investors learn from previous mistakes and successes, adjust their future trading plans accordingly, and subsequently achieve higher levels of investment performance as they gain additional experience. Similar findings have been gathered in studies focused on the private equity industry, showing that more experienced and skilled PE firms, whether they be VC or BO oriented, have higher survival rates and offer better returns compared to others (Manigart *et al.*, 2002; Kaplan and Schoar, 2005; Diller and Kaserer, 2008; Phalippou and Gottschalg, 2009). There are also indications in the literature that PE fund investors as well clearly benefit from more experience. Lerner *et al.* (2007) argue that institutional fund investors with longer experience in the field develop a deeper understanding, i.e., are more sophisticated, than less experienced investors, which is assumed to constitute a comparative advantage. Based on these discussions, it is hypothesized that:

H2. *In a financial services industry characterized by moderate to high uncertainty, longer experience in the field will positively impact performance.*

The next organizational characteristic in focus concerns geographical proximity. Organizations closer to a focal market are considered not only to be better located to access, understand and economically value information about the market, but also to pick up information that point them toward an opportunity (Fuentelsaz *et al.*, 2002). Hence, local organizations have an advantage over their international counterparts in their relative closeness to the market. Sociologists assert that geographical proximity greatly facilitates the development of social networks (Stuart and Sorensen, 2003). Such networks are regarded as crucial for inter-organizational knowledge sharing and transfer, which is assumed to lead to improved capabilities and thereafter to increased competitiveness. In his study of primarily US-based institutional PE fund investors, Hobohm (2009) found that institutions geographically closer to successful VC-intense areas achieve significantly better returns than do more distant investors. It is reasonable to believe that this finding transfers not only to buyout funds, but also to private equity fund investing in general. Following this, the next hypothesis is formulated as:

H3. *In a financial services industry characterized by moderate to high uncertainty, geographical proximity to the market in question will positively impact performance.*

The next organizational characteristic concerns investment objectives. As outlined in Chapter 2, for a vast majority of institutional investors, the overriding goal of PE fund investing is simply to receive as high a rate of return as possible. But, as discussed, investors may have additional motives for getting involved in private equity investing. Such motives were also apparent in the qualitative study presented in Chapter 6. Examples of identified, more or less pronounced, secondary goals for PE fund investing include: establishment of future customer relations, learning from others, expectation of enhanced organizational image and reputation, and herding (see Section 6.3.3). However, some institutional PE fund investors have more fundamental alternative purposes for their investment activities that are closely linked to their, or their parent company's, principal objectives. Aside from the promise of financial returns, two additional motives tend to dominate: to stimulate local economy and to spur technological innovation. The first purpose is especially common among public institutions such as government agencies or regional municipalities (Lerner, 2007). The second motive is frequently expressed by multinational corporations having a special interest in technological development, for example within the areas of high-technology or life science (Maula, 2001). Accordingly, institutional investors can broadly be divided into two groups: (i) investors having (mainly) financial objectives, and (ii) investors with objectives other than purely financial for their investment activities.

There is indicative evidence in the PE literature that investors having goals other than pure financial gain, tend to receive lower returns. For example, Lerner *et al.* (2007) suggested that public pension funds face political pressures which often negatively affect financial performance, and Hobohm (2009) found that US government agencies underperform all other types of institutional PE fund investors. The analysis of performance heterogeneity among investor types presented in Section 5.3 also indicated that corporate investors and government agencies underperform relative to other investors. A plausible explanation for the findings is that investors with additional goals for their investment activities are more interested in PE firms' operations *per se*, and are less focused on constantly maximizing investment returns. In other words, such investors may need to, from time to time, make tradeoffs between purely financially driven decisions and overall organizational goals. This leads to the following hypothesis:

H4. *In a financial services industry characterized by moderate to high uncertainty, having additional objectives besides purely financial motives will negatively impact performance.*

The final organizational characteristic, or actually, asset, discussed within this subsection is organizational reputation. As outlined in Section 3.2.4, a good reputation is considered to be a critical asset to organizations given its rare, socially complex and hard-to-imitate nature (Barney, 1991; Rao, 1994; Fombrun, 1996). Further, it is a type of 'social approval' asset considered especially important and valuable in situations of high uncertainty (Cyert and March, 1963). The basic idea is that an organization with a favorable reputation can capitalize on its prominence and hence enjoy various benefits, which in turn leads to enhanced performance. A large body of research has documented a positive relation between organizational reputation on the one hand, and superior outcomes of various kinds on the other (Benjamin and Podolny, 1999; Deephouse, 2000; Roberts and Dowling, 2002).

Also, in the VC literature, there are clear indications of links between a favorable reputation and better performance. For example, Lerner (1994b) found that prominent venture capitalists are more successful than others in taking portfolio companies public near market peaks. Nahata (2008) showed that more reputable VC firms select superior firms, which is in line with the findings presented by Sørensen (2007). Lee and Wahal (2004) put forward the finding that more reputable VC firms are able to raise more money. Finally, Hochberg *et al.* (2007) argued that more prominent VC firms experience significantly better fund performance than their peers. It could be expected that these findings are transferable to the PE fund investment segment, suggesting that more reputable PE fund investors benefit from general advantages leading to superior financial returns, hence the hypothesis:

H5. *In a financial services industry characterized by moderate to high uncertainty, a favorable reputation will positively impact performance.*

The above hypotheses had a rather narrow focus on how organizational factors may affect performance in a financial services industry characterized by relatively high uncertainty, here represented by the PE fund investment field. The following two sets, however, lift the generalization level when hypothesizing around entry order and subsequent outcomes in environments of moderate and high uncertainty, respectively.

8.3 Organizational characteristics' effects on entry order

This subsection develops hypotheses which relate to how organizational characteristics, including resources and capabilities, may affect entry order within situations of moderate to high uncertainty.

Two organizational features that have frequently been investigated within the FMA research stream are size and experience. As outlined in Chapter 3, a large number of FMA studies demonstrate that large and/or experienced firms are natural first movers (Mitchell, 1989; Schoenecker and Cooper, 1998). The central idea is that such organizations are expected to have acquired the resources and capabilities needed to enter, build and maintain a new market, which will be difficult or even impossible for firms with limited resources. An argument that supports the notion that more experienced firms are expected to pioneer is that firms with experience from a related business possess many of the necessary capabilities needed to compete in the related field (Schoenecker and Cooper, 1998).

Given that most empirical studies within the FMA-based research have focused on mature packaged-goods industries, however, these results may not be transferable to other contextual settings. In other words, whether the same types of characteristics are associated with an early entry, or a later move, in a financial services industry with relatively high levels of uncertainty is unclear. Here, it is hypothesized that whether larger organizational size and/or longer experience in the field leads to an increased propensity to pioneer depends on the level of uncertainty. In cases where uncertainty is moderately high, it is expected that organizations with strong resources and longer experience are willing to take on risks by moving early because they can afford to gamble (cf. Bromiley *et al.*, 2001), leading to the two following hypotheses:

H6a. *When uncertainty levels are moderate, size will positively impact entry order.*

and

H7a. *When uncertainty levels are moderate, longer experience in the field will positively impact entry order.*

However, in cases in which uncertainty is very high, even resource rich and highly capable firms are likely to avoid risky first moves. Shamsie *et al.* (2004) argued that an organization with significant financial assets can await the resolution of uncertainty and then use its resources to cancel out potential first mover advantages created by early entrants. This is considered especially true in environments with high uncertainty and comparably low entry barriers (Kerin *et al.*, 1992), such as the situation for VC fund investing, where first moves in general do not require significantly high levels of capital or human resources. In addition, organizations with previous experience in a similar industry or from another geographical location may substitute such knowledge for the specific experience acquired by first movers (Lord and Ranft, 2000; Bayus and Agarwal, 2007). Within the private equity market, which is characterized by a high

degree of standardization, as discussed in Chapter 2, international experience in PE fund investing is likely a relatively good substitute for experience gained in the local market. Based on this, the following two hypotheses predict that size and prior experience in the field are negatively associated with early entry in a market characterized by high levels of uncertainty:

H6b. *When uncertainty levels are high, size will negatively impact entry order.*

and

H7b. *When uncertainty levels are high, longer experience in the field will negatively impact entry order.*

The next hypothesis concerns how geographical proximity may affect entry order. This area has, in contrast to the above-discussed concepts, received limited interest in the entry order literature, with the exception of a few studies, and hence merits more elaboration. The line of thinking outlined in this section has close links with the reasoning behind Hypothesis 3.

Organizations are expected to consider entry into new contexts only if they have access to, and are capable of understanding and evaluating, information about the situation (Cotterill and Haller, 1992). In general, information is considered to be costly and may be difficult to access, depending on its nature, i.e., whether it is publicly available, private or tacit. Organizations closer to a focal market are expected to be in a superior position to access local information due to a greater general understanding about the topic of interest, but also due to better access to local networks (Fuentelsaz *et al.*, 2002). Hence, while organizations distant from a particular market are expected to perceive higher degrees of uncertainty, proximity implies better knowledge of the focal market. Research from the private equity field in general supports these observations. Sorenson and Stuart (2001) found that the likelihood that a venture capitalist would invest in a new venture declines sharply with geographic distance. In a similar vein, Jeng and Wells (2000) showed that VC firms tend to invest as well as exit their investments primarily in their home markets. In one of the few studies investigating PE fund investors, Hobohm (2009) found a significant degree of home bias. In other words, institutional investors tend primarily to invest in regions close to their origins, a pattern that was found to be especially true for VC funds. Hobohm's study included primarily US-based PE funds. Following this finding, it is expected that local institutional investors in general are better positioned and therefore more willing to take on pioneering investing roles in local PE funds, which leads to the following hypothesis:

H8. *When uncertainty levels are moderate to high, geographical proximity to the market in question will positively impact entry order.*

Another possible determinant of entry order that has not been analyzed in the mainstream literature relates to company mission, i.e., to what extent the overriding business goals of the organization have any effect on the organization's willingness to enter early or late. As outlined in Chapter 2, as well as in the discussion leading to Hypothesis 4, certain organizations have additional goals for their PE fund investment activities other than to attain the best possible financial returns. In other words, institutional investors can broadly be divided into two groups: one group of investors that seeks to optimize returns, and another group having additional motives for investing in private equity other than purely profit-driven thinking. Consequently, it is expected that these institutional investors are willing to take on pioneering roles in order to kick-start private equity investing into, for example, specific technological areas or geographical regions, while financial returns are considered to be of secondary importance. This leads to the ninth hypothesis:

H9. *When uncertainty levels are moderate to high, having additional objectives besides purely financial motives will positively impact entry order.*

As discussed in Chapter 3, reputation refers to external stakeholders' expectations of an actor's capability to deliver value along some key dimensions, determined by general perceptions of its previous efforts. Thereby, reputation incorporates an extrapolation from the past to future behavior, implying that an organization needs to have reached a certain level of maturity in order to be reputable (Deephouse and Suchman, 2008). Given the efforts needed to be perceived as a prominent organization within the industry/society, organizations that have reached such a position are likely to be hesitant to take actions that may hurt their favorable reputation. Hence, it is expected that high-reputation organizations in uncertain contexts, where the consequences of a particular course of action are especially difficult to foresee, will avoid first mover roles. Instead, unknown or troubled firms with poor reputations, are expected to be more willing to enter early in attempts to improve their situations (cf. Bowman, 1982; Figenbaum and Thomas, 1986). Following this discussion, the tenth hypothesis can be formulated as:

H10. *When uncertainty levels are moderate to high, a favorable reputation will negatively impact entry order.*

8.4 Entry order effects on performance

This final subsection will elaborate upon hypotheses concerning how pioneering, or following, affects performance in the chosen empirical setting with its moderate to high levels of uncertainty. In addition, the question of whether organizational reputation may be used as a moderating factor on optimal entry order will be hypothesized around.

8.4.1 Entry order effects on performance in moderate/high uncertainty

As outlined in Chapter 3, a number of sources focusing on first mover advantages seem to apply only to industrial or packaged goods markets, while others are more broadly applicable. Of the proposed sources of first mover advantages, 'preemption factors' and 'proprietary effects' are isolating mechanisms, i.e., mechanisms through which pioneers can be protected from imitative competition, which are applicable to most industries and contextual settings (cf. McNamara *et al.*, 2008). First movers may preempt market opportunities by building relationships with important stakeholders, for example with customers, partners, or investors (ibid.). In this way, a pioneer is in a position to identify opportunities earlier than rivals due to asymmetric information; and also in a better position to gain control of critical assets before their full value becomes known to the larger market (ibid.). In other words, first movers are likely to pursue and acquire the 'best' targets, and thereby to limit choices for followers (Carow *et al.*, 2004). The proprietary experience effects relate to advantages stemming from learning and experience, which will also benefit first movers (Porter, 1980; Lieberman and Asaba, 2006). In other words, there are clear examples of first mover advantages that could likely benefit pioneers in non-packaged goods industries, such as a financial services industry.

Having said that, strategy as well as imitation scholars tend to generally put forward following as the most advantageous entry order in situations of uncertainty. Strategy scholars consider following to be an efficient response to uncertainty and ambiguity where later entrants learn from preceding organizations and thereby avoid costly mistakes (Kerin *et al.*, 1992; Naveh *et al.*, 2004). That is, late movers are likely to be better informed about the emerging market's characteristic and opportunities, and thus can 'leap-frog' pioneers (Naveh *et al.*, 2004; Kopel and Löffler, 2008). Institutional scholars also indirectly emphasize the benefits of entering a market first when uncertainty has been resolved and increased industrial legitimacy enhances the possibility of acquiring resources and attracting the interest of important stakeholders (Hannan and Carroll, 1992; Aldrich and Fiol, 1994; Suchman, 1995).

Taken together, it is unclear whether first, or for that matter second, mover advantages actually exist within a financial services industry characterized by relatively high levels of uncertainty. Extant FMA research on the finance sector provides rather

ambiguous and mixed results on this matter (Tufano, 1989; Makadok, 1998; Berger and Dick, 2007). However, a fundamental assumption in the FMA theory is that the contextual situation will have a major impact on to what extent pioneers, or followers, will be able to exploit their position and build sources of sustainable advantages (Lieberman and Montgomery, 1988). Following this basic notion, it is proposed that an optimal entry strategy depends to a high extent on the level of environmental uncertainty – also within a certain industry.

The preemption factors leading to first mover advantages addressed above are likely also to be applicable to an area such as PE fund investing and to the question about whether or not to invest in first funds. In this industry, institutional investors that avoid first-time fund investing may face situations where, for example: (i) they are not invited to invest in later funds run by PE firms with excellent track records, (ii) if they are invited, they may have limited ability to affect fund manager compensation terms, and (iii) they may find themselves in a position where important service providers, such as lawyers and investment banks, are engaged by first movers. In other words, followers (here, investors that fancy later funds) may be forced to invest with fund managers with limited, or even poor, track records, pay higher fees, and be supported by less skilled third-parties (cf. Carow *et al.*, 2004). Based on the previous discussions, in cases where uncertainty is moderate, it is proposed that there exist first mover advantages:

H11. *When uncertainty levels are moderate, pioneers will outperform followers.*

However, in cases when uncertainty reaches very high levels and risks associated with an early entry increase commensurately, possible FMAs will likely be surpassed by late mover benefits (cf. Schoenecker and Cooper, 1998). This reasoning applies to the field of PE fund investing and the area of first versus subsequent fund investing. Investing in first-time funds raised by recently founded PE firms with no or limited track records is obviously a considerably higher risk compared to investing in a second, third, fourth, etc., fund. In these instances, the PE firm is assumed to have gained more experience, cultivated larger networks, and, of particular importance, amassed a record of past performance that the institutional investor can evaluate before making an investment decision. And, the higher the uncertainty level associated with an investment, the less likely an investor is to be willing to move early. Thus, in line with previous research suggesting that following may be the optimal entry strategy in the face of uncertainty (Kerin *et al.*, 1992; Lieberman and Asaba, 2006), the following hypothesis is proposed:

H12. *When uncertainty levels are high, followers will outperform pioneers.*

8.4.2 Moderating effects of reputation

In this final subsection, hypotheses that investigate how organizational reputation may alter an earlier optimal entry order strategy are developed.

As discussed, of several 'social assets' that contribute to prominence, reputation holds a central position in the strategy literature (see Section 3.2.4). While such an asset is valuable to the high-reputation organization itself, it can also strengthen the trustworthiness of associated parties. A large number of studies have reiterated the vital roles that endorsing organizations play as 'certification' providers (e.g., Stuart *et al.*, 1999; Gulati and Higgins, 2003; Dacin *et al.*, 2007). In particular, the venture capital literature provides a substantial body of research and evidence in this area (Megginson and Weiss, 1991; Hsu, 2004 ; Sørensen, 2007; Nahata, 2008; Puri and Zarutskie, 2009). These studies put forward the notion that more reputable venture capital firms have stronger and more positive impacts on the development of their portfolio firms, which in turn generate advantages to the VCs themselves in terms of, for example, access to investments of higher quality and potential, more skilled and reputable external advisors, and better exit routes.

Unlike PE firms, institutional PE fund investors are not in a position to contribute with any value-add to the operations of their investees, i.e., PE firms. In fact, the GP-LP relation prevents institutional investors from taking an active part in operations, as discussed in Chapter 2 (see Section 2.2.4). However, prominent institutional investors will likely contribute through signaling effects just by making an investment decision public. In other words, an institutional investor with a favorable reputation that, after an evaluation of a PE fund and its management firm, decides to invest sends a strong signal about the quality of said firm and fund. Such signals are expected to have positive effects on other stakeholders, for instance: other fund investors, managements in potential portfolio companies, industrial or financial sellers or buyers, investment banks, advisors, senior executives, and so forth. Especially in the private equity industry, which is characterized by high levels of secrecy and uncertainty, positive indicators from prominent institutional investors are likely considered as important proxies for specific, detailed, and hard to obtain information about specific private equity firms and funds. That is, in a less uncertain environment, stakeholders would have more opportunities to examine the firm in greater detail and would not need to rely as heavily on others. Hence, private equity firms are also expected to benefit from endorsements from prominent investors, at least until the former have built their own solid track records. This idea was also apparent in the in-depth interviews, presented in Chapter 6 (see Section 6.5.3).

Given that an association with a prominent organization brings clear benefits and advantages to an organization, while the endorsing entity puts its own reputation on the line by taking such a risk, such associations are expected to exact a price. That is,

reputation-rich organizations are likely to expect something in return for their willingness to let reputation-poor entities 'piggyback' on their prominence. Determining the exact costs of affiliations with prominent organizations is a subject that has, however, gained limited interest in the literature, with only a few exceptions. For example, Podolny (1993) proposed that suppliers are not willing to be affiliated with entities that may damage their reputation. Hsu (2004) showed that VC firms tend to be concerned with their status on the market, given the highly networked nature of the private equity industry and the ongoing need for capital and attractive investment opportunities. Hence, when analyzing the costs borne by entrepreneurs for affiliating with more reputable VCs, Hsu (ibid.) showed that more prominent venture capitalists enjoy better conditions as shareholders compared with others. Kaplan and Strömberg (2003) argued that firms that foresee clear benefits from certification provided by a chosen venture capitalist would accept unusually strict terms and conditions. Finally, Chen *et al.* (2008) investigated the price of engaging high-level affiliates as executive managers or as company board members, and found significant differences in payments. Some types of organizations and/or individuals, such as venture capitalists or senior executives, may be able to directly capitalize on their reputation by extracting higher rents or demanding higher salaries (e.g., Hsu, 2004; Chen *et al.*, 2008). However, the same is not true for others. For example, Pollock *et al.* (2010) argued that commissions to underwriters are rather uniform, i.e., aligned to some type of general market level. Hence, the authors put forward the notion that underwriters tend instead to capitalize on their prestige through higher stock prices. In the PE fund investment market, the situation is similar. That is, terms and conditions such as management fees, hurdle rates, carried interest levels, etc., are fairly standardized (Barnes and Menzies, 2005). Thus, institutional investors that have strong positive reputations, and are likely especially attractive as PE fund investors, would hardly expect any specific advantages related to, for example, fee structures or return schemes compared to other investors. What they may look for, though, are ways to reduce a feature prevailing in this industry, namely, risk.

As hypothesized above, it is proposed that in the case of moderate uncertainty, first mover advantages would outweigh the risks of early entry. That is, organizations arriving late might lose the opportunity to gain access to the best opportunities, i.e., in this case, they might not be invited to participate in funds raised by the best-performing private equity management teams. Hence, in situations of moderate uncertainty, a first mover strategy is in general proposed to be the optimal entry strategy (Hypothesis 11). However, the risks of entering early are obviously also higher in situations of moderate uncertainty compared with entering later when uncertainty has been resolved – and hence, the latter entry order is probably preferable in case the benefits associated with pioneering would be offered. It is likely that a prominent investor most often would be welcome to invest in any PE fund, regardless of whether they have invested previously or not, given the strong signal such a commitment would

send to society at large and, specifically, to other key stakeholders. Put differently, an organization with significant bargaining power in terms of possessing a strong reputation is expected to be in a position where it can trade endorsement for access to superior investment opportunities. Hence, it is proposed that prominent institutional investors do not have to take on risky pioneering roles by investing in first-time funds. Rather, they can await the accumulation of a certain track record gained by the private equity firm and then invest in subsequent funds. Consequently, the prominent institutional investor gets the option to wait for new information to arrive, whereby the delay in entry is expected to reduce the effect of uncertainty. This means that a good reputation moderates the positive effect of pioneering in situations of moderate uncertainty, leading to the following hypothesis:

H13. *When uncertainty levels are moderate, organizations with favorable reputations will benefit more from following than from pioneering.*

Building on the reasoning above, it is hypothesized that organizations with strong reputations are also in a position to be invited to the best performing teams in cases of high uncertainty, and hence it is hypothesized that:

H14. *When uncertainty levels are high, organizations with favorable reputations will benefit more than others from following.*

8.5 Summary

The hypotheses developed in this chapter are depicted in Figure 8.1 and summarized in Table 8.1.

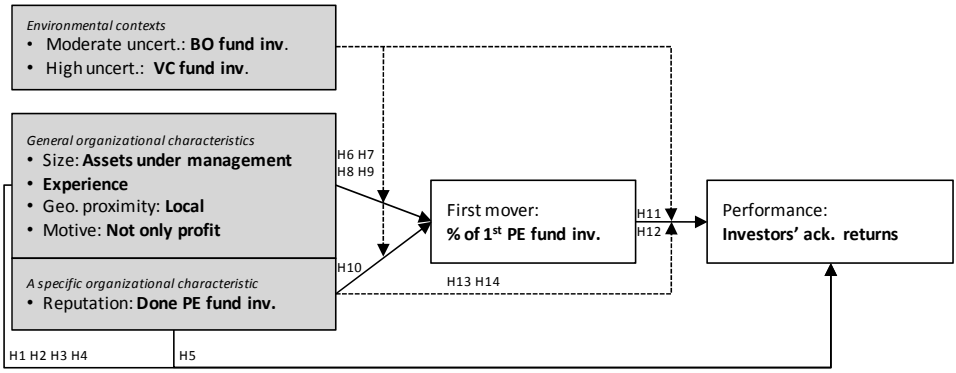


Figure 8.1. Proposed research model of organizational characteristics, entry order and performance – hypothesized connections

Table 8.1. Overview of developed hypotheses and expected relationships

ORGANIZATIONAL CHARACTERISTIC	MODERATE UNCERTAINTY		HIGH UNCERTAINTY	
	Performance	First mover	Performance	First mover
Size	+ H1	+ H6a	+ H1	- H6b
Experience	+ H2	+ H7a	+ H2	- H7b
Geographical proximity	+ H3	+ H8	+ H3	+ H8
Investing motive: Not only profit	- H4	+ H9	- H4	+ H9
Favorable reputation	+ H5	- H10	+ H5	- H10
First mover	+ H11		- H12	
Favorable reputation & Second mover	+ H13		+ H14	

In the following chapter, the results from testing these 16 hypotheses empirically will be presented and analyzed.

CHAPTER 9

Prediction of entry order and performance

In this chapter, empirical findings for the hypotheses developed in the previous chapter about links between organizational characteristics, entry order and performance are presented and analyzed.

9.1 Introduction

In the previous chapter, 16 hypotheses arranged into three sets were developed. Hypotheses 1 to 5 outline how organization-specific characteristics may be connected to performance for investors active within a financial services industry. Hypotheses 6a to 10, on a more general level, seek to investigate links between organizational characteristics and entry order in situations of uncertainty. The final set, consisting of hypotheses 11 to 14, focuses on entry order and its effect on performance in the same type of contextual setting. This chapter presents outcomes from testing the hypotheses empirically. Given the statistical methods chosen, however, the results will not appear in the same order as the hypotheses were developed in Chapter 8. First, results from testing the hypotheses where entry order constitutes the outcome variable are outlined, i.e., H6a – H10. Second, test results for the hypotheses developed for predicting performance, i.e., H1 – H5 and H11 – H14, are provided. After this information is offered, a deeper analysis of the results with links back to existing literature is presented. First, though, a few reminders about the datasets used in the tests and how key variables have been operationalized will be given.

Table 9.1. Data used in the hypothesis-testing study (cf. Figure 4.4)

	BO funds (A)	VC funds (B)
Funds	46	27
Investments	342	506
Institutional investors	219	186

The quantitative dataset collected within the research for this dissertation was presented in Section 4.4. The database consists of 334 institutional investors that together have made 848 investments into 73 private equity funds. Since the hypotheses set out to test entry order and performance effects in situations of moderate versus high uncertainty, two subsets of the full database were used (see Table 9.1). First was one subset of the database that only contains investments made into BO funds, referred to as dataset 'A'. Second was a subset that consists of VC fund investments, referred to as dataset 'B'. As discussed in Section 7.2.2, the BO fund investment segment is in this study used as a representation of a moderately uncertain environment, while the VC funds represent an investment segment characterized by high

levels of uncertainty. Moreover, pioneers are operationalized in the study based on institutional investors' inclination to invest in first-time funds (see Section 7.2.1). Investors who have made at least one-third of their PE fund investments into first funds are here referred to as 'first movers' and the others are termed 'second movers'.

A list of the variables used in the hypothesis tests is provided in Appendix 12. Appendices 14 and 15 present descriptions and correlations for variables predicting entry order for BO and VC fund investments, respectively. Appendices 16 and 17 contain correlation tables for variables predicting performance for the two datasets[34].

9.2 Factors affecting entry order

In this section, relationships between institutional investors' organizational characteristics and their preference for taking on roles as first movers are investigated, correlating to hypotheses 6a to 10. The analyses were made using binary logistic regressions. In order to simplify the explanations of how individual predictors impact the research model, odds ratios were calculated. The ratio indicates how much more likely it is that an investor with the organizational characteristic under study will become a first mover. A value greater than one indicates that the odds of taking on a pioneering role are increased, while the opposite is true when the odds ratio is less than one.

Given that the concept of reputation is of special importance to the study, the regressions were run on two sequential models: excluding and including the reputation construct. The first model, Model 1, includes the following variables: (i) variables used for controlling temporal effects, (ii) the investor's average level of assets under management, (iii) the investor's average experience from PE fund investing, (iv) whether or not the investor is local (in this case, Nordic), and (v) whether or not the motive for PE fund investing is purely financial. The second model, Model 2, incorporates the reputation construct, measured as the average of previously made PE fund investments. As stated above, the regressions are run on both databases, i.e., investments into BO funds ('A') as well as VC funds ('B').

Table 9.2 reports the coefficients, standard errors and odds ratios for variables predicting institutional investors' inclination to become first movers.

[34] Regression diagnostics for the datasets are presented and discussed in Appendix 5.

Table 9.2. Summary of logistic regression analysis for variables predicting investors' inclination to invest in first-time PE funds

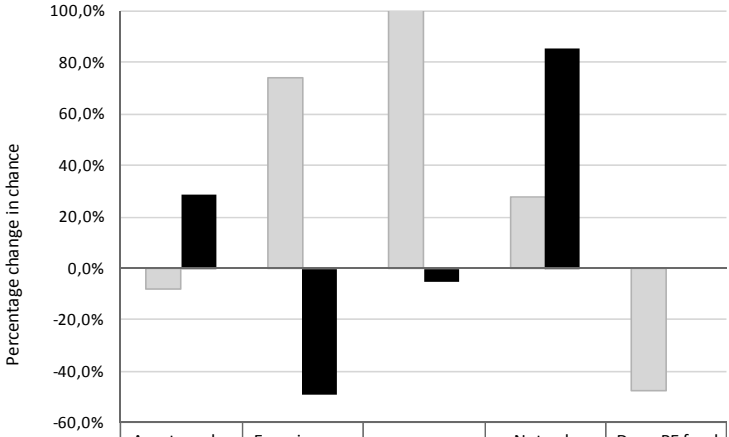
Dependent variable: **FIRST MOVER**	**BO FUNDS (A)** *'Moderate uncertainty'*				**VC FUNDS (B)** *'High uncertainty'*			
	Model A1: Base		**Model A2: Reput**		**Model B1: Base**		**Model B2: Reput**	
	Coef.[1)]	O.R.	Coef.[1)]	O.R.	Coef.[1)]	O.R.	Coef.[1)]	O.R.
Start period 1					2.68*** (0.61)	14.63***	2.65*** (0.61)	14.16***
Start period 2					0.92† (0.49)	2.50†	0.87† (0.50)	2.38†
Assets under man.	-1.43 (0.20)	0.87	-0.08 (0.20)	0.92	0.21 (0.16)	1.22	0.23 (0.16)	1.25
Experience	0.99 (1.23)	2.69	3.00† (1.53)	20.16†	-3.14** (1.21)	0.04**	-2.40* (1.22)	0.09*
Local	1.86*** (0.47)	6.41***	1.69*** (0.48)	5.44***	-0.13 (0.45)	0.88	-0.29 (0.46)	0.75
Not only profit	0.73 (0.50)		0.77 (0.51)	2.17	1.45** (0.50)	4.25**	1.46** (0.50)	4.31**
Done PE fund inv. *'Reputation'*			-0.80* (0.37)	0.45*			-0.34 (0.30)	0.71
McFadden's ps. R^2	0.150		0.172		0.173		0.178	
Likelihood ratio χ^2	32.00***		36.88***		42.38***		43.62	
Change in ps. R^2			0.023				0.005	
χ^2 for change in ps. R^2			4.88*				1.23	
N	219		219		186		186	

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10.
[1)] Standard errors reported in parentheses below the coefficient estimate.

The logistic regressions for BO fund investments encountered a numerical issue referred to as a 'zero-cells' problem (Chen *et al.*, 2010). The underlying cause is that only four of the institutional organizations in this dataset that started their investment activities in period 2 were classified as first movers, which, due to it being such a small group size, leads to computation problems. A suggested way to circumvent the problem is to remove variables from the regression model. Hence, for the computation of the dataset containing BO fund investments, the two variables indicating when the LP started to invest were taken out.

When running the logistic regressions on the dataset containing BO fund investments, McFadden's pseudo R^2 arrived at 0.150 for Model A1. The model has a relatively moderate explanatory power, given that values close to 0.2 and above are

considered satisfactory (Chen *et al.*, 2010). Model A2, though, significantly increased the explanation capacity by 0.023 ($\chi^2 = 4.88$, $p < 0.05$) to 0.172. In other words, the reputation construct, i.e., the variable *Done PE fund investments*, enhanced the fit and should be included in the regressions when testing entry order determinants in the case of BO fund investing. Thereafter, the model was tested on VC fund investments. McFadden's pseudo R^2 arrived at 0.173 for Model B1, which constitutes a significant fit of data ($\chi^2 = 42.38$, $p < 0.001$). When adding the reputation variable, however, the new model, Model B2, turned out not to be statistically significant. In other words, reputation as an organizational asset seems not to impact a VC fund investor's inclination to become a first, or for that matter a second, mover. Hence, Model 1 provided a better fit of data when predicting entry order in the case of VC fund investing. Figure 9.1 shows the odds ratio for each predictor with a one-standard-deviation change, i.e., the increased chance in percentage form of taking on a first mover role for Model A2 and B1, respectively.



	Assets under man. + 1SD	Experience + 1SD	Local + 1SD	Not only profit + 1SD	Done PE fund invest. + 1 SD
BO: First Mover (Model A2)	-8,0%	74,0%	132,7%	28,0%	-47,5%
VC: First Mover (Model B1)	28,6%	-48,8%	-5,4%	85,3%	

Figure 9.1. Factors associated with inclination to invest in first-time PE funds

Hypothesis 6a proposed that larger financial investors in terms of assets under management are more likely than others to pioneer (in this research, to invest in first-time funds) in situations of moderate uncertainty. On contrary, Hypothesis 6b suggested that if uncertainty levels are high, asset-heavy investors are expected to await resolution and take on second mover roles. None of these hypotheses were supported; size did not have any significant impact on entry order, irrespective of uncertainty level. Hypothesis 7a predicted that more experienced PE fund investors, measured in years, are likely to pioneer in situations of moderate uncertainty. The hypothesis was supported

with an odds ratio of 20.16 ($p < 0.10$), which here implies that experienced PE fund investors are more keen to invest in first-time BO funds than are other investors. Hypothesis 7b, on the other hand, proposed that when uncertainty levels are high, experienced investors will prefer a follower strategy. This hypothesis was also supported (O.R. = 0.04, $p < 0.01$).

The next hypothesis, Hypothesis 8, predicted a positive relationship between being a local organization and the likelihood of pioneering, regardless of uncertainty level. The hypothesis received significant support in the case of BO fund investing, with an odds ratio at 5.44 ($p < 0.001$). However, the hypothesis was not supported and actually indicated negative odds for VC funds. According to Hypothesis 9, institutional investors having not only financial objectives for their investment activities are more likely than others to make first moves in both moderately and highly uncertain situations. This hypothesis received significant support for VC funds with an odds ratio of 4.25 ($p < 0.01$). The hypothesis was, however, not significantly supported for BO fund investing (although the direction was in line with the prediction). Finally, Hypothesis 10 predicted that a favorable reputation is negatively related to taking on pioneering roles when uncertainty is moderate to high. This means, for the current empirical context, that institutional organizations having made a larger number of PE fund investments are less willing to invest in first-time funds, whether BO or VC funds. This hypothesis received significant support in the case of BO fund investing with an odds ratio of 0.45 ($p < 0.05$). The model including the reputation construct, i.e., Model 2, was, as stated above, not significant for investments made into VC funds, and hence the hypothesis was not supported for investments in such funds. Although the direction of the variable was in line with the hypothesized prediction, it was without statistical significance (Model B2: O.R. = 0.71, $p = 0.27$).

9.3 Factors affecting performance

Chapter 8 outlined nine hypotheses concerning performance in relation to: (i) organizational characteristics (hypotheses 1 to 5), (ii) pioneering in situations of moderate and high uncertainty (hypotheses 11 and 12), and (iii) combinations of pioneering, environmental uncertainty and organizational reputation (hypotheses 13 and 14). In this section, results from testing these hypotheses will be presented.

The tests were carried out through multiple linear regressions. In the same way as detailed in the previous section, blocks of variables were introduced sequentially, and thereafter, determinations of their respective explanatory capacities were made (i.e., hierarchical regressions). The dependent variable is apparently performance, measured as an institutional investor's overall return from investing in Swedish PE funds throughout the period 1983 to 2003.

The first block, Model 1, contains variables controlling for the starting time as Swedish PE fund investors. Model 2 adds five variables outlining institutional investors' organizational characteristics, including: (i) average level of assets under management at the time of each investment, (ii) average experience level in years at the time of each investment, (iii) whether or not the LP is local (in this case, Nordic), (iv) whether or not the LP has others goals for its PE investment activities than profit maximizing, and (v) the reputation construct, i.e., the average number of completed PE fund investments at the time of each investment. Model 3 incorporates to what extent a specific entry order (in this case, a second mover position) affects performance. Finally, a block with the interaction effect between organizational reputation and entry order is introduced, i.e., Model 4. Table 9.3 presents the results from the hierarchical regressions for both datasets, including BO funds ('A') and VC funds ('B'), respectively.

Model 1 shows that the control variables alone explain 24.6% when applied on BO fund investments (Model A1) and 17.7% for VC fund investments (Model B1). Given that an R^2 between 0.1 and 0.2 indicates a moderate fit of data and values greater than 0.3 indicate a strong fit, both sub-models constitute adequate representations. The ways and extent to which the starting date for Swedish PE fund investment activities affect performance vary between the two types of investments. BO fund investors that started to invest in Sweden before 2000 have, according to these results, received lower returns than peers entering the market later. In the case of VC fund investing, market entrance between 1998 and 2000 is clearly associated with poor performance.

Model 2 improved the explanatory power for both datasets; Model A2 exhibited a statistically significant increase of R^2 with 2.5%, and Model B2 a similar increase with 11.2%. Hypothesis 1 proposed that within a financial services industry, size has a positive effect on performance. In this study, organizational size is measured based on an investor's total assets under management. This hypothesis received no support. The β weight was very weak ($\beta = 0.01$) for BO funds and not significantly supported. Furthermore, when tested on the VC fund dataset the result turned out to be reversed from the hypothesis proposition (Model B2: $\beta = -0.31$, $p < 0.001$). The size variable also continued to be significantly negatively associated with performance for VC funds in Model 3 and 4.

Table 9.3. Summary of multiple regression analysis for variables predicting investor performance from PE fund investing

Dependent variable: **PERFORMANCE**	**BO FUNDS (A)** *'Moderate uncertainty'*				**VC FUNDS (B)** *'High uncertainty'*			
	Model A1: Control[1)]	Model A2: Charact.[1)]	Model A3: Entry order[1)]	Model A4: Interaction[1)]	Model B1: Control[1)]	Model B2: Charact.[1)]	Model B3: Entry order[1)]	Model B4: Interaction[1)]
Start period 1	-0.54*** (0.09)	-0.60*** (0.09)	-0.73*** (0.10)	-0.74*** (0.09)	0.12 (0.09)	0.07 (0.09)	0.14 (0.09)	0.15 (0.09)
Start period 2	-0.10 (0.11)	-0.12† (0.11)	-0.15* (0.10)	-0.16* (0.10)	-0.32** (0.08)	-0.27** (0.08)	-0.24* (0.08)	-0.23* (0.08)
Assets under man.		-0.01 (0.04)	0.00 (0.04)	0.01 (0.04)		-0.31*** (0.02)	-0.29*** (0.02)	-0.29*** (0.02)
Experience		0.20* (0.29)	0.19** (0.27)	0.18* (0.27)		0.17† (0.18)	0.14 (0.18)	0.14 (0.18)
Local		0.05 (0.09)	0.00 (0.09)	0.02 (0.09)		0.16* (0.07)	0.16* (0.07)	0.16* (0.07)
Not only profit		0.02 (0.13)	-0.01 (0.12)	-0.05 (0.12)		-0.11 (0.06)	-0.08 (0.06)	-0.08 (0.06)
Done PE fund inv. *'Reputation'*		-0.06 (0.07)	-0.01 (0.06)	-0.03 (0.14)		0.02 (0.05)	0.00 (0.05)	-0.01 (0.06)
Second mover			-0.33*** (0.11)	-0.26*** (0.11)			0.14* (0.06)	0.14* (0.07)
Interact: Second x Done PE fund inv.				0.18** (0.13)				0.03 (0.07)
R^2	0.246	0.271	0.351	0.377	0.177	0.289	0.305	0.305
Adj. R^2	0.239	0.247	0.326	0.350	0.168	0.261	0.273	0.270
F	35.28***	11.21***	14.18***	14.06***	19.62***	10.31***	9.69***	8.60***
Change in R^2		0.025	0.080	0.026		0.112	0.016	0.000
F for change in R^2		1.45	25.76***	8.81*		5.60***	4.11*	0.19
N	219	219	219	219	186	186	186	186

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10.

[1)] Standardized regression coefficients (β) reported incl. standard errors for unstandardized coefficients in parentheses below.

Hypothesis 2 predicted a positive relationship between experience and performance. This hypothesis received significant support in the regression analysis made for BO fund investments (Model A2: $\beta = 0.20$, $p < 0.01$) and also when tested on the VC dataset (Model B2: $\beta = 0.17$, $p < 0.10$). The significant positive effect of experience on performance also remains in Model 3 and 4 for BO fund investments. For VC fund investing the positive direction is maintained in Model 3 and 4; however, it was without statistically significant support. Hypothesis 3 suggested that local investors (in this case, Nordic) enjoy higher returns compared with international peers. In the case of investing in BO funds, the hypothesis was not supported. While the β is positive, as predicted, the weight is small and not statistically significant ($\beta = 0.05$ in Model A2). The regression analysis for VC fund investments, on the other hand, shows a moderate support for the hypothesis in Model B2 ($\beta = 0.16$, $p < 0.05$), which remains equal in Model B3 and B4. Hypothesis 4 proposed that investors having not only financial objectives for their investment activities would receive lower returns than others. This hypothesis found no support in either of the datasets, and although the directions of the βs were negative, as expected, they were small. The final hypothesis associated with institutional investors' characteristics is Hypothesis 5, which predicted that organizations possessing higher levels of reputation will enjoy better returns than others. The result indicates, however, that organizational reputation has no direct effect on performance, either positive or negative, irrespective of uncertainty level. In other words, the hypothesis was not supported.

Model 3, concerning order of entry effects, increased the explanation capacity for both datasets with statistically significant increments. Model A3, evaluating BO fund investing, made an improvement of R^2 compared with the preceding model by 8.0%. Model B3, pertaining to VC fund investments, also saw a significant increase of explanatory power compared with the previous model, although with a more modest increase in R^2 of 1.6%. Hypothesis 11 predicted that in moderately uncertain contexts, first mover advantages exceed the possible negative effects of early entry and, thus, pioneering constitutes the optimal entry order strategy. This suggests, in reverse, that a second mover position is negatively associated with performance in such environmental settings. Again, BO fund investing represents in this study an investment segment characterized by moderate uncertainty levels. The hypothesis was supported, meaning that a second mover position, i.e., one associated with comparably fewer investments in first-time funds, predicts lower returns from BO fund investing (Model A3: $\beta = -0.33$, $p < 0.001$; Model A4: $\beta = -0.26$, $p < 0.001$). On the other hand, Hypothesis 12 predicted that in cases where uncertainty is very high, a second mover position is preferable to a first mover position. In this case, the VC market constituted the test bed for a market characterized by high uncertainty. The hypothesis was supported, showing that a second mover position is positively related to performance in contexts characterized by high uncertainty (Model B3 and B4: $\beta = 0.14$, $p < 0.05$).

Model 4 includes interaction effects between entry order and reputation. As outlined in the previous chapter, the line of thinking at play here is that organizational reputation may alter optimal entry order strategy. This model made a significant improvement when tested for BO fund investments (Model A4: $\Delta R^2 = 0.026$, $p < 0.05$). However, the model did not contribute to the explanatory power over Model B3 when run for VC funds.

Hypothesis 13 predicted that high levels of organizational reputation counteract the need for pioneering roles in situations of moderate uncertainty, and instead proposed that high-reputation organizations may also benefit from second mover roles in situations of moderate uncertainty. When applied to the current empirical setting, this means that organizations with good reputations can avoid the risks associated with investing into first-time funds and primarily invest in subsequent funds. When testing this interaction effect on the dataset including BO fund investments, the interaction variable had a significant positive effect on performance (Model A4: $\beta = 0.18$, $p < 0.01$)[35]. In other words, the hypothesis was supported.

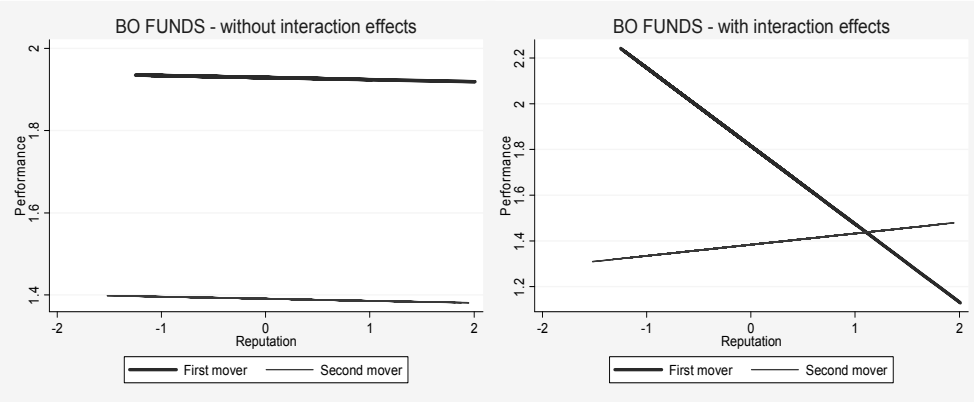


Figure 9.2. BO fund investments. Reputation and entry order predicting performance, without and with interaction

Figure 9.2 illustrates the interaction effect between entry order and reputation in the case of moderate uncertainty (i.e., BO fund investing). The figure shows performance as a function of reputation for first and second movers while holding other variables constant at their mean. The graph on the left shows how first mover and second mover positions affect performance, where first mover positions are preferable in case

[35] In order to test for possible reverse effects, the regression was also run with the reverse interaction variable *First × Done PE fund investments*. The variable had a statistically significant negative effect on performance ($\beta = -0.18$, $p < 0.05$), which gives further support to the hypothesis.

of moderate uncertainty (as stipulated in Hypothesis 11). However, the right-hand graph with the interaction effect provides a more nuanced view. As illustrated, an organization possessing low levels of organizational reputation will benefit from taking on first mover positions in situations of moderate uncertainty, while following is the preferable entry order for high-reputation organizations (Hypothesis 13).

Hypothesis 14 predicted that high levels of favorable reputation in combination with second mover positions would also have an additional impact on performance in situations of high uncertainty. As stated above, though, the model did not increase the explanatory power of the performance variance above the preceding model, Model B3, and hence the hypothesis was rejected.

This subsection has presented outcomes from testing the 16 developed hypotheses in hierarchical logistic and multiple linear regression analyses. The following subsection will provide a more detailed discussion of the results, and will also provide links to earlier PE studies and to the entry order literature.

9.4 Analysis of hypothesis testing results

Following the same order as above, the results from testing the seven hypotheses investigating entry order determinants are first elaborated upon. Thereafter, the nine performance-related hypotheses are discussed. Additional discussion of the results will be provided in Chapter 10.

9.4.1 Entry order

H6a. When uncertainty levels are moderate, size will positively impact entry order, and *H6b. When uncertainty levels are high, size will negatively impact entry order*. The impact of organizational size on entry order is a topic that has gained significant interest in the literature, where it has been appointed as a predictor of early – but also of late – entry (Lieberman and Montgomery, 1988; Schoenecker and Cooper, 1998; Fuentelsaz *et al.*, 2002). Again, the type of environmental setting has been put forward as a steering factor that helps to determine when large organizations are likely to pioneer or to follow. Most FMA literature has investigated entry order in settings such as the mature packaged goods industries, where first mover advantages and entry barriers are considered relatively high and size is often seen as being strongly associated with pioneering (Schoenecker and Cooper, 1998). On the other hand, the strategy literature as well as the imitation literature identify following as a common path to entry in a new contextual setting or in more uncertain situations (Suchman, 1995; Schoenecker and Cooper, 1998). Following this, the level of uncertainty was in these hypotheses used as a differentiating factor to explain large organizations' inclination to pioneer or to follow. Interestingly enough, however, neither of the hypotheses was supported. In other words, organizational size

measured in financial terms seems not to impact entry order, irrespective of uncertainty level, when applied to this financial services industry. The result contradicts the findings presented by Fuentelsaz *et al.* (2002) in a study conducted on an adjacent industry. They found that size, in terms of financial resources, had a positive and significant impact on the timing of new market entry in the savings bank market. On the other hand, the result of the current study supports the findings of Schoenecker and Cooper (1998). While these scholars identified organizational size, measured by the number of employees, as a predictor of entry order, they did not find any links between size in terms of financial resources and entry timing.

H7a. When uncertainty levels are moderate, longer experience in the field will positively impact entry order, and *H7b. When uncertainty levels are high, longer experience in the field will negatively impact entry order*. The reasoning behind these two hypotheses is somewhat similar to the previous two. Traditional FMA research focused on mature and stable industries tends to appoint experienced firms as early movers. The line of thought holds that such organizations are assumed to have the necessary skills and capabilities to also compete in related fields, and hence are more willing to pioneer (Mitchell, 1989; Schoenecker and Cooper, 1998). In contrast, in more uncertain environments, experienced organizations are expected to await resolution of uncertainty and use their experience to cancel out first movers in later phases (cf. Kerin *et al.*, 1992; Helfat and Lieberman, 2002). Hence, the level of uncertainty was also used here to explain how and when organizational experience may lead to early, as well as to late, entries. Both hypotheses were supported. In situations of moderate uncertainty, such as the case of BO fund investing, more experienced investors were found to take on pioneering roles (i.e., in this study, to invest in first-time funds). This result supports the finding made by Schoenecker and Cooper (1998) in their study about the minicomputer industry. On the other hand, as hypothesized, in the case of high uncertainty (i.e., VC fund investing) experienced investors were less common as first movers. This latter result could be interpreted to signify that these investors were not particularly keen to take on large risks by investing in first-time funds raised by newly established PE firms, but would rather invest in later funds when the team was somewhat more proven. This finding obviously supports a fundamental idea in both the strategy and the imitation streams of literature, i.e., firms are especially prone to move later in situations of high uncertainty (Porter, 1980; DiMaggio, 1988; Banerjee, 1992).

H8. When uncertainty levels are moderate to high, geographical proximity to the market in question will positively impact entry order. The general arguments behind this hypothesis are that geographical proximity implies: (i) better knowledge of the objective market, (ii) higher social network quality and thus access to key stakeholders, and (iii) greater opportunities to control local activities (Cotterill and Haller, 1992; Fuentelsaz *et al.*, 2002). Given this link between proximity and superior market knowledge, the option of waiting for new information to arrive is less valuable. Hence, an organization closer

to a particular market was also in this study hypothesized as being more likely to take on a pioneering role, irrespective of uncertainty level. When investigating investors' propensity to invest in first-time funds, the hypothesis was supported for BO fund investments; in other words, Nordic investors were more likely to invest in local first-time BO funds than were others. This result supports earlier findings, such as, for example, those garnered in studies about entry into the US supermarket space (Cotterill and Haller, 1992) as well as the savings banking industry (Fuentelsaz *et al.*, 2002). However, when tested on the VC fund investment segment, the hypothesis was rejected with a reverse direction (although not one that was statistically significant). That is, international institutions seem to be more willing to invest in first-time VC funds than are their local peers. This result was obviously quite surprising. However, when analyzing the result in more detail, it turns out that a smaller number of the VC funds raised during the 'dot-com bubble' period were particularly successful in attracting international capital, which skews the aggregated data and explains this unexpected result. When leaving these funds out, the analysis of VC fund investments also shows that local investors to a higher extent than others take on pioneering roles (not to a statistically significant degree, though).

H9. When uncertainty levels are moderate to high, having additional objectives besides purely financial motives will positively impact entry order. The line of thinking behind this hypothesis is that organizations having additional goals besides profit maximizing for their investment activities are expected to be more willing to support unproven businesses in order to spur technological development or establish new ventures. In other words, these organizations are more likely to be active in areas that purely profit-seeking parties may avoid due to high risk. In the current study, local government agencies and corporate investors were classified as 'not only for profit' investors. The hypothesis was supported in the case of VC fund investing. That is, institutions funded by governmental or regional means, as well as by corporate investors, were more inclined than others to invest in unproven teams that manage first-time VC funds. This supports earlier findings and expectations (see Section 2.3.6). In the case of BO fund investing, however, the hypothesis was not supported. That is, investors having other goals besides financial ones do not take on first mover roles to a higher extent than others when investing in BO funds. Since this is an area that, until now, according to my knowledge, has remained unexplored, both these findings add new knowledge to the field.

H10. When uncertainty levels are moderate to high, a favorable reputation will negatively impact entry order. The theoretical argument behind this hypothesis is that high-reputation organizations are particularly unwilling to jeopardize their achieved reputation by entering an uncertain environment. On the contrary, little-known firms or firms possessing negative reputations, e.g., newly established companies aiming to gain market shares or distressed firms trying to turn around negative situations, are more likely to

take on extraordinary risks, including pioneering new markets (Bowman, 1982; Figenbaum and Thomas, 1986). As mentioned, reputation has in this dissertation been operationalized as previously made PE fund investments (in any geographical location). Furthermore, BO fund investing represents an area with moderate uncertainty and VC fund investing an area characterized by high levels of uncertainty. The hypothesis was significantly supported for BO fund investing, and also had the same direction for VC funds (although not to a statistically significant level). This to some extent contradicts the findings presented by Dimov *et al.* (2007) in a study adjacent to the present investigation, which showed that more reputable PE firms (with high finance capacity) made more early-stage investments than did their less reputable counterparts. The result of this hypothesis also reveals new knowledge, since the links between organizational reputation and entry order in situations of uncertainty has not directly, to my knowledge, been investigated before.

The next nine hypotheses, focusing on how organizational characteristics and entry order predict performance, will be discussed in more detail in the following subsection.

9.4.2 Performance

H1. In a financial services industry characterized by moderate to high uncertainty, size will positively impact performance. In line with earlier research on performance determinants for private equity fund investing (Laine and Torstila, 2004; Phalippou and Gottschalg, 2009; Metrick and Yasuda, 2010), this hypothesis suggests that large investors perform better than their smaller peers due to economies of scale and strong market positions. Size here is operationalized as 'assets under management' which includes the total capital base, i.e., not only allocations to PE fund investing. However, the hypothesis was not supported in the case of BO fund investing and was actually reversed for VC funds. The notion that size, in terms of financial capital under management has no, or actually a negative, effect on performance supports earlier findings from the hedge and mutual fund industries (Grinblatt and Huang, 1989; Wermers, 2000; Getmansky *et al.*, 2004). Still, the results are somewhat surprising since they contradict earlier research about PE fund performance determinants (Laine and Torstila, 2004; Phalippou and Gottschalg, 2009; Da Rin and Phalippou, 2010; Metrick and Yasuda, 2010). Hence, these findings merit further analysis, which is provided in a subsequent section discussing Hypothesis 3.

H2. In a financial services industry characterized by moderate to high uncertainty, longer experience in the field will positively impact performance. The reasoning behind this hypothesis arrives from a well-supported concept in both the organizational and the strategic management streams of literature, namely that longer experience in a field is expected to lead to competitive advantages (e.g., Dreyfus and Dreyfus, 1986). Extensive experience not only indicates better knowledge, but it also usually leads to a well-developed

social network with important stakeholders in the market in question. The idea that longer experience, on an individual as well as on an organizational level, is associated with better performance has been supported in a number of empirical settings closely related to the present study, including the finance literature (e.g., Nicolosi *et al.*, 2009), studies about private equity firms (Kaplan and Schoar, 2005; Phalippou and Gottschalg, 2009), and in existing research about PE fund investors (Lerner *et al.*, 2007). The hypothesis was supported in the current study irrespective of uncertainty level, i.e., for both buyout and venture capital fund investing (although not significantly for the latter in the final model). Put differently, an investor with more experience in the field in question (in this case, PE fund investing) on average performs better than less experienced investors.

H3. In a financial services industry characterized by moderate to high uncertainty, geographical proximity to the market in question will positively impact performance. In line with the thoughts underpinning Hypothesis 8, this hypothesis is also derived from the idea that geographical proximity implies better knowledge and strong links with important stakeholders in the relevant market setting (Stuart and Sorensen, 2003). Such knowledge and social networks are assumed to lead to improved skills and capabilities, advanced opportunities and, consequently, to superior performance. In the current study, there were no noticeable differences in returns between local versus non-local investors in the case of BO fund investing, which in this study represents a moderately uncertain environment. In other words, for this type of investment, the hypothesis was rejected.

However, the hypothesis was supported for VC fund investing, which in this study represents an environment characterized by high levels of uncertainty. It was found that Nordic investors have in general enjoyed better returns than their international peers. When analyzing the results in more detail, the 'size' factor elaborated upon in Hypothesis 1 appeared to affect the results. This 'assets under management' variable is rather strongly negatively correlated with the 'local' variable. As a post hoc test, a group analysis (ANOVA) was carried out in order to investigate whether geographical proximity or size is the decisive factor for variations in returns. The result showed with statistical significance[36] that Nordic institutions with lower levels of capital under management have received significantly better returns from their VC fund investments compared with both Nordic investors managing larger capital pools and international investors. The international investors, irrespective of having high or low levels of capital under management, and the larger Nordic investors all received about the same levels of returns from VC fund investing. The result indicates that both smaller sizes and geographical proximity affect returns, where the latter seems to be of

[36] ANOVA test: $F(3,182) = 7.83$, $p < 0.001$.

particular importance. This to some extent supports the finding presented by Hobohm (2009), in which it was shown that fund investors closer to successful VC-intense areas are more successful than remote investors.

H4. In a financial services industry characterized by moderate to high uncertainty, having additional objectives besides purely financial motives will negatively impact performance. The idea behind this hypothesis is the expectation that a financial investor that has more than economic motives for engaging in investing activities sometimes needs to make decisions that negatively impact direct returns but support a higher goal. In this study, this could be exemplified by a local government agency that invests in newly established PE funds in order to support new market initiatives, or a corporate investor that invests in early-stage high-tech VC funds in the expectation of gaining access to superior technology that may be beneficial to the parent company's core business. However, no significant support for the hypothesis was provided, either for VC or for BO fund investing (and the β weights were rather small for both datasets). This result contradicts earlier research showing that government agencies underperform relative to other PE fund investors (Hobohm, 2009). The result is somewhat surprising but is nevertheless interesting, showing that having additional purposes for an operation does not necessary imply that a conflict of interest between that particular purpose and financial performance will occur. The result also contradicts the indicative findings presented in Section 5.3.

H5. In a financial services industry characterized by moderate to high uncertainty, a favorable reputation will positively impact performance. This hypothesis is of central interest to this dissertation, given the importance of the reputation construct. The hypothesis arrives from the idea that an organization possessing a positive and strong reputation can capitalize on this asset and enjoy benefits that are expected to lead to superior performance. A number of studies have indicated positive links between prominence and strong outcomes, not least within the PE literature (Lerner, 1994b; Benjamin and Podolny, 1999; Gompers and Lerner, 1999a; Deephouse, 2000; Lee and Wahal, 2004; Hochberg *et al.*, 2007). Interestingly enough, this study found no support for the notion that a high level of favorable reputation in itself leads to better performance. This was irrespective of the type of fund investment, i.e., BO or VC; in both settings, the hypothesis was rejected. The result contradicts the finding presented by Hochberg *et al.* (2007) in an adjacent study about VC firms, which showed that a good organizational reputation leads to better performance.

The following two hypotheses concern relationships between order of entry and performance.

H11. When uncertainty levels are moderate, pioneers will outperform followers. The fundamental reasoning behind this hypothesis is that first mover advantages are expected to exist when environmental uncertainty levels are relatively modest. In other words, in

the case of moderate uncertainty, early movers will seize the best opportunities and thereby limit the available options for followers. This hypothesis received strong support. In the context of the current study, this means that institutional investors that have a higher share of first-time BO fund investments will enjoy better returns than investors with BO portfolios containing predominantly later fund investments. Hence, a central first mover advantage in this empirical setting arrives from building early relations with PE firms and thus securing invitations to invest in subsequent funds. By contrast, an investor that avoids investing with nascent teams in their first commercial attempt, i.e., their first fund, may not be invited to invest in a subsequent fund if the first is successful. As such, this result supports earlier findings from another financial industry which could be characterized as relatively certain, namely, banking, where first mover advantages have been identified (Tufano, 1989; Berger and Dick, 2007).

H12. When uncertainty levels are high, followers will outperform pioneers. This hypothesis follows a reversal of reasoning compared to the last-discussed hypothesis. That is, in the case of high uncertainty, organizations prefer to await resolution of uncertainty and thus to take on late mover positions; or, put differently, in such environments the high risk is expected to outplay potential FMAs. This hypothesis was also supported, which means that when investing in venture capital funds, second movers have been more successful compared with first movers. The result to some extent contradicts the findings presented by Makadok (1998) in a study investigating how first mover advantages may be sustained in the mutual fund industry, which is considered a young and highly fragmented market; in other words, a relatively uncertain type of industry. Makadok's study showed that also in such an industry, early movers enjoy sustainable market share advantages; that is, opposite from the finding for the present study.

The final two hypotheses investigate moderating effects of reputation on the relationship between entry order and performance.

H13. When uncertainty levels are moderate, organizations with favorable reputations will benefit more from following than from pioneering. This is one of the central hypotheses in the dissertation and arrives from the idea that a favorable reputation is an organizational asset that may be exchanged for other resources or favors (Fombrun, 1996; Rindova *et al.*, 2005). Here, it is hypothesized that a high-reputation organization can allow relatively unproven businesses to 'piggyback' on its reputation in return for a favorable order of entry position. Hence, also in situations when first mover advantages do exist, organizations with good reputations can await resolution of uncertainty and still enjoy advantages that otherwise would only be available to first movers. The hypothesis was significantly supported, which is illustrated in Figure 9.2. Taken together with Hypothesis 11, the result can be interpreted as follows in the present empirical setting: While pioneering has been the superior entry position for BO fund investors in general, investors possessing high levels of reputation have been better off as late movers. In other words, such investors seem to be in a position where they can trade their promi-

nence, i.e., providing certification, for a seat in a subsequent fund irrespective of earlier funds' performance. The finding that there is a price associated with certifications provided by prominent parties supports existing research, e.g., in terms of better financial terms and conditions (Kaplan and Strömberg, 2003; Hsu, 2004), higher stock prices (Pollock *et al.*, 2010), or higher employee salary levels (Chen *et al.*, 2008). This is, though, to my knowledge the first time a study has indicated that prominence may also be exchanged for a favorable entry order position.

H14. When uncertainty levels are high, organizations with favorable reputations will benefit more than others from following. The line of reasoning here was similar to the one called on in the previous hypothesis. The hypothesis was not supported.

9.5 Summary

This chapter has presented and discussed results from testing 16 hypotheses. The first set of hypotheses concerned relations between organizational characteristics and entry order in market settings with moderate and high levels of uncertainty. In situations of moderate uncertainty (here, BO fund investing), experienced and local investors were especially common as first movers, while high-reputation investors tend to take on late mover roles. When investigating investments in situations of high uncertainty (in this study, to invest in a high proportion of first-time VC funds), less experienced investors and those having more than purely financial goals for their investment activities were more likely than others to pioneer.

The second set of hypotheses analyzed links between organizational characteristics, entry order and performance in various levels of uncertain environments. This section showed that variables indicating higher performance multiples from PE fund investing are: (i) smaller organizational size when investing in VC funds, (ii) longer prior experience in PE fund investing activities (although not significantly for VC funds), and (iii) geographical proximity in the case of investing in VC funds, while (iv) reputation in isolation turned out not to have any effect on performance. Moreover, taking on a first mover position in settings with moderate uncertainty, but following instead of pioneering in situations of high uncertainty, were both courses of actions that were associated with superior returns. However, organizations with good reputations will benefit more from following than from pioneering in situations of moderate uncertainty.

Table 9.4 summarizes the results from the hypotheses testing. Support is given when the tested hypothesis has the correct direction and is statistically significant at the $p < 0.10$ level or lower. A hypothesis is reversed when the coefficient is statistically significant but in the opposite direction to that which was hypothesized.

Table 9.4. Summary of hypothesis testing results

AREA	HYPOTHESIS	RESULT
Entry order	H6a. When uncertainty levels are moderate, size will positively impact entry order.	Not supported
	H6b. When uncertainty levels are high, size will negatively impact entry order.	Not supported
	H7a. When uncertainty levels are moderate, longer experience in the field will positively impact entry order.	Supported
	H7b. When uncertainty levels are high, longer experience in the field will negatively impact entry order.	Supported
	H8. When uncertainty levels are moderate to high, geographical proximity to the market in question will positively impact entry order.	BO: Supported VC: Not supported
	H9. When uncertainty levels are moderate to high, having additional objectives besides purely financial motives will positively impact entry order.	BO: Not supported VC: Supported
	H10. When uncertainty levels are moderate to high, a favorable reputation will negatively impact entry order.	BO: Supported VC: Not supported
Performance	H1. In a financial services industry characterized by moderate to high uncertainty, size will positively impact performance.	BO: Not supported VC: Reversed
	H2. In a financial services industry characterized by moderate to high uncertainty, longer experience in the field will positively impact performance.	BO: Supported VC: Not supported
	H3. In a financial services industry characterized by moderate to high uncertainty, geographical proximity to the market in question will positively impact performance.	BO: Not supported VC: Supported
	H4. In a financial services industry characterized by moderate to high uncertainty, having additional objectives besides purely financial motives will negatively impact performance.	Not supported
	H5. In a financial services industry characterized by moderate to high uncertainty, a favorable reputation will positively impact performance.	Not supported
	H11. When uncertainty levels are moderate, pioneers will outperform followers.	Supported
	H12. When uncertainty levels are high, followers will outperform pioneers.	Supported
	H13. When uncertainty levels are moderate, organizations with favorable reputations will benefit more from following than from pioneering.	Supported
	H14. When uncertainty levels are high, organizations with favorable reputations will benefit more than others from following	Not supported

After this discussion of the findings from testing 16 hypotheses, the next, and final, chapter will provide conclusions arrived at from all empirical studies in this dissertation and consider possible implications for future research.

CHAPTER 10

Conclusions and implications

This chapter concludes the dissertation by discussing the primary findings from the empirical studies. Interpretations of general patterns that have been observed and their theoretical meanings are offered. Other insights acquired throughout the development of this dissertation are presented to further the discussion. Then, implications for the private equity research stream, for the entry order literature, and for practice, are elaborated upon. Finally, the limitations of the dissertation and suggestions for future research are discussed.

10.1 Introduction

This dissertation is rooted in a noticeable lack of research about private equity as an asset class in general, and more specifically, about performance determinants for fund investors. The specific aim of the dissertation was formulated as:

> *To enhance the understanding of PE fund investing in general, and, more specifically, to explore how heterogeneity in organization-specific characteristics and entry order strategies may impact investment performance.*

In order to fulfill this aim, four research topics were identified as areas of focus, as illustrated in Figure 10.1. The overall research area concerns the asset class of private equity, with the purpose of providing a broader understanding about PE fund investing in general. Within this area, particular attention was devoted to performance determinants. That is, the dissertation seeks to identify and investigate factors that affect investor returns from PE fund investing. Of possible performance factors, a few organizational characteristics were investigated carefully. However, factors that are more directly controlled and affected by organizations were of greater interest, and thereby merited the need to get a better insight about different investment strategies. Of such investment strategies, entry order was chosen as an area of central importance to this dissertation.

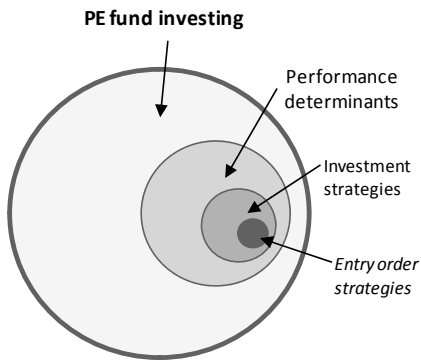


Figure 10.1. Overview of research areas in focus for the dissertation (identical with Figure 1.2)

Aside from the private equity literature, the major theoretical framework for the thesis arrives from the entry order streams of research. By cross-fertilizing first mover

advantage theory with ideas stemming from the imitation literature, the expectation was to develop a richer set of tools to theoretically explain entry order behaviors and outcomes also in environments less commonly described in traditional FMA research, namely, a financial services industry with relatively high levels of uncertainty in many dimensions.

The strategy pursued to fulfill the aim for the dissertation was to apply both an inductive and a deductive research approach. In order to provide a rich and encompassing understanding about private equity as an asset class, a qualitative study was undertaken based on 36 in-depth interviews with institutional PE fund investors located in Sweden and in the UK. In addition, to facilitate a thorough investigation of links between organizational characteristics, entry order and performance, a quantitative study was also carried out. Within the frame for this study, 16 hypotheses were developed that subsequently were tested on a unique database. The information in the database was collected from primary and secondary sources for the purpose of this study; it contains information about Swedish PE fund investments made by 334 institutional investors between 1983 and 2003. The hypotheses were tested using logistic and multiple linear regressions. Furthermore, the data collected for the hypothesis-testing study was also used for: providing an overview of how the Swedish PE fund industry has evolved over time, undertaking a high-level analysis of performance heterogeneity across investor types, and analyzing PE fund performance determinants.

In the following section, conclusions of the findings derived from the empirical studies will be provided.

10.2 Conclusion of findings

Based on the four research areas depicted in Figure 10.1, this section presents concluding remarks on the findings emerging from the studies completed within the frame of this dissertation.

10.2.1 Private equity fund investing

The PE literature review, presented in Section 2.3, pointed at a clear lack of research about private equity as an asset class, where the few studies on the topic tend to be somewhat scattered and contradictory. There is a particular scarcity of studies that thoroughly investigate and theoretically explain performance determinants for PE fund investors. Consequently, this thesis has had a special focus on investigating such performance factors. Before discussing performance, though, a few more general insights about PE fund investing arriving from this work deserve special mention.

From the analysis of the emergence and development of the Swedish PE fund market (see Section 5.2), the crucial roles held by large institutional organizations in the

establishment of the Swedish private equity industry are striking. That is, the industry does not primarily stem from independent entrepreneurial initiatives but rather from formal directives and actions taken by large Swedish institutions. This finding suggests that a private equity market could hardly emerge without strong sponsors, which may consist of private or, for that matter, governmental institutions. The sponsors were important as capital providers – but likely equally important as certifiers to young teams in a nascent market. This finding supports the notion of the importance of legitimacy providers in early life-cycle stages (Hannan and Carroll, 1992; Aldrich and Fiol, 1994).

Another reflection from the overview of the Swedish PE market development concerns how local investors have behaved over the years. After the 'dot-com bubble' burst, Swedish institutions seemed to be quicker to abandon the venture capital segment compared to their international peers. It would be interesting to understand more about the reasons behind this behavior. One explanation may be that local investors had an advantage in comparison with international peers due to their geographical proximity and thereby superior market knowledge (cf. Hobohm, 2009), and hence were faster to withdraw from the market when the VC downturn arrived. That in turn suggests that local VC fund investors could be expected to in general perform better than their international counterparts – which was also one of the results from the hypothesis-testing study (see below). The finding indicates, though, that some kind of 'loyalty' from local investors in terms of continuing to invest in local VC funds during down periods – an expectation that is sometimes put forward by practitioners – does not seem to exist. Also, within the BO fund investment segment, international institutions outnumbered the local PE fund investors over the years. However, here the reason is likely very different from the one described in the previous finding, given the significant differences between the two investment fields. Instead, due to the boom in the buyout market that occurred at the beginning of this century, one plausible explanation for the shift is that international investors with larger capital bases and stronger reputation simply, to some extent, crowded out their local peers.

Another interesting reflection from the overview of the industry development was that local government agencies have been equally committed to BO fund investing as they have been to VC fund investing over the years. This finding is surprising since governmental institutions are expected to put national innovation and growth before financial returns, and thereby to primarily invest in venture capital-oriented funds (cf. Section 2.3.6). One likely explanation is that even these investors need to invest in less risky investments, such as BO funds, to ensure continuous streams of positive cash flows to be used for their core, more inherently uncertain, activities. Still, the result was somewhat unexpected.

A final observation from this descriptive material is that the mix of PE fund investors in Sweden in some ways differs from the composition presented by EVCA for

the overall European market. It was especially interesting to note that whilst banks have been the largest capital providers to European PE funds, they have had a rather modest role in Sweden over the years. On the other hand, asset managers and PE fund of funds have become the largest groups of investors on the Swedish market, which is not the case for the European region as a whole. One partial explanation behind these differences may be that Sweden has a fairly large BO fund industry, and that these latter types of investors seem predominantly to invest in BO funds[37].

The qualitative study provided a more in-depth knowledge about the asset class of private equity. In order to convey a comprehensive understanding about heterogeneity in attitudes and approaches to private equity across investors, the material was split into four groups based on the institutions' respective sources of capital (cf. Barnes and Menzies, 2005; Mayer *et al.*, 2005; Lerner *et al.*, 2007): 'investment companies', 'hybrid' investors, 'balance sheet' investors, and 'non-financial' investors. The analysis revealed noteworthy variations among the different investor types in terms of: investment motives, investment strategies, working methods, and performance satisfaction. The final subsection in Chapter 6 summarizes the results, which both confirmed and amplified a number of previous findings but also offered a number of new insights, whereof some deserve special mention.

First, the analysis broadly confirmed the view that private equity is a difficult asset class to invest in, due to its complex, opaque and uncertain nature. Hence, a number of motives for not investing in PE funds were put forward including: the long investment horizon, the heavy organizational demands, the comparatively high costs, and the extraordinary risks associated with investing in such assets. These specified properties are well in line with some of the characteristics commonly used to describe the asset class (see Section 2.2.5). On the other hand, strong motives for investing in the asset class were also argued for. Several of the reasons addressed during the interviews support findings in earlier research, including: expected high returns and portfolio diversification, an interest in spurring technological development and economic growth, as well as a way to enhance organizational learning (cf. Maula, 2001; Lerner *et al.*, 2007; Phalippou and Gottschalg, 2009). In addition, two other explanations were mentioned. One was related to brand building, where private equity fund investing is expected to positively contribute to an investor's corporate image. Another explanation could be referred to as herd mentality. That is, some of the respondents argued that they became interested in private equity because other investors, especially those perceived as highly prominent on the financial market in question, had begun to invest in PE funds.

[37] Another possible explanation for the observed differences is that the data presented by EVCA likely are incomplete (cf. Ljungqvist *et al.*, 2007, and Section 2.3.4).

One of the more striking observations from this study involved the significant differences in investment strategies across the four groups, which will be discussed next.

10.2.2 Investment strategies

In the analysis of the findings of the qualitative study, it was apparent that the four groups of investors vary along a continuum in their sophistication levels (cf. Lerner *et al.*, 2007) and dedication to private equity – an observation that in itself is not overly surprising. More interesting, though, was that the investors that came through as being the most satisfied with returns belonged to one of the two extreme groups, despite the fact that their respective approaches to investing in private equity differed. On one end of the continuum are the 'investment companies', which are highly dedicated to the asset class and set aside large proportions of managed capital to private equity, maintaining separate PE investment organizations, and possess solid knowledge about the investment area. On the other end of the spectrum are the 'hybrid' investors, which typically do not have any dedicated staff for private equity investing, make only a few PE investments per year and demonstrate a relatively limited understanding about this particular asset class. In between these two extremes, in terms of sophistication and dedication to PE fund investing, were the other two groups of investors.

The 'investment companies' emphasized their rigorous in-house due diligence processes; a majority of the respondents were keen to stress their independence in relation to other investors. The 'hybrid' investors, on the contrary, relied heavily on other LPs' opinions and actions in terms of both evaluating and monitoring funds. In other words, these latter institutions admitted their preference for 'piggybacking' on other institutions with solid reputations as skilled private equity investors. Both groups were highly satisfied with returns – and several explanations for this are plausible. First, these investors have had, in comparison with the other institutions, a relatively high proportion of BO fund investments. This dissertation has clearly confirmed earlier studies that have suggested that BO funds on average have outperformed VC funds (see Section 5.4.4). Hence, the two extreme groups may simply have enjoyed higher returns than the others due to the greater proportion of BO funds in their investment portfolios. Another possible explanation is linked to what type of signals the respondents want to send about performance satisfaction. That is, the representatives for the 'investment companies', where PE fund of funds were in a majority, may have a motive to exaggerate their satisfaction with PE fund investing. The line of thinking here is that several of these companies themselves are dependent on external capital and thus on a generally positive attitude toward investing in this asset class. A third explanation, and perhaps one that is more intriguing, is that both types of investment strategies may lead to satisfactory returns. Research and common practice indicate that investment skills are crucial in order to succeed as a PE fund investor, given the complexity of the

asset class (see Section 2.2.5) – skills that seem to match the profile of many of the 'investment companies' in this study. However, in cases where skills are lacking and hence uncertainly levels are very high, moving late may be a better investment strategy (cf. Kerin *et al.*, 1992; Naveh *et al.*, 2004) – which can lead to imitation of prominent parties, as discussed several times throughout this dissertation. In other words, this result indicates that there may be two very different investment strategies that lead to superior results when investing in PE funds: (i) to be a devoted, highly skilled and independent investor, or (ii) to copy the behaviors and decisions taken by other investors perceived as having high skills and thus prominence within the market in question. This, in turn, suggests that organization-specific characteristics determine which strategy will be the optimal choice for a certain investor.

Another observation about investment strategies from this study is that the 'balance sheet' investors, i.e., the group dominated by public pension funds but which also includes a few family offices/foundations, have in comparison made a large number of investments into VC funds and are more open to investments into first-time funds than any other group. Put simply, they seem to be willing to take on more risks compared with their peers. A possible explanation behind such a behavior, in line with suggestions provided in existing research (Lerner *et al.*, 2007), is that public pension funds may implicitly be subject to political pressures to support venture capital and/or first-time funds in order to stimulate domestic innovation and growth. In other words, they may operate under conditions that are similar to the expectations placed on local government agencies, though somewhat less explicit and less general.

Following this general discussion of private equity investment strategies, the next section will focus more specifically on entry order.

10.2.3 Entry order

Given that entry order is considered one of the more important strategic decisions within the strategy literature (Porter, 1980; Lieberman and Montgomery, 1988) and the current lack of research on possible links between entry order and returns from private equity fund investing, the dissertation has had a particular focus on this area.

The in-depth interviews confirmed the importance of entry order as such, i.e., the question of whether or not to invest in first-time funds is perceived as one of the more important strategic decisions for PE fund investors. Arguments in favor of first-time fund investing were: (i) to ensure a seat in a future fund in case the first is successful, and (ii) some of the best performing funds in recent memory have been first-time funds, due to a large incentive for nascent PE firms to succeed. This 'seat at the table' argument supports the idea of preemption factors addressed within the FMA literature; that is, early movers preempt market opportunities by building early relations with important stakeholders in the field (Lieberman and Montgomery, 1990; McNamara *et*

al., 2008). On the other hand, the basic argument against investing in first-time funds that was put forward in the interviews was the perceived higher risks associated with such investments compared with investing in later funds, which allows earlier performance and behavior to be evaluated. The reduced risk associated with a later entrance, and thus the existence of second mover advantages in cases of high uncertainty, also has strong support in the literature (Kerin *et al.*, 1992; Lieberman and Asaba, 2006), as discussed.

To further investigate entry order strategies, seven hypotheses were developed. A few of them also examined whether the level of environmental uncertainty affected organizations' propensity to move early within a financial services industry, which is here represented by BO and VC fund investing. A schematic overview of the results is presented in Figure 10.2 and Figure 10.3 below.

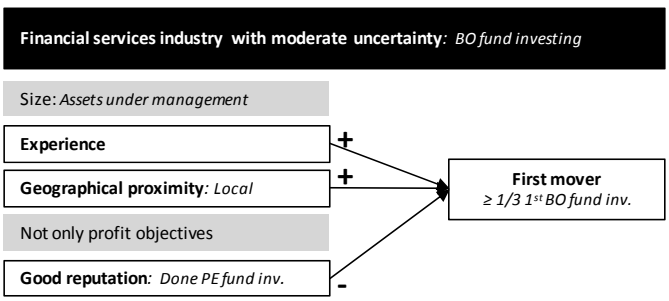


Figure 10.2. Factors affecting investors' inclination to pioneer in a financial services industry characterized by moderate uncertainty (here, to invest in 1st BO funds)

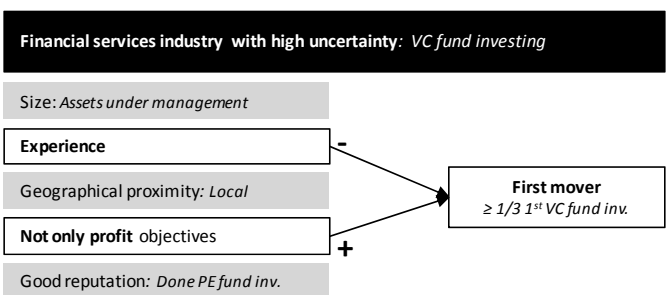


Figure 10.3. Factors affecting investors' inclination to pioneer in a financial services industry characterized by high uncertainty (here, to invest in 1st VC funds)

When investigating entry order in situations where uncertainty levels are not extremely high, which has been assumed to represent the situation for BO fund investing, a few observations were particularly noteworthy. First, investors with extensive experience in the field have been more inclined than others to move early. This finding suggests that the traditional argument in the FMA literature that companies with longer experience

in the field are expected to be early movers, due to their assumed accumulation of the superior skills and resources necessary to make such moves (Mitchell, 1989; Schoenecker and Cooper, 1998), also holds true here. Second, the test results showed that geographically closer investors were more willing to invest in unproven businesses, which was according to expectations. The line of thinking here is that such parties have better knowledge about the market and, thus, the risk of moving early is lower compared with the situation for more distant peers (Cotterill and Haller, 1992).

Third, and rather unexpectedly, the size factor had no impact on entry order – a factor that in most FMA research has been strongly associated with first, or for that matter late, moves. However, the fact that size here reflects the total level of assets under management and not only the capital set aside for PE investing may have distorted the results. That is, even if an organization has large amounts of capital under management, the restrictions related to PE investing may be constrained due to internal and external factors (as discussed in Section 2.2.1) and thus the total capital may be a poor indicator of entry order. Fourth, links could not be found between early entries and having goals other than purely financial ones for investment activities, such as is the case for many corporate and governmental investors. Given that such objectives are especially associated with VC investing, the motives behind investing in BO funds are likely also for these types of organizations to maximize profits (in line with the discussion in 10.2.1).

Finally, the reputation construct was, as a result of the cross-fertilization between the FMA and the imitation literatures, incorporated in the tests of entry order. The idea was that in situations of high uncertainty, such an asset is considered to be highly important (Fombrun, 1996; Deephouse, 2000), and hence it was argued that the reputation concept deserves to be tested in this empirical setting. As hypothesized, firms possessing good reputations turned out not to be especially keen to take on first mover positions, which is here interpreted to mean that such organizations are not willing to jeopardize their strong reputations by interacting with unknown parties (cf. Bowman, 1982; Figenbaum and Thomas, 1986).

Moving over to VC fund investing, which represents a financial investment field characterized by very high uncertainty, the general expectation was that second moves would be expected from large, experienced and established firms (Kerin *et al.*, 1992; Helfat and Lieberman, 2002). The results on this count were interesting. First, as hypothesized, experienced organizations are more inclined to await resolution of uncertainty by taking on second mover roles when investing in VC funds. Second, the fact that size, in terms of financial means, did not have any effect on entry order is likely due to the same reasons discussed above for BO funds. Third, while a favorable reputation was not a statistically significant predictor of late moves, there were indications that high-reputation organizations would also avoid early entry when investing into VC funds. Fourth, as hypothesized, organizations having aims other than profit

maximization for their VC fund investing were found to be early movers. Fifth, and more surprisingly, geographical proximity was not associated with early entry, i.e., Nordic investors were not more prone than anyone else to invest in first-time VC funds. The explanation, as addressed in Section 9.4.1, is that a large number of international investors entered the VC fund market around 2000.

Taken together, except for the specific results just presented, the analysis indicates three things: (i) the level of uncertainty seems to affect which factors explain early or late entry, and thus should be an environmental component to include when testing entry order, (ii) while the existing FMA literature, with its primary focus on mature product markets, seems to accurately explain entry order in cases of moderate uncertainty, the imitation literature contributes with theoretical explanations that apply in situations of high uncertainty, and (iii) reputation turns out to be an asset that affects entry order in situations of uncertainty. Next, performance determinants for PE fund investing will be discussed.

10.2.4 Performance determinants

The first performance analysis presented in the thesis was the univariate analysis of performance heterogeneity across various types of PE fund investors (see Section 5.3). This analysis both supported and rejected earlier research on the topic (Lerner *et al.*, 2007; Hobohm, 2009). The conclusion from this finding was that a more comprehensive analysis of various performance determinants is needed.

A few tests of PE fund performance determinants were also made, which revealed the following findings. The performance of a PE fund is clearly associated to the date when it was founded. Funds raised before 1997 in general performed significantly better than funds raised between 1998 and 2003. This observation verifies earlier research (Gompers and Lerner, 2000; Kaplan and Schoar, 2005; Diller and Kaserer, 2008). Furthermore, it is likely that the strongest predictor of a PE fund's performance is whether it has a VC or a BO focus, as BO funds in general have performed significantly better than VC funds. This finding has strong support in earlier studies (e.g., Manigart *et al.*, 2002; Cumming and Walz, 2010). The analysis also showed that subsequent funds generally perform better than first funds. However, if only evaluating PE firms that have raised a sequence of funds (i.e., not only one fund), for venture capital there are indications that first funds perform better than later funds. This result is an extension of earlier research about links between fund number and performance (cf. Hochberg *et al.*, 2007; Phalippou and Gottschalg, 2009). In contradiction to earlier studies (Nikoskelainen and Wright, 2007; Phalippou and Gottschalg, 2009), these tests did not find any support for the notion that larger PE funds, i.e., those with higher levels of committed capital, generate better returns than do smaller funds.

Thereafter, nine hypotheses concerning performance determinants for private equity fund investing were tested in a multiple linear analysis. Once again, the two submarkets were used to test performance determinants within a financial services industry in situations of moderate versus high uncertainty, i.e., BO versus VC fund investing. An overview of the results is depicted in Figure 10.4 and Figure 10.5.

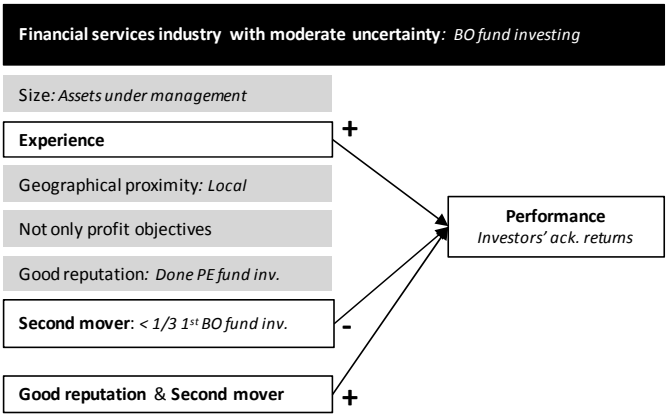


Figure 10.4. Factors affecting investor performance in a financial services industry characterized by moderate uncertainty (here, represented by BO funds)

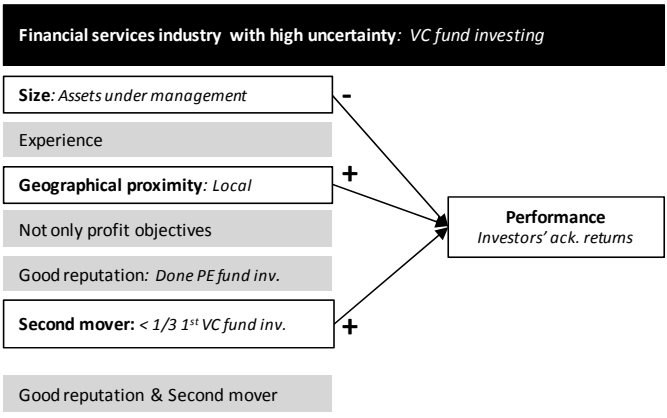


Figure 10.5. Factors affecting investor performance in a financial services industry characterized by high uncertainty (here, represented by VC funds)

A few reflections can be made on the findings emerging from the tests of performance factors in the case of BO fund investing. First, as hypothesized, longer experience in the field had a positive effect on performance. This is likely one of the more strongly supported hypothesis in the strategic literature (e.g., Dreyfus and Dreyfus, 1986) and the finding confirms earlier research about PE fund investing as well (Lerner, 2007).

Second, and potentially more intriguing, a first move was positively associated with performance when investing in BO funds. The result indicates that in situations of moderate uncertainty, first mover advantages do exist in a financial services industry (Lieberman and Montgomery, 1988; López and Roberts, 2002). Third, it was interesting to note that neither size nor geographical proximity were associated with over-performance, which contradicted expectations. Fourth and finally, it was especially remarkable that a good reputation did not have any direct effect on performance, but could be used for altering the otherwise optimal entry order. In other words, an organization can use its prominence in exchange for a less risky (here, later) entry position instead of being forced to enter early. This is likely one of the more interesting results in this dissertation and supports the notion that prominence is an important and valuable asset that can be traded for other favors (Kaplan and Strömberg, 2003; Hsu, 2004; Pollock *et al.*, 2010). To my knowledge, this is the first time that a study has shown that reputation may be used in exchange for a better (read: less risky) entry position, where said organization would still enjoy the same advantages as first movers.

When testing factors affecting performance for VC fund investors, here representing a highly uncertain financial service market, other factors were apparent. First, the negative link between organizational size and performance on the one hand, and the positive link between geographical proximity and performance on the other hand, was elaborated upon and analyzed in some detail in Section 9.4.2. This analysis revealed that Nordic institutions with lower levels of capital under management have received significantly better returns from their VC fund investments compared with both Nordic investors managing larger capital pools and with international investors. This could be interpreted as meaning that small local investors enjoy benefits stemming from their geographical proximity (Stuart and Sorensen, 2003), as well as benefits from being smaller and thus more likely to be flexible compared with larger and international peers. Second, although experience was not statistically significant in the last model when tested for VC fund investing, there was a clear indication that longer experience in the field also has a positive effect on performance for this type of investment. Third, a rather interesting result was that organizations having additional goals for their PE fund investing activities, here represented by government agencies and corporate organizations, did not retain significantly lower returns than did other investors. This finding contradicts both earlier research (Hobohm, 2009) and conventional thinking. The result implies that complementary goals do not necessarily lead to lower financial performance. Fourth, it was interesting to note that also in the case of VC fund investing, organizational reputation does not have any particular impact on financial results. This finding once again emphasizes that a good reputation in itself is not a predictor of superior performance, but rather needs to be exchanged for other favors to impact performance (Benjamin and Podolny, 1999; Deephouse, 2000; Roberts and Dowling, 2002). Finally, as expected, in a highly uncertain area such as VC

fund investing, taking on a late mover position was clearly associated with higher performance, which supports earlier research (Kerin *et al.*, 1992; Lieberman and Asaba, 2006).

To summarize, the analysis of possible performance determinants for PE fund investing indicates, in addition to the specific results just presented, that: (i) the level of uncertainty seems to be related to how entry order affects performance determinants and hence needs to be taken into account when evaluating first and late mover advantages, and (ii) reputation is not an asset that in itself contributes to superior performance, but it can be used in exchange for benefits, such as a favorable entry order position, that subsequently may lead to enhanced performance.

After presenting the main findings derived from the empirical studies included in this thesis, the next section will discuss possible implications.

10.3 Implications

The dissertation makes several relevant contributions that apply to: (i) the body of private equity research, (ii) the entry order literature, and (iii) practitioners.

10.3.1 Contributions to the private equity literature

This dissertation responds to a call for more research about private equity fund investing. Although the literature about private equity has grown significantly over the years, this particular area has remained relatively unexplored. The dissertation makes some valuable contributions to the field, three of which are especially important to highlight.

First, a central aim of this study was to provide a rich and comprehensive understanding of private equity as a financial asset class. Hence, significant effort has been expended to study the topic from multiple research angles. First, a rigorous literature review was conducted, encompassing more than 300 papers and books within the field of private equity research with relevance to the dissertation. Next, detailed data about 73 Swedish private equity funds and their 334 investors were gathered, primarily through personal interviews but also from secondary sources. Finally, 36 in-depth interviews were carried out with a variety of PE fund investors. Hence, multiple perspectives on private equity fund investing are offered within the frame of the dissertation, including: (i) an extensive overview of what scholars currently know about the field, (ii) a discussion of how the Swedish PE fund investment area has evolved and developed from its earliest stages to the present, (iii) deep insights into how various groups of fund investors perceive and manage investment strategies for this asset class, and (iv) an enhanced and detailed understanding of performance determinants for PE fund investing related to organizational characteristics and entry order strategies. Consequently, the dissertation has contributed to the literature by providing a consi-

derably broader understanding of private equity as an asset class than previously existed.

Second, this dissertation builds on a theoretically grounded model arrived at primarily from the fields of strategy, economics and sociology. The few existing studies about private equity fund investors tend to be either primarily empirically oriented without any clear theoretical basis (e.g., Da Rin and Phalippou, 2010; Groh and Von Liechtenstein, 2011) or rooted in the finance literature (e.g., Gompers and Lerner, 1998; Mayer *et al.*, 2005; Lerner *et al.*, 2007; Hobohm, 2009). That is, in an effort to understand private equity investing from a financial perspective, behavioral elements tend to be overlooked. As such, this study contributes with explanations of observed phenomena that not only describe economically rational behaviors, but also highlight sociologically rational motives.

Third, the hypotheses developed within the frame of this dissertation have been tested on a primary and comprehensive dataset. Given a background as a professional venture capital investor in the Swedish market, I was in a position to utilize my network to get access to truly unique data. The dataset has several advantages over many others used in the literature. First, unlike commercial databases provided by vendors such as Venture Economics or Dow Jones Venture, it is free from self-reporting and survivor biases (cf. Ljungqvist *et al.*, 2007). Second, it is a full population database in the sense that it contains all PE funds raised in Sweden following the criteria outlined in Section 4.4.1. Third, all information collected is reported in a homogenous way, including performance data, which makes comparisons straightforward and reliable.

10.3.2 Contributions to the entry order literature

When testing hypotheses about entry order, the dissertation made use of the related theories stemming from the first mover advantage and the imitation literatures. A few distinct contributions to these streams of research deserve special attention.

First and foremost, Lieberman and Montgomery's (1988) seminal model of first mover advantages was further developed and extended in several dimensions in the dissertation. In response to a recent call for further investigation (Lieberman and Asaba, 2006), the theoretical insights about entry order were developed by cross-fertilizing the 'empirically heavy' first mover advantage research with the 'theory-heavy' imitation literature. In such a way, the new model developed was expected to better explain entry order behaviors and subsequent outcomes in a financial services industry. Varying levels of uncertainty played a particularly important role in this thesis, in response to a recent call to extend the environmental categorization to a more overarching level (cf. Suarez and Lanzolla, 2007). The next extension of the model concerns the micro side. By adding the construct of reputation, a so-called 'social approval asset', the model was assumed to be more applicable to environments typically in focus

in the imitative body of literature, i.e., highly uncertain contexts (Fombrun, 1996; Deephouse, 2000). Furthermore, by incorporating more recent research from both the FMA literature and the imitation streams of research (e.g., Schnaars, 1994; Lieberman and Montgomery, 1998; Boulding and Christen, 2008), the model also embraced late movers to the same extent as it did first movers.

Second, the dissertation has contributed by empirically testing the FMA theory in two new ways. The empirical area chosen was the private equity fund investment segment, which exemplifies an environment characterized by particularly high uncertainty in many dimensions; one that has rarely been in focus for traditional FMA research. Furthermore, the extended FMA model was tested in a novel way by defining first and late movers based on their propensity to invest in first or subsequent PE funds. In this manner, the research model was tested in an even more rigorous way.

Third, the dissertation contributes with suggestions on how to operationalize two central and complex theoretical concepts. When operationalizing the reputation construct, existing research about reputation and similar concepts was used as inspiration. Given the scarcity of empirical research about links between organizational reputation and performance, the proposed operationalization and following tests may constitute a reference for future studies. Furthermore, the ways of defining first and late movers are unique and may constitute a source of inspiration for other researchers in the future.

Finally, while the results from the hypothesis testing both confirm existing knowledge and add new insights in several areas, three theoretical conclusions deserve special mention. First, these findings again provide evidence for the notion that FMA theory definitely can be extended beyond the traditional focus on product or geographical contexts, and be applied in new settings (cf. Naveh *et al.*, 2004; McNamara *et al.*, 2008) – especially when cross-fertilized with ideas derived from the imitation streams of research. Second, the results provide a strong endorsement of the more dynamic and generic categorization of the macro environment in terms of various levels of uncertainty used in this dissertation (Lieberman and Asaba, 2006). Third, it was tested and confirmed that reputation is a tradable resource that can be used in exchange for advantageous entry order positions. This has to my knowledge never been tested in previous research, and it adds significantly to the understanding of the market for affiliation (Stuart *et al.*, 1999; Hsu, 2004).

10.3.3 Implications for practitioners

This dissertation has highlighted a number of findings that ought to be of interest to practitioners working within, or in close connection to, the private equity industry.

An enhanced general understanding about the capital providers to private equity is obviously of great importance to most stakeholders in this particular industry. For

PE firms, for which fundraising is a crucial element of survival, such insights are critical. For these firms, increasing the knowledge about the types of investors that will be likely to invest in a specific fund, what return expectations various investors have, and what bargaining power they can be expected to exert, should facilitate and improve fund-raising processes.

A more comprehensive understanding about this specific area is likely to be of vital interest for policymakers as well. From this dissertation, policymakers can derive information about investment areas that non-public investors tend to avoid and that therefore may be in need of governmental support or intervention. That many private investors have abandoned the venture capital fund segment is not surprising news. However, this dissertation provides insight about another area that potentially deserves more public attention, namely, the interest in investing in the first fund raised by a newly founded PE firm. In addition, the study may also be used to evaluate how government agencies have operated on the market. One interesting observation is that these types of investors do not gain, contrary to expectations, significantly lower returns from their private equity investing activities as the average investor.

Clearly, the practical implications of the study should be particularly important to PE fund investors. The study has provided them with a broad understanding about the relationships between organizational characteristics and order of entry behaviors on the one hand and expected returns on the other. The results once again confirm the widespread assumption that success from PE fund investing is highly related to the mix of fund types, i.e., BO and VC funds, in a portfolio. But beyond that, the study also pointed at several other important performance indicators. First, an optimal investment strategy depends on organization-specific characteristics in terms of size, experience, nationality and reputation. Hence, institutional investors need to define what, for them, would be the optimal way to operate in the asset class. Second, the connection between organizational characteristics and an optimal investment strategy in terms of entry order is highly dependent on the prevailing environmental situation (in this context, the level of uncertainty). Thus, the strategies need to be continuously adjusted for the current macro environment. Finally, it is significant that institutional investors perceived as having a good reputation can use this resource to achieve more favorable positions and, thereby, enjoy better performance.

10.4 Limitations and directions for future research

This research, like all other empirical studies, is not without its limitations. However, many of the limitations may also offer promising follow-on questions for future investigations. There are three categories of limitations that are particularly important to emphasize within the frame of this dissertation: (i) limitations concerning the chosen research methods and units of analysis, (ii) limitations due to choices of variables and

operationalizations of theoretical constructs, and (iii) limitations concerning how the results may be generalized to other contexts. Some concerns, limitations and suggestions for future research considered to be particularly critical will be elaborated upon below.

10.4.1 Choice of methods

One central concern in the hypothesis-testing study is related to causality, which was already discussed in Section 4.6.7 but deserves to be commented upon again. Although the study combines survey data and secondary data collected at different points in time, the nature of the study is essentially cross-sectional. Such a design may limit opportunities to claim causality in identified relations purely based on findings from the empirical tests. However, the hypotheses were developed on the basis of entry order theories and existing PE research, which is considered to reduce the risks of converted causality. Other features of this study and the collected data, e.g., the long study period and the evidence-based type of data used, also improve the possibility of claiming causality between the independent and the dependent variables. Nevertheless, a longitudinal research approach could help to alleviate any concerns dealing with causality.

Another potential issue with the current research, also discussed in Chapter 4 but worth highlighting again, concerns the data collection methods, which were primarily based on interviews. Given the sensitivity of the information and the respondents' reluctance to make information public, the decision was made not to record interviews and to preserve anonymity. This may complicate the possibility of other researchers repeating the study. This issue is less problematic for the hypothesis-testing study, given its highly structured format, the collection of factually based data, and that parts of the information were verified by secondary sources. However, for the qualitative study, such an approach may challenge the reliability of the results. Methods that could be used to reduce the negative effects of this approach were discussed in Section 4.3.2, including rapid follow-ups with respondents in cases where clarifications were needed and immediate transcriptions. Since the interviews were only one out of several data sources used in the dissertation (i.e., in addition to the literature review, the quantitative survey and secondary data sources), the risks of not identifying clearly biased information were reduced. Still, this is a limitation to keep in mind.

10.4.2 Included variables and operationalization of constructs

The hypothesis-testing study makes use of a number of fixed-effect and variable organization-specific factors for determining the influence on entry order and performance. Additional independent variables would allow for more fine-grained analyses. In particular, the issue of how social networks and business relations between investors

and PE fund managers, consultants, etc., may impact imitative behaviors and subsequent performances would be interesting to evaluate further.

Two other matters to reflect upon concern how performance was measured in the study. Two measurements are common in the private equity industry: IRR and multiples between proceeds and costs of investments. In this dissertation, the latter performance measurement was used. However, multiple ratios do not take into account timing factors and hence it would have been valuable to compare the results using IRR as the performance measure. Furthermore, investor performance was calculated on an aggregated level (cf. Lerner *et al.*, 2007). Evaluating entry order and performance on a fund-by-fund basis, instead of using this chosen aggregated level, would represent an alternative or even a complementary way to test the hypotheses. Using multiple performance measures is considered a fruitful way to pursue strategic management research in general, since performance is considered to be multidimensional (Venkatraman and Ramanujam, 1986).

Another, potentially larger, issue concerns how the reputation concept has been operationalized. As discussed in Section 7.2.3, operationalization of such a complex construct is no easy task. The decision was made to operationalize reputation as experience in terms of previously made PE fund investments. One suggestion for future studies is to test this operationalization of reputation in other contexts in order to evaluate its validity.

The way the first mover construct was operationalized in this study also merits further consideration. The definition of first movers used here was based on the percentages invested in first versus later PE funds. Since this was a novel way of applying the FMA theories, no common method of splitting the organizations into first versus late mover groups was available for use. Thus, the investors were divided into first and late mover categories fairly arbitrarily, based on the proportion of first versus later funds. However, robust checks to investigate whether small adjustments of the limit caused any significant changes in the result were made, and this turned out not to be the case. In the future, checking whether this operationalization is valid when tested on other PE fund databases would be a valuable way to further add to the theories of entry order.

10.4.3 Generalizability

A central question that is applicable to most research is related to its generalizability to other contexts – and here the discussion primarily concerns the hypothesis-testing study. There may be a risk that the findings in this dissertation are only applicable to; (i) a single industry, or even only to part of an industry, (ii) a single period in time, and (iii) a single population. These three possible limitations will be discussed below, in reverse order.

The population in focus for this study is institutional investors investing in Swedish private equity funds. This group represents approximately 60 percent of the total capital that has flowed into the Swedish PE industry throughout the study period. This capital has been invested in the most common type of investment vehicles in the PE industry, i.e., the limited partnership structure with independent and closed-end funds. However, the remaining 40 percent of the capital was invested in other types of vehicles, e.g., publicly listed PE firms, subsidiaries of corporate organizations, government-affiliated investment programs, etc. The capital arrives from various sources, such as corporate investors, government authorities, business angels, private individuals, etc. These types of structures tend to have somewhat different investment models in comparison with the limited partnership structure, e.g., often by having an evergreen type of investment horizon. A suggested expansion of the current research is to explore how investment strategies and levels of performance differ across various types of PE investment structures. For example, given the ongoing debate about the prevalent crisis in the VC industry (e.g., Mason, 2009), it would be interesting to investigate whether alternative structures are more suitable for these particular types of investments in the long run.

Moreover, the Swedish context of the study might place some constraints on the generalizability of the results to other national contexts. However, there are several arguments for why the results may well be generalized to other PE fund markets. First, PE fund investing is in many respects highly standardized and international, e.g., agreements between LPs and GPs follow standardized formats and compensation schemes, working procedures on both the LP-GP and the GP-portfolio firm levels are fairly similar in most regions, and there is a large presence of international institutional investors in most geographies. Second, Sweden shares many characteristics with other developed economies in terms of technological progress, financial structures, and market conditions. Hence, it is expected that the results presented in this dissertation can be generalized to PE fund investing occurring in other geographical areas. Having said that, it would be interesting to carry out a multi-country study.

The period of study range from 1983 to 2003, a period that was extreme in many ways. Booms and busts during this period have affected the entire PE market, but especially the venture capital segment. Whether the VC market ever will get back to what it was just before the 'dot-com bubble' burst is debatable. There have been arguments put forward that the current venture capital crisis will force the industry to downsize (which is already occurring) and that new investment models and structures for VC investing are emerging, e.g., boutique funds and angel-backed investments (Mason, 2009). Hence, the VC market could change shape radically and thus the results related to these types of funds will be limited to this specific period in time. However, the study period is long enough to have captured both booms and busts, which hopefully on a general level has eliminated the most pronounced extremes. That is, the

results arrived at in this dissertation, based on measuring variables on aggregate levels, are likely to be applicable to the PE fund investment market in the future, even if some adjustments are made to the investment models. Nevertheless, continuing to track what is happening in this dynamic industry will constantly lead to new insights.

Finally, the industry, or part of the industry, in focus for this dissertation is the private equity fund investment market. I believe that the extended model of first and late mover advantages as presented in this dissertation is fairly general and may be transferred to other industries. In cases where the environmental conditions set out for the hypotheses developed within the frame of the current study are similar, i.e., a financial services industry with moderate to high uncertainty, the conclusions are expected to carry over as well. Still, a systematic empirical test of the model in other financial industries would be a useful and important extension.

10.5 Final thoughts

Institutional investing into private equity has grown dramatically throughout the years and has become a significant investment sector. Given that a large proportion of this funding arrives from most of us, at least indirectly, through our bank savings, future pensions, taxes, insurance, etc., an enhanced understanding about the phenomenon of private equity investing ought to be of great interest to many people. Still, private equity as an asset class is considered to be one of the less well-understood segments of today's financial markets. I believe that this dissertation has contributed one small but significant piece to the larger puzzle that is this investment area. Furthermore, I hope that the thesis has been conducted in such a manner that future researchers see value in using it as a foundation from which to further expand the understanding about the asset class of private equity.

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Appendices

Appendix 1. Private equity glossary

The definitions originate from the following sources: Own definitions (see Chapter 2), the European Private Equity and Venture Capital Association (EVCA), AltAssets, and Preqin[38].

TERM	DEFINITION
Alternative assets	A class of investments into non-traditional assets. Alternative assets include, e.g., real estate, infrastructure, commodities, hedge funds and PE funds.
Asset allocation	The percentage breakdown of an investment portfolio, showing how managed capital is divided among different asset classes. To many investors the objective is to create a well-diversified investment portfolio and thereby to balance risk.
Assets under management (AUM)	The total amount of capital available for future investments plus the amount of capital already invested (also known as *Capital under management*).
BO	See *Buyout*.
Business angels	Private individuals investing a proportion of their assets directly into unquoted companies to which they have no family connections. Business angels provide both funding and business expertise in return for equity (also known as *Informal venture capital investors)*.
Buyout (BO)	A transaction financed with a mix of debt and equity in which a business, business unit or company is fully or partly acquired from other shareholders.
Buyout capital	A subset of private equity, referring to investments made in buyout transactions.
Buyout firm	A PE firm whose strategy is to make buyouts.
Capital distribution	The net return that an investor in a PE fund receives, i.e., the income and capital realized from investments less expenses and liabilities.
Carried interest	A share of the profit accruing to the general manager once the limited partners have achieved repayment of their original investment in the fund plus a defined hurdle rate.
Closed-end fund	The predominant investment vehicle in the PE industry is the independent, private, fixed-life, closed-end fund, usually organized as a limited partnership. It is termed 'closed-end' since the number of investors is fixed for the life of the fund and closed to new investors.
Corporate private equity firm	A PE firm that is tied to a larger organization, typically a bank, insurance company or corporation, where the parent organization allocates capital from internal sources (also known as *Captive PE firm*).

[38] www.evca.eu, www.altassets.com, www.preqin.com

Appendix 1, continued

TERM	DEFINITION
Draw down	When investors commit to back a PE fund, the funding will typically remain with the limited partners until the PE firm, i.e., the general partner, has decided upon a specific investment target. Thereafter, the PE firm approaches the limited partners to 'draw down' money from the committed capital.
Due diligence	The investigatory process at a PE fund or company level, performed by investors to assess the viability of a potential investment and the accuracy of the information provided by the target company.
Early-stage financing	Investments in firms that have recently been, or are still in the process of being, established. There are two main categories of early-stage financing: startup and seed.
Endowment fund	An investment fund created, normally based on donations, in support of the work of a particular non-profit institution, e.g., a university, a hospital or a church.
Evergreen fund	A fund in which the returns generated by its investments are automatically channeled back into the fund, rather than being distributed to the fund investors and thus having an infinite life (compare *Closed-end fund*).
Exit	Liquidation of holdings by a PE fund. Among the various methods of exiting an investment in a portfolio firm are: (i) initial public offering, (ii) trade sale, (iii) sale to another PE firm or financial institution, (iv) company buyback, or (v) write-off.
Expansion capital	Investments aiming to grow and expand established firms, e.g., to enter new markets or expand operations (also known as *Development* or *Growth capital*). Capital provided for turnaround situations is often included in this category.
Family office	A privately owned firm that manages investments and trusts for a single wealthy family.
First (-time) fund	The first fund raised by a particular PE firm, irrespective of whether the firm is set up of managers who have never raised a PE fund before, or if the managers have former experience from private equity investing in other constellations.
Fund investor	The investors investing capital into a PE fund (compare *Institutional investor* and *Limited partner*).
Fund manager	A PE firm that manages a PE fund (also known as *Management company*; compare *General partner*).
General partner (GP)	The managing partner in a PE firm who has unlimited personal liability for the debts and obligations of the limited partnership and the right to participate in its management. In other words, the general partner is the intermediary between the fund investors with capital, and businesses seeking capital (compare *Limited partner* and *Limited partnership*.)
GP	See *General partner*.
Growth capital	See *Expansion capital*.
Hurdle rate	The minimum amount of return that the general partner needs to return to the limited partners in addition to the repayment of their initial commitment before the general partner is entitled to deduct carried interest (also known as *Preferred return*).

Appendix 1, continued

TERM	DEFINITION
Initial Public Offering (IPO)	The sale or distribution of a company's shares to the public for the first time. An IPO of a portfolio company's shares is one way in which a PE fund can exit from an investment.
Institutional investor	A professional entity or organization whose primary purpose is to invest its own assets or those it holds in trust for others. Examples of institutional investors, based on this definition, are: pension funds, insurance companies, banks, investment companies, endowments, family offices, corporate investors, and governmental organizations.
Internal rate of return (IRR)	The interim return earned by the PE fund investors from inception to a stated date. The IRR is calculated as an annualized effective compounded rate of return, using monthly cash flows and annual valuations.
Investee firm	See *Portfolio firm*.
Investment company	A company that invests pooled capital of its shareholders in a variety of asset classes.
Investment multiple	The ratio between (i) the total value that the PE fund investor has derived from its investments in a particular PE fund, i.e., the capital distribution, and (ii) the total investment made by the investor into the fund, expressed as a multiple. This measure does not reflect the time value of money, and, therefore, will not show whether one fund investment has returned value to its investors more quickly, or slowly, than another.
IPO	See *Initial public offering*.
IRR	See *Internal rate of return*
Late stage financing	Investments into established, medium-sized companies to finance strategic moves, such as expansion, growth and acquisitions.
Leveraged buyout (LBO)	A buyout of a company incorporating a particularly high level of debt, normally secured against the company's assets.
Limited partner (LP)	Institutional investors, or high net worth individuals, investing capital into a PE fund in a limited partnership (compare *General partner* and *Limited partnership*).
Limited partnership	The standard legal structure used for investments in PE funds, composed by one general partner and a number of limited partners. The general partner manages the investments and is liable for the actions of the partnership, while the limited partners commit capital to the fund and are liable only to the extent of their investments. A limited partnership has a fixed life.
Liquidation	See *Exit*.
LP	See *Limited partner.*
Management company	See *Fund manager*.
Management fee	Annual fee received by the general partner from its limited partners, meant to cover the costs of running and administering a fund. Management fees during the investment period are typically calculated as a percentage fee applied to the commitments made by the limited partners to the fund.

Appendix 1, continued

TERM	DEFINITION
PE	See *Private equity*.
Portfolio company	The company or entity into which a PE firm invests (also known as *Investee company*). The full set of companies currently backed by a PE firm is referred to as the PE firm's investment portfolio.
Preferred return	See *Hurdle rate*.
Private equity (PE)	The professional provision of capital and management expertise to companies in order to create value and subsequently, with a clear view to an exit, generate capital gains after a medium- to long-holding period. PE firms act as financial intermediaries between businesses and, primarily, institutional investors. Private equity consists of two types of investment classes: venture capital and buyout capital.
Private equity firm	The company that invests, manages and exits a portfolio of PE investments on behalf on its investors. The general model for PE investments is hands-on, i.e., the PE firm is expected to bring not only money but also domain knowledge, business contacts, brand equity, and strategic advice to their portfolio firms (compare *General partner*).
Private equity fund	A vehicle for enabling pooled investments by a number of investors in equity and equity-related securities of companies. The fund normally takes the form of an unincorporated arrangement, such as a limited partnership.
Private equity fund of funds	PE funds whose principal activity consists of investing in other PE funds.
Public pension fund	A fund set up by a government entity to invest the pension contributions of members and employees in securities and a variety of assets, as well as to pay out pensions to those people when they reach retirement age.
Seed financing	The provision of very early-stage finance to a company with a business venture or idea that has not yet been established, i.e., before it has reached the startup phase (also known as *Seed capital*; compare *Early-stage financing*).
Startup financing	Finance to companies after their seed but before their expansion phases (also known as *Startup capital*; compare *Early-stage financing*).
Subsequent fund	The second, third, fourth, etc. PE fund raised by a particular PE firm (compare *First (-time) fund*).
VC	See *Venture Capital*.
Venture capital (VC)	A subset of private equity, referring to primarily equity investments made into privately owned companies with large growth potential in their seed, startup or expansion phases.
Venture capital firm	A PE firm focusing on venture capital investments.
Vintage	The year in which a PE fund has been formed and makes its first investment.
Write-off	The write-down of a portfolio company's value to zero. The value of the investment is eliminated and the return to investors is zero or negative.

Appendix 2. Private equity literature review: General

This table lists the refereed journal articles, selected books and working papers on private equity outlined in Chapter 2. Studies appear in the same order as presented in the literature review, and then in alphabetical order.

RESEARCH TOPIC	THEORY STREAM	
	Finance & Economics	**Entrepreneurship, Organizational, Management & Sociology**
PE firms' working processes	Admati and Pfleiderer (1994) JF Fried and Hisrich (1994) FM Gompers (1995) JF Hellmann (1998) RAND Kaplan and Strömberg (2004) JF Lerner (1994a) FM Meuleman *et al.* (2009) JBFA Sahlman (1990) JFE	Barney *et al.* (1996) JBV Bygrave (1987; 1988) JBV Lockett and Wright (2001) OM Dimov *et al.* (2007) JBV Macmillan *et al*. (1985) JBV Podolny (2001) AJS Sapienza and Gupta (1994) AMJ Seppä (2003) Shane and Cable (2002) MS Sorenson and Stuart (2001) AJS Steier and Greenwood (1995) JBV Tyebjee and Bruno (1984) MS Zacharakis and Shepherd (2001) JBV
PE firms' added value	Bottazzi *et al.* (2008) JFE Cressy *et al.* (2007) JCF Gompers (1996) JFE Hellmann and Puri (2002) JF Hsu (2004) JF Muscarella and Vetsuypens (1990) JF Sørensen (2007) JF	Arthurs *et al.* (2008) JBV Barney *et al.* (1996) JBV Berg-Utby *et al.* (2007) VC Busenitz *et al.* (2004) JBV Fried *et al.* (1998) JBV Gorman and Sahlman (1989) JBV Large and Muegge (2008) VC Podolny (2001) AJS Rosenstein *et al.* (1993) JBV Sapienza (1992) JBV Sapienza *et al.* (1996) JBV Stuart *et al.* (1999) ASQ Zarutskie (2010) JBV
Portfolio firm performance	Barry *et al.* (1990) JFE Brav and Gompers (1997) JF Cressy *et al.* (2007) JCF Diller and Kaserer (2008) EFM Harris *et al.* (2005) RES Hellmann and Puri (2002) JF Jain and Kini (2000) JBFA Kortum and Lerner (2000) RAND Muscarella and Vetsuypens (1990) JF	Bottazzi and Da Rin (2002) EP Davila *et al.* (2003) JBV Florin (2005) JBV

Appendix 2, continued

RESEARCH TOPIC	THEORY STREAM	
	Finance & Economics	**Entrepreneurship, Organizational, Management & Sociology**
Macro factors	Black and Gilson (1998) JFE Gompers and Lerner (2000) JFE Jeng and Wells (2000) JCF Romain and van Pottelsberghe de la Potterie (2004a; 2004b) *WP*	Leleux and Surlemont (2003) JBV Manigart (1994) JBV Zacharakis *et al.* (2007) JIBS
PE fund performance	Chen *et al.* (2002) JPM Cochrane (2005) JFE Conroy and Harris (2007) JAF Driessen *et al.* (2008) *WP* Gottschalg (2010) *WP* Groh & Gottschalg (2008) *WP* Hwang *et al*. (2005) CEAP Jones and Rhodes-Kropf (2003) *WP* Kaplan and Schoar (2005) JF Ljungqvist and Richardson (2003) *WP* Phalippou and Gottschalg (2009) RFS	
PE fund performance determinants	Cressy *et al.* (2007) JCF Das *et al.* (2003) JIM Diller and Kaserer (2008) EFM Driessen *et al.* (2008) *WP* Gompers and Lerner (1996) JLE Gompers and Lerner (2000) JFE Gompers *et al.* (2009) JEMS Hochberg *et al.* (2007) JF Kaplan and Schoar (2005) JF Kaplan *et al.* (2003) JFI Laine and Torstila (2004) *WP* Ljungqvist and Richardson (2003) *WP* Megginson (2004) JAF Metrick and Yasuda (2010) RFS Nikoskelainen and Wright (2007) JCF Phalippou and Gottschalg (2009) RFS Sahlman (1990) JFE Schmidt (2006) JAI	Hege *et al.* (2008) *WP* Jääskeläinen *et al.* (2006) ETP Manigart (1994) JBV Manigart *et al.* (1994) JSBF Manigart *et al.* (2002) JBV Walske and Zacharakis (2009) ETP

Appendix 2, continued

RESEARCH TOPIC	THEORY STREAM	
	Finance & Economics	**Entrepreneurship, Organizational, Management & Sociology**
Institutional investors	Da Rin and Phalippou (2010) *WP* Fried and Hisrich (1989) *WP* Gompers and Lerner (1996) JFE Gompers and Lerner (1998) *WP* Gompers and Lerner (1999a) JFE Groh and Liechtenstein (2009) *WP* Hellman *et al*. (2004) RFS Hobohm (2009) Lerner and Schoar (2004) JFE Lerner *et al.* (2007) JF Mayer *et al.* (2005) JCF Müller (2008) Phalippou and Gottschalg (2009) RFS Schertler (2005) APE Schmidt and Wahrenburg (2004) *WP*	Barnes and Menzies (2005) VC Litvak (2004) *WP*

AJS=American Journal of Sociology

AMJ=Academy of Management Journal

APE=Applied Financial Economics

ASQ=Administrative Science Quarterly

CEAP=Contributions to Economic Analysis & Policy

EFM=European Financial Management

EP=Economic Policy

ETP=Entrepreneurship Theory and Practice

FM=Financial Management

JAF= Journal of Applied Corporate Finance

JAI=Journal of Alternative Investments

JBFA=Journal of Business Finance and Accounting

JBV=Journal of Business Venturing

JCF=Journal of Corporate Finance

JEMS=Journal of Economics and Management Strategy

JF=Journal of Finance

JFE=Journal of Financial Economics

JFI=Journal of Financial Intermediation

JIBS=Journal of International Business Studies

JIM=Journal of Investment Management

JLE=Journal of Law and Economics

JPM=Journal of Portfolio Management

JSBF=Journal of Small Business Finance

MS=Management Science

OM=Omega: The International Journal of Management Science

RAND=RAND Journal of Economics

RES=Review of Economics and Statistics

RFS=Review of Financial Studies

VC=Venture Capital

WP=Working Paper

Appendix 3. Private equity literature review: PE fund performance and performance determinants

This table summarizes the main results in a selected number of studies about returns from PE investments as well as suggested performance determinants. Studies appear in alphabetical order.

Reference: Research reference, i.e., author(s) and paper title.
Data source: Empirical source of data. CEPRES=CEPRES' Private Equity Analyzer. CMBOR=Centre for Management Buy-out and Private Equity Research. Preqin. VentureSource database (former Venture One) provided by Dow Jones. VentureXpert database provided by Thomson Venture Economics.
Sample/Period: (i) Level of analysis: portfolio firm (PF) level, or PE fund level. (ii) Number of objects analyzed within parenthesis. (iii) Type of investments: PE=Private equity, VC=Venture capital, BO=Buyout. (iv) Geography: EU=Europe, RoW=Rest of World, UK or US. (v) Time period covered by the analysis.
Benchm.: Benchmark: S&P 500=Standard and Poor's 500 index of US 500 largest & most liquid firms. CRPS=Center for Research in Security Prices historical index of stocks trades on NYSE, AMEX and NASDAQ. PME=Public Market Equivalent benchmark.

REFERENCE	DATA SOURCE	SAMPLE/PERIOD	BENCHM.	PERFORMANCE	PERFORMANCE DETERMINANTS
Chen *et al.* (2002)	Venture-Xpert	PE funds (148) 100% VC. US. 1960-1999		VC funds have generated annual average compound return (IRR) of 13.4%.	
Cochrane (2005)	Venture-Source	PFs (7 765) 100% VC. US. 1987-2000	S&P 500 NASDAQ CRSP	Positive risk-adjusted excess return gross of fees. Average fund alpha 32% per year.	
Conroy and Harris (2007)	Venture-Xpert	PE funds (1 700) VC & BO. US. 1989-2005	S&P 500 NASDAQ	Average returns (net of fees) to investors not as attractive as assumed.	
Cressy *et al.* (2007)	Venture-Xpert	PF (122) 100% BO. UK. 1995-2002			Industry specialization has positive effect on PE firms' profitability.

Appendix 3, continued

REFERENCE	DATA SOURCE	SAMPLE/PERIOD	BENCHM.	PERFORMANCE	PERFORMANCE DETERMINANTS
Das *et al.* (2003)	Venture-Xpert	PF (23 208) 75% VC, 25% BO. US. 1980-2000			High-tech and later stage investments associated with higher exit probability.
Diller and Kaserer (2008)	Venture-Xpert	PE funds (777) 59% VC, 41% BO. EU. 1980-2003			Excess returns in previous fund, ability to select ideas and skilled management positively affect fund performance. Funds closed in years with high capital inflows associated with lower returns.
Driessen *et al.* (2008)	Venture-Xpert	PE funds (958) 72% VC, 28% BO. US. 1980-2003	PME	High market beta for VC funds, low beta for BO funds. PE risk adjusted returns low.	Significant underperformance of VC funds. No abnormal performance for BO funds.
Gompers and Lerner (2000)	Venture-Source	PE inv (4 069) 100% VC. US. 1987-1995			Excessive inflow of capital to PE industry has positive effects on valuation of PF firms.
Gompers *et al.* (2009)	Venture-Source	PE firms (822) 100% VC. US. 1975-2003			Generalist, in terms of industry, VC firms underperform specialist firms.
Gottschalg (2010)	Venture-Xpert & Preqin	PE funds (701) 100% BO. US & EU. -2003	PME	Average BO funds underperform public market indices by 3% per year (net of fees). Top-quartile BO funds generate better returns than public market investments with the same risk profile.	
Groh & Gottschalg (2008)	Unique dataset	PFs (133) 100% BO. US. 1984-2004	S&P 500	BO fund returns (gross of fees) exceed those of S&P500.	

Appendix 3, continued

REFERENCE	DATA SOURCE	SAMPLE/PERIOD	BENCHM.	PERFORMANCE	PERFORMANCE DETERMINANTS
Hege *et al.* (2008)	Venture-Xpert	PF firms (379) 100% VC. 61% US, 39% EU. 1997- 2003			US VC industry outperforms EU peers, because US VCs: have superior screening skills, invest higher amo-unts, syndicate more, involve corpo-rate VCs, and are more specialized.
Hochberg *et al.* (2007)	Venture-Xpert	PE Funds (3 469) 100% VC. US. 1980-2003			Larger PE funds, better networked PE firms and more nurturing of PF firms have positive effects on successful exiting. Investments in first funds and excessive inflow of capital to the industry have negative effects.
Hwang *et al.* (2005)	Venture-Source & Unique dataset	PFs (9 092) 100% VC. US. 1987-2003	S&P 500 NASDAQ	Average performance less than, but close to, S&P 500.	
Jääskeläinen *et al.* (2006)	Venture-Xpert	PE firms (97) 100% VC. US. 1986-1996			Number of PFs per PE firm partner follows a curvilinear form in terms of number of IPOs.
Jones and Rhodes-Kropf (2003)	Venture-Xpert	PE funds (1245) 70% VC, 30% BO. US. 1980-1999	S&P 500	No excess returns. Fund alphas are positive but insignificant with an average of 4.68 for VC and 0.67 for BO funds.	
Kaplan and Schoar (2005)	Venture-Xpert	PE funds (746) 78% VC, 22% BO. US. 1980-2001	S&P 500	No excess returns. Average fund returns (net of fees) equal to the returns of public equity. Large heterogeneity across funds.	Higher returns in earlier PE funds and higher fund seq. number positively associated with higher fund IRRs. Funds raised in boom times generate lower IRRs. Top-performing funds grow proportionally slower than low performing funds.

Appendix 3, continued

REFERENCE	DATA SOURCE	SAMPLE/PERIOD	BENCHM.	PERFORMANCE	PERFORMANCE DETERMINANTS
Kaplan *et al.* (2003)	Unique dataset	PE firms (70) 100% VC. US & RoW. 1992-2001			Use of US-style contracts positively associated with PE firm survival rates.
Laine and Torstila (2004)	Venture-Xpert	PE funds (138) 100% VC. US. 1970-2002			Larger PE fund sizes positively associated with the proportion of successful exits, while sole funds are negatively associated.
Ljungqvist and Richardson (2003)	Unique dataset	PE funds (73) 15% VC, 85% BO. 91% US, 7% EU, 2% RoW. 1981-2001	S&P 500 NASDAQ	Positive excess return of private equity of 5% to 8% in comparison with S&P 500.	Increased number of investment opportunities positively associated with fund IRR, while inflow of capital to the PE industry negatively associated. BO funds generally outperform VC funds.
Manigart *et al.* (2002)	Unique dataset	PE firms (209) 100% VC. US & EU. 1995-1997			Specialization in later stages, role as lead investors, experienced PE firms and shorter holding periods are associated with higher IRR.
Metrick and Yasuda (2010)	Unique dataset	PE funds (238) 39% VC, 61% BO. US & EU. 1993-2006			Sharp differences between VC and BO fund returns. BO managers increase size of their funds faster than VC managers do. Suggests that the BO business model is more scalable than the VC.
Nikoskelainen and Wright (2007)	CMBOR	PFs (321 BOs) 100% BO UK 1995-2004			Value increase and return characteristics of LBOs related to the governance mechanisms resulting from a leveraged BO.

Appendix 3, continued

REFERENCE	DATA SOURCE	SAMPLE/PERIOD	BENCHM.	PERFORMANCE	PERFORMANCE DETERMINANTS
Phalippou and Gottschalg (2009)	Venture Economics	PE funds (852) 72% VC, 28% BO. 64% US, 36% EU. 1980-2003	S&P 500	After adjusting for sample bias and overstated accounting values for non-exited investments, average PE fund performance underperforms the S&P 500 Index (net of fees) by 3% per year.	More experienced management teams, previous PE fund success and larger fund sizes are associated with better returns. First-time funds and EU- focused funds underperform peers. VC funds underperform more than BO funds.
Sahlman (1990)	Venture Economics & others	- US. 1980-1988			Role as lead investor positively linked to excess returns.
Schmidt (2006)	CEPRES	PE funds (123) BO & VC. US. 1980-2002			In the late 1990s, the PE market performed well. VC funds receive high average returns due to a few well-performing outliers. An ideal PE portfolio size has 20 to 28 investments.
Schmidt *et al.* (2006)	CEPRES	PE funds (70) 34% VC, 66% BO. 65% US, RoW. 1971-1998			Timing impact performance of VC funds. BO funds largely driven by GPs experience, which is not the case or VC funds.
Walske and Zacharakis (2009)	Venture Economics	PE firms (172) 100% VC. US. 1990-1997			VC firms founded by PE fund managers with prior VC, or similar experiences, more likely to raise subsequent funds. VC firms with partners having entrepreneurial backgrounds are less likely to raise follow-on funds.

Appendix 4. Private equity literature review: PE fund investors

This table lists a selected number of studies about institutional investors investing in PE funds, leaving out studies exclusively focused on PE fund performance (for those studies, see Appendix 3). Studies appear in alphabetical order.

REFERENCE	METHOD & SAMPLE[1)]	FOCUS	KEY FINDINGS
Barnes and Menzies (2005)	Interv. 21 LPs VC funds 100% EU	Examines processes and criteria utilized by LPs in selection of VC funds	LPs utilize structured selection processes and criteria when evaluating PE funds. Nurturing informal relationships important part of investment process. LPs may pre-allocate capital to VCs when a relationship already exists.
Da Rin and Phalippou (2010)	Survey 157 LPs BO & VC funds 29% US, 71% RoW 2009	Examines heterogeneity among LPs	Size is the dominant variable, where larger LPs exert more efforts and are favored by PE funds. Experience or investor types play no role once size is taken into account.
Fried and Hisrich (1989)	Interv. 18 LPs VC funds 100% US	Examines LP criteria for VC fund investing	Criteria for selection of GPs: people, teamwork, prior performance, discipline and strategy.
Gompers and Lerner (1996)	140 GP-LP rel. VC funds 100% US 1978-1992	Examines use of contractual covenants in VC agreements	US VC firms may reduce the number of restrictive covenants in years with high supplies of capital. Older and larger VC firms receive greater shares of capital gains than others.
Gompers and Lerner (1998)	400 IPO memor. VC funds 100% US	Examines determinants of VC fundraising	Historic fund performance an important determinant of a GP's ability to raise a new fund. Reputation gained by IPO exits increases the chances of raising a subsequent fund and its size.
Gompers and Lerner (1999a)	419 LP-VC rel. VC funds 100% US 1978-1992	Examines GP-LP partnerships, focusing on compensation schemes	Fixed-base component of compensation higher for younger and smaller VC firms. Reputation an important factor for determining compensation terms.
Groh and Liechtenstein (2009)	Survey 75 LPs VC funds 45% US, 51% EU	Examines how LPs select VC funds	Top criteria for PE fund evaluation: deal flow, track record, local market experience, match of experience with proposed investment strategy, team's reputation, and mechanisms to align interest between GP and LPs. The level of fund fees not important.

[1)]LP=Limited partner, GP=General partner, VC=Venture capital, BO=Buyout capital. PF=Portfolio firm.

Appendix 4, continued

REFERENCE	METHOD & SAMPLE[1)]	FOCUS	KEY FINDINGS
Hobohm (2009)	1 864 LPs BO & VC funds 46% US, 42% EU 1991-2003	Compares different LP types in their fund preferences and returns	Significant differences in preference for fund category depending on LP type. LPs also differ in degree of home bias. Large differences in returns among LPs where insurers and banks are best performers, followed by endowments. Investment corporations, private pension funds and PE FoF return close to the average. Public pension funds and US government agencies generate lowest returns.
Lerner and Schoar (2004)	243 LP-GP rel. BO & VC funds 100% US 1974-2001	Examines rationale for restrictions on liquidity	LPs in US PE funds have limited rights and incentives to direct fund activities. Even in cases LPs are allowed to interfere, this rarely occurs.
Lerner *et al*. (2007)	838 LPs BO & VC funds 100% US 1991-1998	Examines hetero-geneity in perfor-mance and strategies across different LP types	Returns of PE funds that endowments invest in significantly greater than others. Funds selected by banks lag sharply. Older LPs realize better performance than younger.
Litvak (2004)	37 LP-GP rel. VC funds 100% US 1987-2003	Analyzes GP-LP partnership agreements	Surprisingly large variations in VC compensation across funds.
Mayer *et al.* (2005)	508 VC funds GE, JP, UK, IS 2000	Compares invest-ment activities and sources of finance to VC funds	VC investments differ across countries in terms of stage, sector and geographical focus due to funding sources.
Müller (2008)	Interv. 24 LPs BO & VC funds 100% EU 2005-2006	Analyzes role of in-formation flow be-tween GPs and LPs after investment	Information flow plays crucial role in the relationship for decision support, governance enabling, and relationship building.
Phalippou and Gottschalg (2009)	852 PE funds BO & VC 64% US, 36% EU 1980-2003	Measures PE performance and discusses aspects of performance reporting	Performance of PE funds previously reported was overstated. Discusses three sets of potential explanations: learning, mispricing, and positive externalities.
Schertler (2005)	149 LPs VC funds 100% EU 1991-2001	Examines if capital sources affect investment charac-teristics of VC firms and PFs	Type of PE fund investor and VC fund focus is linked.
Schmidt and Wahrenburg (2004)	168 LP-GP rel. VC funds 100% EU 1996-2001	Explores factors influencing design of contracts bet-ween GPs and LPs	Established funds have more contractual covenants than young debut funds with no established reputations.

Appendix 5. Regression diagnostics

This appendix describes the regression diagnostics carried out for the two datasets, i.e., BO and VC fund investments, used in the hypothesis testing in Chapter 9. A list of associated variables is provided in Appendix 12.

As outlined in Chapter 4, all statistical methods have a set of underlying assumptions that need to be fulfilled in order to arrive at trustworthy and reliable results. Given that several of the assumptions apply to both the statistical techniques used in the study, i.e., logistic and multiple linear regressions (see sections 4.5 and 4.6), this appendix will address potential statistical issues jointly.

The **normal distributions** of the independent and non-binary variables were tested through skewness and kurtosis tests. Although normal distribution of independent variables is not a requirement for regressions, severely skewed distributions should be avoided (Hair *et al.*, 2005). Three of the continuous variables, i.e., *Assets under management, Done PE fund investments* and *Experience*, turned out to be substantially skewed. Hence, nonlinear logarithmic transformations were carried out for these variables in order to attain more symmetrical and closer-to-normal distributions. In appendices 14 to 17, the transformed means and standard deviations for these variables are presented, as are the real, untransformed values. The dependent variable used in the second set of hypotheses, *Performance*, adjusted for period effects, as discussed in Section 5.4.1, did not meet the normality criteria either. However, given only a mild skew, it was decided that no further transformation of the performance variable would be undertaken. Normality of the residuals was checked through residual plots, where the plots showed minor and trivial deviations from normality. Since the deviations were small, the result was accepted as close to normal distribution of residuals.

To facilitate control for **multicollinearity**, the variance inflation factors (VIF) were computed for both datasets. Some researchers argue that scores above ten are associated with severe multicollinearity (Hair *et al.*, 2005; Hamilton, 2009), while others propose an even more restrictive view of VIF scores by only accepting values below five (Hahn, 2002). In the current study, two variables in the models used for predicting performance turned out to suffer from multicollinearity (which is a common issue in interaction-effect models). The multicollinearity tests resulted in VIF scores close to, or even above, ten for the variables *Done PE fund investments* and *Second mover*, i.e., the two independent variables used for calculating the interaction terms. A proposed way to reduce multi-collinearity in the case of interaction modeling is to center the variables (Hamilton, 2009). Consequently, this

Table A5.1. Multicollinearity tests. Presentation of VIF factors after centering

Dataset	Max VIF	Avg VIF
BO fund investments	2.22	1.68
VC fund investments	3.16	1.95

was done for the *Done PE fund investments* variable; after this, the issue of multicollinearity, according to the VIF test, was reduced and well within acceptable limits (see Table A5.1). Furthermore, the correlations between the variables *Done PE fund investments* and *Experience* were high even after the former had been centered, i.e., returned a $p = 0.66$ in the BO fund database and a $p = 0.69$ in the VC fund database (see correlation tables in appendices 16 and 17). Hence, in order to double-check that the regression models do not lack unique solutions for these variables, the models were also tested when first leaving out the *Done PE fund investments* variable and, thereafter, *Experience*. None of the results differed in any substantial way; rather, they were more or less identical. Therefore, it was concluded that the models, after centering one of the variables as discussed above, do not suffer from multicollinearity that distorts results.

After that the multiple and logistic regressions had been carried out, the data were inspected in order to identify potential **outliers** and **influential cases**. Examining standardized Pearson residuals is suggested as a way to identify outliers, i.e., cases that potentially fit the regression models poorly (Long and Freese, 2006). Cases that score above 2.58 or below -2.58, i.e., the two-tailed 0.01 level of significance, are typically classified as outliers (Hair *et al.*, 2005). Consequently, the standardized residuals were examined for both datasets, whereby ten outliers were found in total when running the logistic 'entry order' regressions, and two outliers were identified when running the 'performance'-related multiple linear regressions. In order to investigate to what extent individual observations influenced the regression models, Cook's distance was calculated and plotted for both the logistic and the multiple linear regression models (cf. Long and Freese, 2006; Hamilton, 2009). The convention cutoff for observations considered to be influential cases is set to four divided by the total number of observations (Chen *et al.*, 2010). For the models focused on entry order, 11 influential cases were found, and in the performance models, a total of 13 were found. In order to control for the outliers and the influential cases identified, all analyses were run with and without these specific observations included. None of the results differed substantially when running the regressions with all observations included or when leaving out the identified outliers and influential cases. That is, single variables did not change from being significant to non-significant or vice versa in any of the comparisons. Neither did any direction of variables change in the models. Hence, the decision was made not to exclude observations from the analyses.

Another main assumption behind reliable multiple linear regressions is the presence of equal variances among residuals, or so-called **homoscedasticity** (Hair *et al.*, 2005). The residuals' variances are considered 'heteroscedastic', and thus problematic, if they are non-constant. In order to check this assumption, the residuals were plotted against the fitted (i.e., predicted) values. The graphs did not reveal any severe indications of heteroscedasticity for any of the databases.

The **linearity** assumption between the non-binary independent variables and the dependent variables were checked using the STATA command *acrplot* (augmented component-plus-residual plot). When the transformed values were used, none of the independent variables showed any strong deviation from linearity. As such, this assumption was assumed to be fulfilled.

Finally, it could be argued that cross-sectional research may suffer from **causality** challenges (see Section 4.6.7). Two dependent variables are used in the hypothesis-testing study: (i) institutional investors' total returns from Swedish PE fund investing, and (ii) first movers, defined as investors making a considerably large amount of investments into first-time funds. These variables cover data from the entire study period. Furthermore, out of the seven independent variables used in the study, only two are fixed in the sense that they do not vary over time (i.e., *Local* and *Not only profit*). The other five variables all incorporate underlying variances over time. Hence, it could be argued that the risks for reversed causality effects are limited in the proposed models (see also discussion in Chapter 10).

Appendix 6. Overview of interviews, qualitative study

RESPONDENT #	TYPE OF LP	PLACE	TIME	INTERVIEW LENGTH
R1	Asset manager	Face-to-face, Sweden	Spring 2008	60 min
R2	Public pension fund	Face-to-face, Sweden	Spring 2008	90 min
R3	Government agency	Face-to-face, Sweden	Spring 2008	90 min
R4	Insurance company	Face-to-face, Sweden	Spring 2008	90 min
R5	Government agency	Face-to-face, Sweden	Spring 2008	100 min
R6	Public pension fund	Face-to-face, Sweden	Spring 2008	90 min
R7	PE fund of fund	Face-to-face, UK	Spring 2008	75 min
R8	Asset manager	Face-to-face, UK	Spring 2008	60 min
R9	Asset manager	Face-to-face, UK	Spring 2008	60 min
R10	PE fund of fund	Face-to-face, UK	Spring 2008	75 min
R11	Asset manager	Face-to-face, UK	Spring 2008	40 min
R12	PE fund of fund	Face-to-face, UK	Spring 2008	105 min
R13	PE fund of fund	Face-to-face, UK	Spring 2008	105 min
R14	PE fund of fund	Face-to-face, UK	Spring 2008	80 min
R15	Asset manager	Face-to-face, Sweden	Spring 2008	45 min
R16	Corporate investor	Telephone	Spring 2008	45 min
R17	Corporate investor	Face-to-face, Sweden	Spring 2008	40 min
R18	Private pension fund	Face-to-face, Sweden	Spring 2008	60 min
R19	PE fund of fund	Face-to-face, Sweden	Spring 2008	90 min
R20	Public pension fund	Face-to-face, Sweden	Spring 2008	120 min
R21	Foundation	Face-to-face, Sweden	Spring 2008	50 min
R22	Corporate investor	Face-to-face, Sweden	Spring 2008	60 min
R23	Private pension fund	Face-to-face, Sweden	Spring 2008	25 min
R24	Private pension fund	Telephone	Spring 2008	90 min
R25	Bank	Face-to-face, Sweden	Spring 2008	90 min
R26	Public pension fund	Face-to-face, Sweden	Spring 2008	75 min
R27	Foundation	Face-to-face, Sweden	Spring 2008	50 min
R28	Bank	Face-to-face, Sweden	Spring 2008	80 min
R29	Insurance company	Face-to-face, Sweden	Spring 2008	80 min
R30	Public pension fund	Face-to-face, Sweden	Spring 2008	75 min
R31	Government agency	Face-to-face, Sweden	Spring 2008	65 min

Appendix 6, continued

RESPONDENT #	TYPE OF LP	PLACE	TIME	INTERVIEW LENGTH
R32	Insurance company	Face-to-face, Sweden	Spring 2008	45 min
R33	PE fund of fund	Face-to-face, Sweden	Spring 2008	55 min
R34	Corporate investor	Face-to-face, Sweden	Spring 2008	75 min
R35	Public pension fund	Face-to-face, Sweden	Spring 2008	60 min
R36	Corporate investor	Face-to-face, Sweden	Spring 2008	60 min
Number of interviews: 36 Number of respondents: 36 Number of organizations: 36				

Appendix 7. Interview questionnaire, qualitative study

LP			
Date		Interview length	
Respondent			
Position		Years in the PE industry	

FACTS ABOUT THE LP

Background			
Type of LP	Asset manager/Investment company ☐ Bank ☐ Corporate investor ☐ Family office ☐ Foundation ☐ Government agency ☐ Insurance company ☐ PE fund of fund ☐ PE firm ☐ Private pension fund ☐ Public pension fund ☐		
First PE investment (year)		No. of PE inv. professionals	
Total number of done PE fund investments			

Why do you invest in PE?		Very low ext.	Low ext.	Some ext.	High ext.
	Expected high returns	☐	☐	☐	☐
	Attractive risk-return investment	☐	☐	☐	☐
	Portfolio diversification	☐	☐	☐	☐
	Future importance for the LP (e.g., bank)	☐	☐	☐	☐
	Strategic (e.g., corporate LPs)	☐	☐	☐	☐
	Good citizen ship/National development	☐	☐	☐	☐
	Building brand/PR	☐	☐	☐	☐
	Other: _____	☐	☐	☐	☐
Comments					

Appendix 7, continued

	2001	2002	2003	2004	2005	2006	2007
Assets under management							
Total performance (mSEK)							
Performance %							
Investments in alt. assets (%)							
Investments in PE funds (%)							
Investments in Swe PE funds (%)							
Performance PE (%)							

Comments	
Split: (i) direct in PFs, (ii) in PE funds, (iii) in PE Fund of funds	

INVESTMENT FOCUS

Do you have any specific geograp-hical or sector focus?								
What type of PE funds do you invest in?		Never done	Not any longer	Some-times	Often	Very often	Import. in the future?	Access to topQ funds?
	Swe VC	☐	☐	☐	☐	☐	☐	☐
	Swe BO	☐	☐	☐	☐	☐	☐	☐
	Nordic VC	☐	☐	☐	☐	☐	☐	☐
	Nordic BO	☐	☐	☐	☐	☐	☐	☐
	European VC	☐	☐	☐	☐	☐	☐	☐
	European BO	☐	☐	☐	☐	☐	☐	☐
	US VC	☐	☐	☐	☐	☐	☐	☐
	US BO	☐	☐	☐	☐	☐	☐	☐
	Emergent mkt VC	☐	☐	☐	☐	☐	☐	☐
	Emergent mkt BO	☐	☐	☐	☐	☐	☐	☐
	Secondaries	☐	☐	☐	☐	☐	☐	☐
How has the invest-ment focus evolved over time?								

Appendix 7, continued

LP INVESTMENT DECISIONS

Which are the major steps in the decision process?		Length of the investment decision process?	
Who decides on investment criteria?	Owners ☐ LP company board ☐ Investment team (of partners) ☐ Individual investment managers ☐	Comments incl. changes over time	
Who decides on individual investments?	Owners ☐ LP company board ☐ Investment team (of partners) ☐ Individual investment managers ☐	Comments incl. changes over time	

Decision factors when investing in PE funds?	Not important VC / BO	Somew imp. VC / BO	Important VC / BO	Very imp. VC / BO
Past PE fund performance	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Diversification	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Team (exp. fr PE investing)	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Favorable terms (e.g., hurdle, carry)	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Status of lead investor	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Existing LPs invest	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Ability to co-invest with GP	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Ability to co-invest with other LPs	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Good citizenship/National dev.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Fashion (it's 'in')	☐ ☐	☐ ☐	☐ ☐	☐ ☐

Do the investment managers have incentives on investments?	No ☐ Yes, bonus ☐ Yes, carry ☐	Comments.
How has this changed over time?		

Appendix 7, continued

INVESTMENTS

What is your view on the following fund characteristics / terms?	

	Positive	Neutral	Negative	Not accept
Off-shore structures	☐	☐	☐	☐
LPs in investment boards	☐	☐	☐	☐
Investment in 1st fund	☐	☐	☐	☐
Investment in corporate PE funds	☐	☐	☐	☐
Deal by deal carry	☐	☐	☐	☐
Removal without cause	☐	☐	☐	☐
Evergreen funds	☐	☐	☐	☐
Large transparency	☐	☐	☐	☐

	Not imp.	Somew imp.	Very imp.	Deal breaker
Standardized terms (e.g., hurdle, carry)	☐	☐	☐	☐
Key man clause	☐	☐	☐	☐
Waterfall – LPs first	☐	☐	☐	☐
In investment committee/advisory board	☐	☐	☐	☐
In investment board (investment dec.)	☐	☐	☐	☐
Part of carry	☐	☐	☐	☐
Co-branding with GP	☐	☐	☐	☐
Special reporting	☐	☐	☐	☐

What are you willing to give up for getting into top-quartile funds?	

	Never done	Rarely	Sometimes	Often	Very often
To what extent do you take lead position/ participate in first closings?					
Swe VC	☐	☐	☐	☐	☐
Swe BO	☐	☐	☐	☐	☐
RoW VC	☐	☐	☐	☐	☐
RoW BO	☐	☐	☐	☐	☐

How has this changed over time? Comments.	

Appendix 7, continued

CONTRIBUTIONS

What contributions do you consider that your firm provides to the PE firms you finance?		No VC / BO	Low extent VC / BO	Some extent VC / BO	High extent VC / BO
	Capital	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Competence – structure	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Competence – financial	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Competence – industrial	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Network – inv. proposals	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Network – other LPs	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Network – board & management	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Brand/status	☐ ☐	☐ ☐	☐ ☐	☐ ☐
How satisfied are you on general with returns?		Very disappointed	Disappointed	Satisfied	Very satisfied
	Across the entire portfolio	☐	☐	☐	☐
	Across the entire PE portfolio	☐	☐	☐	☐
	Swedish VC	☐	☐	☐	☐
	Swedish BO	☐	☐	☐	☐
	European VC	☐	☐	☐	☐
	European BO	☐	☐	☐	☐
	US VC	☐	☐	☐	☐
	US BO	☐	☐	☐	☐
How has this changed over time? Comments.					

EXTERNAL VIEW

How do you think the Swedish market perceives you?		1	2	3	4	5	6	
	Unknown	☐	☐	☐	☐	☐	☐	Well known
	Unsuccessful PE PE investor	☐	☐	☐	☐	☐	☐	Very successful PE investor
	Risk aversive	☐	☐	☐	☐	☐	☐	Risk willing
	Low level of social respons.	☐	☐	☐	☐	☐	☐	High level of social respons.
	Low contrib. to national well-being	☐	☐	☐	☐	☐	☐	High contrib. to national well-being
	Low level of reliabil., trustworth., etc.	☐	☐	☐	☐	☐	☐	High level of reliabili. trustworth., etc.

GENERAL QUESTIONS

- What do you consider as the most important shifts in the PE-market over time?
- In what way do you cooperate with other LPs (investment lead, standardized contracts, terms and fees, knowledge, ILPA, etc.? How has this changed over time?

Appendix 8. Overview of pre-study & pilot interviews, quantitative studies

RESPONDENT #	TYPE OF ORGANIZATION	PURPOSE/PLACE	TIME	INTERVIEW LENGTH
P1	Industry association	Pre-study interview Face-to-face, Sweden	Spring 2007	60 min
P2	Government agency, institutional investor	Pre-study interview Telephone	Spring 2007	60 min
P2	Government agency, institutional investor	Pre-study interview Telephone	Spring 2007	30 min
P1	Industry association	Pre-study interview Telephone	Fall 2007	20 min
P1	Industry association	Pre-study interview Face-to-face, Sweden	Fall 2007	60 min
P2	Government agency, institutional investor	Pre-study interview Telephone	Fall 2007	30 min
P2	Government agency, institutional investor	Pre-study interview Telephone	Fall 2007	20 min
P2	Government agency, institutional investor	Pilot interview Face-to-face, Sweden	Fall 2007	180 min
P3	Pension fund, institutional investor	Pilot interview Face-to-face, Sweden	Fall 2007	70 min
P4	Pension fund, institutional investor	Pilot interview Face-to-face, Sweden	Fall 2007	90 min
P5	Insurance company, institutional investor	Pilot interview Face-to-face, Sweden	Fall 2007	90 min
P6	Government agency, institutional investor	Pilot interview Face-to-face, Sweden	Fall 2007	80 min
Number of interviews: 12 Number of respondents: 6 Number of organizations: 6				

Appendix 9. Overview of survey interviews, quantitative studies

RESPONDENT #	TYPE OF PE FIRM	PLACE	TIME	INTERVIEW LENGTH
S1	Venture capital	Face-to-face, Sweden	Fall 2007	50 min
S2	Venture capital	Face-to-face, Sweden	Fall 2007	60 min
S3	Buyout	Face-to-face, Sweden	Fall 2007	75 min
S4	Venture capital	Face-to-face, Sweden	Fall 2007	30 min
S5	Venture capital	Face-to-face, Sweden	Fall 2007	60 min
S6	Buyout	Face-to-face, Sweden	Fall 2007	70 min
S7	Venture capital	Face-to-face, Sweden	Fall 2007	55 min
S8	Buyout	Face-to-face, Sweden	Fall 2007	90 min
S9	Venture capital	Telephone	Fall 2007	50 min
S10	Venture capital	Telephone	Fall 2007	60 min
S11	Venture capital	Telephone	Fall 2007	50 min
S12	Buyout	Face-to-face, Sweden	Fall 2007	110 min
S13	Venture capital	Face-to-face, Sweden	Fall 2007	45 min
S14	Venture capital	Face-to-face, Sweden	Fall 2007	75 min
S15	Venture capital	Face-to-face, Sweden	Fall 2007	90 min
S16	Buyout	Face-to-face, Sweden	Fall 2007	60 min
S17	Venture capital	Face-to-face, Sweden	Fall 2007	75 min
S18	Buyout	Face-to-face, Sweden	Fall 2007	60 min
S19	Buyout	Face-to-face, Sweden	Fall 2007	90 min
S20	Venture capital	Face-to-face, Sweden	Fall 2007	75 min
S21	Buyout	Face-to-face, Sweden	Fall 2007	75 min
S22	Venture capital	Face-to-face, Sweden	Fall 2007	55 min
S23	Venture capital	Face-to-face, Sweden	Fall 2007	70 min
S4	Venture capital	Face-to-face, Sweden	Fall 2007	80 min
S24	Buyout	Face-to-face, Sweden	Fall 2007	85 min
S25	Buyout	Face-to-face, Sweden	Fall 2007	55 min
S26	Buyout	Face-to-face, Sweden	Fall 2007	20 min
S27	Buyout	Face-to-face, Sweden	Fall 2007	90 min

Number of interviews: 28
Number of respondents: 27
Number of organizations: 26

Appendix 10. Survey template, quantitative studies

One form per raised fund was filled in during each survey interview.

GP			
Date		Interview length	
Respondent			
Position			

Fund		Vintage	
		Duration	
		Structure	
Committed capital		Invested capital	
Status		No. of investments	
General focus (VC or BO)		Phase focus	
Industrial focus		Geographical focus	
Performance			

LP	Share	Lead	Comment
…			

Type of due diligence? .....
Why did LPs enter? .....
How active is the LP? .....

OPEN-ENDED QUESTIONS

- When you set up the fund – what was your desired set of LPs (few/many, Swedish/international, etc.)?
- Expectations on added value from the LPs besides capital (competence, network, etc.)?
- Lessons learned (e.g., type of LPs, fund size, focus, fund structure, duration, etc.)?

Appendix 11. Variable list: PE fund performance

The table lists variables (dependent and independent) used for testing variables affecting PE fund performance.

VARIABLE		DESCRIPTION	TYPE
DEP	Performance	Fund performance based on multiples, i.e., returns (net of fees) divided by inserted capital.	Ratio
	Performance, adjusted	Fund performance based on multiples adjusted for period effects, i.e., *Performance* divided with the average performance for all funds raised in period 1, period 2, or period 3.	Ratio
INDEP	BO focus	Whether the fund is VC or BO focused.	Binary nominal 1=BO focus
	First fund	Whether or not the fund is the first fund raised by the GP.	Binary nominal 1=First fund
	Fund number	Fund sequence number, i.e., 1=first fund, 2=second fund, etc.	Ratio
	Fund size	Total capital committed to the fund in mSEK.	Ratio
	Geographical focus	The fund's geographical focus on a scale of 1-6, where 1 indicates a narrow regional focus and 6 a world-wide focus.	Interval 1-6
	Period 1 (1983-1997)	Whether or not the fund was raised in period 1, i.e., 1983-1997.	Binary nominal 1=Raised in period 1
	Period 2 (1998-2000)	Whether or not the fund was raised in period 2, i.e., 1998-2000.	Binary nominal 1=Raised in period 2
	Period 3 (2001-2003)	Whether or not the fund was raised in period 3, i.e., 2001-2003.	Binary nominal 1=Raised in period 3
	Phase focus	What portfolio firm development phase the fund focuses on (1=very early, 4=very late; 1&2=VC focus, 3&4=BO focus).	Interval 1-4
	Specialist focus	Whether or not the fund has a narrow industrial focus, i.e., only invests in portfolio companies within one or a few industries such as IT, life science, etc.	Binary nominal 1=Specialist focus
	Sub fund	Whether or not the fund is the second, third, fourth, etc. fund raised by the GP.	Binary nominal 1=Sub fund

Appendix 12. Variable list: PE fund investors' entry order and performance

List of variables (dependent, independent and control) used for evaluating factors affecting institutional investors' entry order and performance in the hypothesis-testing study.

VARIABLE		DESCRIPTION	TYPE
DEP	First mover	LPs that made at least one-third of their Swedish PE fund investment between 1983 and 2003 in first-time funds.	Binary nominal 1=First mover
	Performance	Total performance multiple. The variable was computed by summarizing the LP's total returns (net of fees) divided by its total invested capital in Swedish PE funds throughout the period 1983-2003. The returns were adjusted for period effects (see Section 5.4.1 for details).	Ratio
INDEP	Done PE fund investments *Reputation construct*	The LP's average number of made PE fund investments. The variable is based on the total number of PE fund investments made by the LP prior to each fund investment (on an overall basis, i.e., not limited to Swedish funds). Thereafter, the value was adjusted for time effects, i.e., divided with the average number of completed PE investments by all LPs that invested in Swedish PE funds during the specific period (five-year periods used). Finally, the average of these values was computed, after which the variable's logarithm was calculated and centered.	Ratio
	Assets under management (AUM)	The LP's average assets under management in mEUR. The variable is based on the level of AUM at the time of each fund investment. Thereafter, the average of these values was computed, and then the variable's logarithm was calculated.	Ratio
	Experience	The LP's average PE fund investing experience in years. The variable is based on the total number of years that the LP has been active as a PE fund investor at the time for each fund investment (on an overall basis, i.e., not limited to Swedish funds). Thereafter, the value was adjusted for time effects, i.e., divided by the average experience in years for all LPs that invested in Swedish PE fund during the specific period (five-year periods used). Finally, the average of these values was computed, after which the variable's logarithm was calculated.	Ratio
	Local	Whether or not the LP is local (i.e., Nordic).	Binary nominal 1=Local

Appendix 12, continued

VARIABLE		DESCRIPTION	TYPE
INDEP	Not only profit	Referring to the LP's main purpose for PE investing, i.e., not only financial goals or 'only' financial performance. Local government institutions and corporate multinational firms were categorized as 'not only profit' investors in the study.	Binary nominal 1=Not only profit
	Second mover	Reverse of the *First mover* variable.	Binary nominal 1= Second mover
	Second x Done PE fund inv. *Interaction variable*	Interaction variable computed by multiplying *Second mover* by *Done PE fund investments*.	Ratio
CONT	Start period 1	Control variable for period effects: whether the LP started to invest in Swedish PE funds 1983-1997, i.e., in period 1.	Binary nominal 1=Start in period 1
	Start period 2	Control variable for period effects: whether the LP started to invest in Swedish PE funds 1998-2000, i.e., in period 2.	Binary nominal 1= Start in period 2
	Start period 3 *Not used.*	Control variable for period effects: whether the LP started to invest in Swedish PE fund 2001-2003, i.e., in period 3.	Binary nominal 1= Start in period 3

Appendix 13. Correlation table: PE fund performance

Descriptive statistics and correlations for variables predicting PE fund performance (N=73).

PE FUND PERFORMANCE FUND LEVEL	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Performance	2.04	1.80	–										
2. Performance, adj.	-	-	0.85***	–									
3. Period 1 (1983-1997)	0.25	0.43	0.41***	-0.01	–								
4. Period 2 (1998-2000)	0.45	0.50	-0.23***	-0.02	-0.52***	–							
5. Period 3 (2001-2003)	0.30	0.46	-0.14	0.03	-0.38***	-0.6***	–						
6. First fund (y/n)	0.47	0.50	0.01	-0.25*	0.36***	-0.02	-0.31*	–					
7. Fund number	1.99	1.18	-0.08	0.14	-0.34***	-0.06	0.39***	-0.74***	–				
8. Fund size (mSEK)	1765	3501	0.05	0.15	-0.12	-0.02	0.13	-0.32*	0.55***	–			
9. BO focus (y/n)	0.37	0.49	0.45***	0.49***	0.22†	-0.18	-0.01	-0.32*	0.35***	0.44***	–		
10. Phase focus (1-4)	2.23	1.11	0.37***	0.43***	0.17	-0.17	0.02	-0.42***	0.46***	0.56***	0.89***	–	
11. Geo. focus (1-6)	2.93	0.82	-0.13	-0.12	-0.07	0.11	-0.05	-0.06	0.14	-0.29*	0.17	-0.29*	–
12. Spec. focus (y/n)	0.55	0.50	-0.47***	-0.49***	-0.31*	0.22†	0.06	0.19	-0.22†	-0.37***	-0.84***	-0.81***	-0.08

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10

Appendix 14. Correlation table: PE fund investors' entry order – BO funds

Descriptive statistics and correlations for variables predicting institutional investors' inclination to become first movers. BO fund investments only. (N=219)

FIRST MOVER INSTITUTIONAL INVESTOR LEVEL BO FUNDS ONLY	Mean	S.D.	1	2	3	4	5	6	7
1. First mover (y/n)	0.19	0.39	–						
2. Start period 1 (y/n)	0.47	0.50	0.43***	–					
3. Start period 2 (y/n)	0.22	0.42	-0.15*	-0.50***	–				
4. Assets under management (*log*) (mEUR)	3.34 24 279[1)]	1.02 81 162[1)]	-0.20**	-0.16*	0.12†	–			
5. Experience, adj. (*log*) (years)	0.21 4.72[1)]	0.18 5.02[1)]	-0.07	0.11†	0.01	0.28***	–		
6. Local (y/n)	0.45	0.50	0.35***	0.32***	-0.04	-0.40***	-0.28***	–	
7. Not only profit (y/n)	0.11	0.32	0.23***	0.12†	-0.05	-0.29***	-0.22**	0.31***	–
8. Done PE fund investments, adj. (*log & cent.*)	-0.78 22.56[1)]	0.81 54.81[1)]	-0.22**	-0.06	0.11†	0.31***	0.66***	-0.34***	-0.38***

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10. [1)] Non-transformed value, i.e., real value.

Appendix 15. Correlation table: PE fund investors' entry order – VC funds

Descriptive statistics and correlations for variables predicting institutional investors' inclination to become first movers. VC fund investments only. (N=186)

FIRST MOVER INSTITUTIONAL INVESTOR LEVEL VC FUNDS ONLY	Mean	S.D.	1	2	3	4	5	6	7
1. First mover (y/n)	0.63	0.48	–						
2. Start period 1 (y/n)	0.35	0.48	0.26***	–					
3. Start period 2 (y/n)	0.51	0.50	-0.08	-0.75***	–				
4. Assets under management (*log*) (mEUR)	2.84 13 428[1)]	1.22 46 656[1)]	0.00	-0.03	0.08	–			
5. Experience, adj. (*log*) (years)	0.19 3.21[1)]	0.21 4.39[1)]	-0.15*	0.33***	-0.28***	0.35***	–		
6. Local (y/n)	0.74	0.44	0.17*	0.16*	-0.10	-0.26***	-0.36***	–	
7. Not only profit (y/n)	0.24	0.43	0.24***	-0.04	0.06	-0.10	-0.21**	0.25***	–
8. Done PE fund investments, adj. (*log & cent.*)	-0.94 11.42[1)]	0.81 31.10[1)]	-0.19*	0.18*	-0.19**	0.34***	0.69***	-0.47***	-0.21**

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10. [1)] Non-transformed value, i.e., real value.

Appendix 16. Correlation table: PE fund investors' performance – BO funds

Descriptive statistics and correlations for variables predicting institutional investors' aggregated performance. BO fund investments only. (N=219)

INVESTOR PERFORMANCE INSTITUTIONAL INVESTOR LEVEL BO FUNDS ONLY	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. Performance	1.49 2.81[1)]	0.64 1.17[1)]	–								
2. Start period 1 (y/n)	0.47	0.50	-0.49***	–							
3. Start period 2 (y/n)	0.22	0.42	0.17*	-0.50***	–						
4. Assets under management (*log*) (mEUR)	3.34 24 279[1)]	1.02 81 162[1)]	0.08	-0.16*	0.12†	–					
5. Experience, adj. (*log*) (years)	0.21 4.72[1)]	0.18 5.02[1)]	0.07	0.11†	0.01	0.28***	–				
6. Local (y/n)	0.45	0.50	-0.16*	0.32***	-0.04	-0.40***	-0.28***	–			
7. Not only profit (y/n)	0.11	0.32	-0.06	0.12†	0.05	-0.29***	-0.22**	0.31***	–		
8. Done PE fund investments, adj. (*log & cent.*)	-0.78 22.56[1)]	0.81 54.81[1)]	0.07	-0.06	0.11†	0.31***	0.66***	-0.38***	-0.21**	–	
9. Second mover (*cent.*) (y/n)	0.00 0.81[)]	0.39	-0.03	-0.43***	0.15*	0.20**	0.08	-0.35***	-0.23***	0.22**	–
10. *Interaction*: Second x Done PE fund inv.	0.075 -0.56[1)]	0.30 0.78[1)]	0.15*	0.17*	0.00	-0.12†	0.05	0.09	0.25***	0.05	-0.37***

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10. [1)] Non-transformed value, i.e., real value.

Appendix 17. Correlation table: PE fund investors' performance – VC funds

Descriptive statistics and correlations for variables predicting institutional investors' aggregated performance. VC fund investments only. (N=186)

INVESTOR PERFORMANCE INSTITUTIONAL INVESTOR LEVEL VC FUNDS ONLY	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. Performance	0.69 1.22[1)]	0.41 1.05[1)]	–								
2. Start period 1 (y/n)	0.35	0.48	0.36***	–							
3. Start period 2 (y/n)	0.51	0.50	-0.41***	-0.75***	–						
4. Assets under management (*log*) (mEUR)	2.84 13 428[1)]	1.22 46 656[1)]	-0.30***	-0.03	0.08	–					
5. Experience, adj. (*log*) (years)	0.19 3.21[1)]	0.21 4.39[1)]	0.13†	0.33***	-0.28***	0.34***	–				
6. Local (y/n)	0.74	0.44	0.19*	0.16*	-0.10	-0.26***	-0.36***	–			
7. Not only profit (y/n)	0.24	0.43	-0.09	-0.04	0.06	-0.10	-0.21**	0.25***	–		
8. Done PE fund investments, adj. (*log & cent.*)	-0.94 11.42[1)]	0.81 31.10[1)]	0.03	0.18*	-0.19**	0.34***	0.69***	-0.47***	-0.21**	–	
9. Second mover (*cent.*) (y/n)	0.00 0.37[1)]	0.48	0.10	-0.26***	0.08	0.01	0.15*	-0.17*	-0.24***	0.19*	–
10. *Interaction*: Second x Done PE fund inv.	0.07 -0.28[1)]	0.41 0.66[1)]	0.02	-0.04	-0.04	0.08	0.15*	-0.13†	0.04	0.22**	0.10

Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.10. [1)] Non-transformed value, i.e., real value.

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