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Essays on Secondary Buyouts

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"If you are looking for a way out, don't forget the way you came in. […] Secondary buyouts are a neat solution to two of the industry's big headaches. Sellers need to demonstrate decent returns to investors, especially if they are planning new fundraising rounds. Buyers are under pressure to invest their capital […]."

The Economist, 25th Feb 2010.

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List of Abbreviations

€	Euro
2sls	Two-stage-least-squares
AUM	Assets under Management
AG	Aktiengesellschaft
bn.	Billion
c.	circa
CAGR	Coumpound Annual Growth Rate
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CQGR	Coumpound Quarterly Growth Rate
DWH	Durbin-Wu-Hausman
e.g.	exempli gratia
EBITDA	Earnings before interest, taxes, depreciation and amortization
et al.	et alii
etc.	et cetera
EV	Enterprise Value
EVCA	European Private Equity and Venture Capital Association
FBD	Freshfields Bruckhaus Deringer
Fi	Financial Exit

GP	General Partner
h	winsorized high only at 0.99 percentile
H	Hypothesis
HAC	Heteroscedasticity Autocorrelation Consistent
i.e.	id est
ICB	Industry Classification Benchmark
IRR	Internal Rate of Return
IPO	Initial Public Offering
IV	Instrumental Variable
JEL	Journal of Economic Literature
LBO	Leveraged Buyout
Log	Logarithm
LP	Limited Partner
LTM	Last Twelve Months
m	million
MBO	Management Buyout
MBI	Management Buyin
M&A	Mergers and Acquisitions
MM	Money Multiple
MSCI	Morgan Stanley Capital International
MSE	Mean Squared Error
Obs.	Observation

OLS	Ordinary Least Squares
p.	page
P	Proposition
p.a.	per annum
PE	Private Equity
PEI	Private Equity International
Pr	Private Exit
Pu	Public Exit
R^2	R-squared
SBO	Secondary Buyout
SCA	Societe en commandite par actions
TU	Technical University
UK	United Kingdom
US	United States (of America)
USD	United States Dollar
vs.	versus
w	winsorized at 0.01 and 0.99 percentiles

I. Introduction

1. Motivation and Research Topics

This dissertation focuses on secondary buyouts, where private equity firms are both on the sell-side and buy-side of a leveraged buyout (LBO) transaction. In order to motivate the research topic, this introductory section first addresses the development and economic significance of the private equity industry. The importance of secondary buyouts for the private equity industry is then derived based on recent industry statistics and an analysis of the private equity investment cycle. A thorough review of the specific literature on secondary buyouts then serves to highlight the research gaps that this dissertation attempts to close.

The origins of the private equity industry can be traced all the way to the 1930s and 1940s, when wealthy families invested equity capital in private companies.[1] Since then private equity has developed into a distinct asset class, which broadly comprises all investments in private companies[2] as opposed to investments in public companies. Kaserer et al. (2007) go on to further differentiate between venture capital and buyout investments.[3] The former comprises all investments in early stage, high growth companies,[4] the latter all investments in established companies.[5]

[1] Cf. Talmor and Vasvari (2011), p. 5.

[2] Cf. Kaserer et al. (2007), p. 14.

[3] Kaserer et al. (2007), p.14, refer to the buyout segment as private equity in the narrow sense.

[4] This refers to all investment in the seed, start-up and expansion stage. Cf. Kaserer et al. (2007), p. 15.

[5] This refers to equity and mezzanine capital investments in established companies. Here, private equity firms usually aim to obtain a majority position in the target company, which is often referred to as a buyout, but in some cases, they also pursue minority investments. Cf. Kaserer et al. (2007), pp. 14-15.

Today, while the asset class private equity has become an important segment of financial markets,[6] the continued opaqueness of this industry has hampered the establishment of an authoritative source on general industry statistics as of yet. According to data provided by Prequin,[7] the industry had total assets under management (AUM) of close to $2.5 trillion in 2010 after a period of strong growth in the last decade.[8] In 2010, total AUM consisted to 59% of the value of unrealized private equity investments, while funds available for new investments – often also referred to as 'dry powder'[9] – accounted for 41% of total AUM.[10]

Following the global financial crisis, global private equity investment volumes and fundraising rebounded. In 2010, worldwide private equity investments totaled $179 billion, up from $110 billion in 2009, and the amount of new funds raised amounted to $150 billion, up from $142 billion in 2009. Similarly, the exit environment, i.e. the opportunities for selling existing portfolio companies, ameliorated after the financial crisis: according to data provided by Deallogic and Preqin,[11] the value of exits of private equity buyouts amounted to $232 billion globally in 2010, which was three times higher than exit activity in 2009. Nonetheless, this figure was still well below the peak in 2007, when companies worth in excess of $350 billion were exited. In the light of this data, it becomes obvious that private equity has not only been an important asset class up to the financial crisis in 2007, but has since regained its momentum.

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[6] Cf. Robinson and Sensoy (2011), p. 1.

[7] Cf. THECITYUK (2011), p. 2.

[8] According to data from Preqin, total assets under management were still just close to $1 trillion in 2003 rising to above $2 trillion by the end of 2007. Cf. THECITYUK (2011), p.2.

[9] Cf. Meerkatt and Liechtenstein (2008), p. 6.

[10] Cf. THECITYUK (2011), p. 2.

[11] Cf. THECITYUK (2011), pp. 4-5.

In terms of geographic spread, North America and Europe still dominate the private equity industry both in terms of funds invested and raised: In 2010, North America accounted for 45% (53%) and Europe for 32% (18%) of total private equity activity in terms of investments (funds raised).[12] Furthermore, as far as the split by financing stage is concerned, the importance of venture capital declined significantly over the past decade. While in 2000, venture capital accounted for 89% of all private equity investments worldwide,[13] its share declined to 31% of all private equity investments by 2010.[14]

Given the importance of the buyout segment in the last decade, it is not surprising that several researchers have analysed the dynamics of this industry.[15] Research in the field of private equity buyouts can be broadly grouped into two clusters, namely studies focusing on fund respectively deal level aspects of private equity. Fund level studies have studied both the structure[16] and performance[17] of private equity buyout funds, while deal level studies have focused on deal level returns[18] and the drivers of these returns.[19]

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[12] Cf. THECITYUK (2011), p. 3.

[13] The high share of venture capital is certainly an artefact of the dot-com bubble, which burst in March 2000. Cf. Talmor and Vasvari (2011), p. 6.

[14] Cf. THECITYUK (2011), p. 6.

[15] Several articles provide a summary of current research (see e.g. Metrick and Yasuda, 2011, Kaplan and Strömberg, 2009, Cumming et al., 2007).

[16] Cf. Axelson et al. (2009) for a theoretical analysis of the structure of private equity funds. Recently, both Metrick and Yasuda (2010) and Chung et al. (2011) evaluated the structure of private equity funds from an empirical perspective.

[17] Several studies have analysed the performance of private equity funds and also benchmarked it with other asset classes (see e.g. Kaplan and Schoar, 2005, Harris et al., 2012, Kaserer and Diller, 2005, Robinson and Sensoy, 2011, Phalippou and Gottschalg, 2009).

[18] Several studies have examined private equity returns on deal level (see e.g. Lopez-de-Silanes et al., 2010, Guo et al., 2011).

[19] Several studies have examined the operational value creation in private equity buyouts (see e.g. Kaplan, 1989, Guo et al., 2011, Muscarella and Vetsuypens, 1990, Acharya et al., 2011). In addition, a number of studies have focused on leverage and valuation as value drivers in private equity transactions (see e.g. Achleitner et al., 2011, Engel et al., 2012, Axelson et al., 2012). Finally, a couple of studies have analysed the overall value creation profile of private equity transactions (see e.g. Achleitner et al., 2010, Kaserer, 2011).

This dissertation focuses on private equity buyouts[20] on the deal level and draws on both strands of recent deal level research to analyze the phenomenon of secondary buyouts (SBOs). SBOs occur when private equity firms are both on the sell-side and the buy-side of a buyout transaction. This phenomenon has been identified as a fruitful avenue for private equity deal level research[21] for two reasons: First, SBOs have gained an increasing share of both buyout investments and divestments in the recent past, and, second, the very nature of an SBO materially affects the private equity investment cycle.

As far as the economic importance is concerned, SBOs increased in importance both as transaction source as well as divestment option. According to data provided by CapitalIQ, SBOs accounted for only 2% of all private equity transactions in terms of enterprise value in the period 1985-89, yet their share increased to 20% in the period 2000-04 and 26% in the period 2005 to mid 2007.[22] In terms of exits, SBOs were the exit channel of choice for already 13% of private equity transactions completed in the period 1985-89. However, the share of SBO exits increased to 31% for private equity transactions completed in the period 2000-05.[23] Recent data from the EVCA confirms that this trend has continued (see Figure I-1). In 2012, the share of SBO exits in Europe has risen above pre-crisis levels: In terms of investment cost, SBO exits accounted for 47% of the divestment activity and in terms of companies exited for 33% of divestment activity.[24]

[20] From now on the terms private equity and buyout are used interchangeably.

[21] Cf. Wright et al. (2009), p. 14, and Cumming et al. (2007), p. 456.

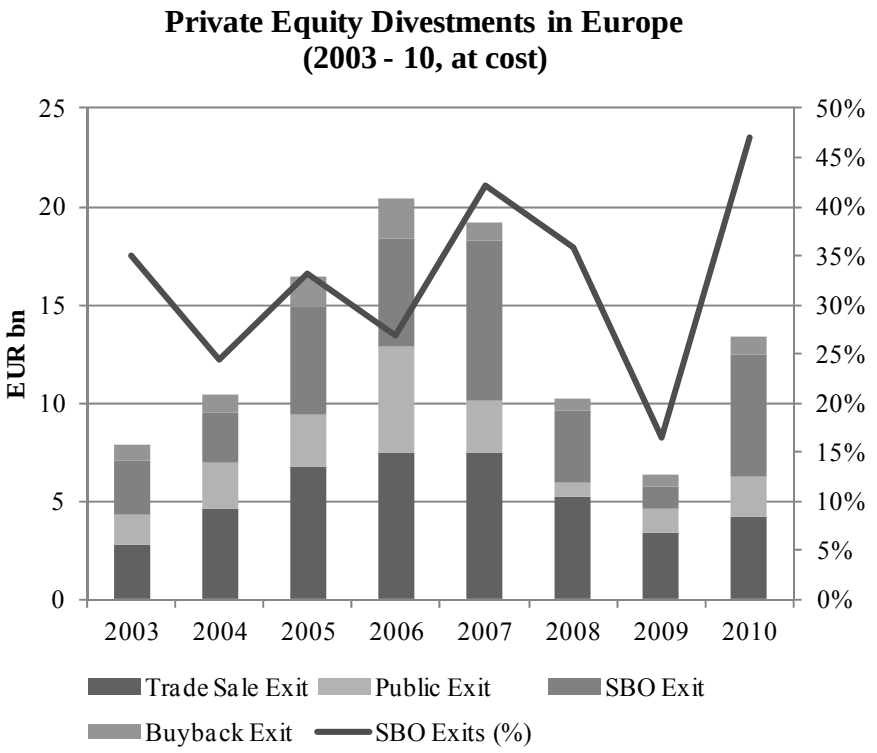
[22] Cf. Kaplan and Strömberg (2009), p. 127. For an equally weighted evaluation of the development of buyout transactions by buyout type, see Strömberg (2008), p. 13.

[23] Cf. Kaplan and Strömberg (2009), p. 129

[24] Please note that this reflects the share of SBO exits among the four main exit types. Since the EVCA data only reports divestment activity at cost, an inclusion of write-offs and other, less popular and attractive divestment channels would have led to serious distortions.

Figure I-1: Secondary Buyouts in European Private Equity Exits

The charts below show the development of private equity divestments in Europe from 2003 until 2010, based on the annual industry statistics published by the European Venture Capital Association (EVCA). The data presented below comprises private equity investments in the broad sense, i.e. both venture capital and buyout exits, and includes only the four main exit types, namely trade sale exit, public exit, SBO exit and buyback exits. The chart on the left hand side illustrates the development of private equity divestments measured by the initial cost of the investment, while the chart on the right hand side shows how overall divestment activity and the split by exit type has developed in terms of the number of companies sold each year.



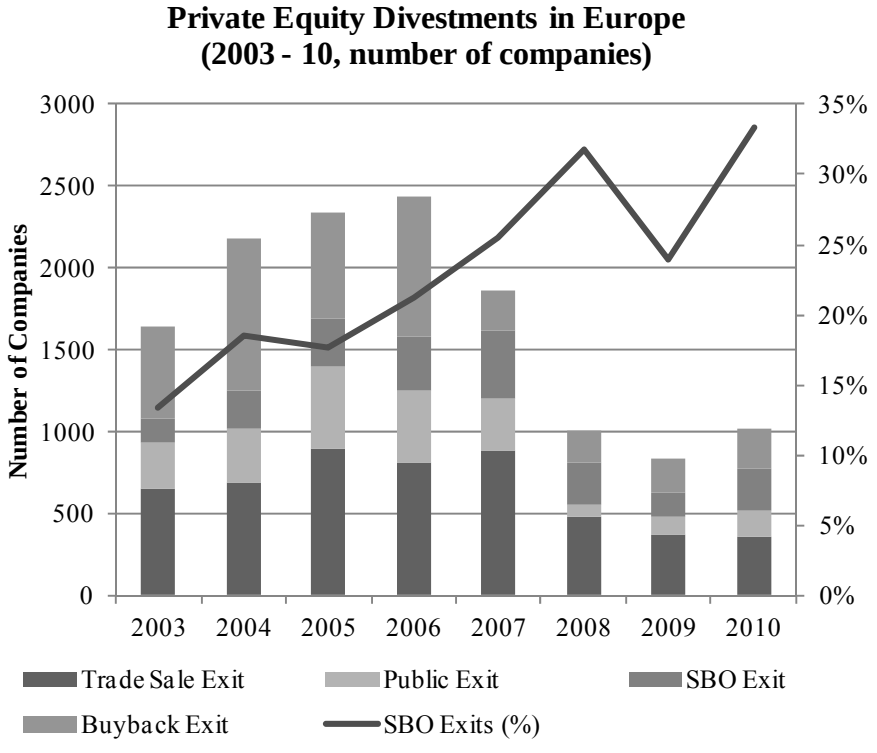
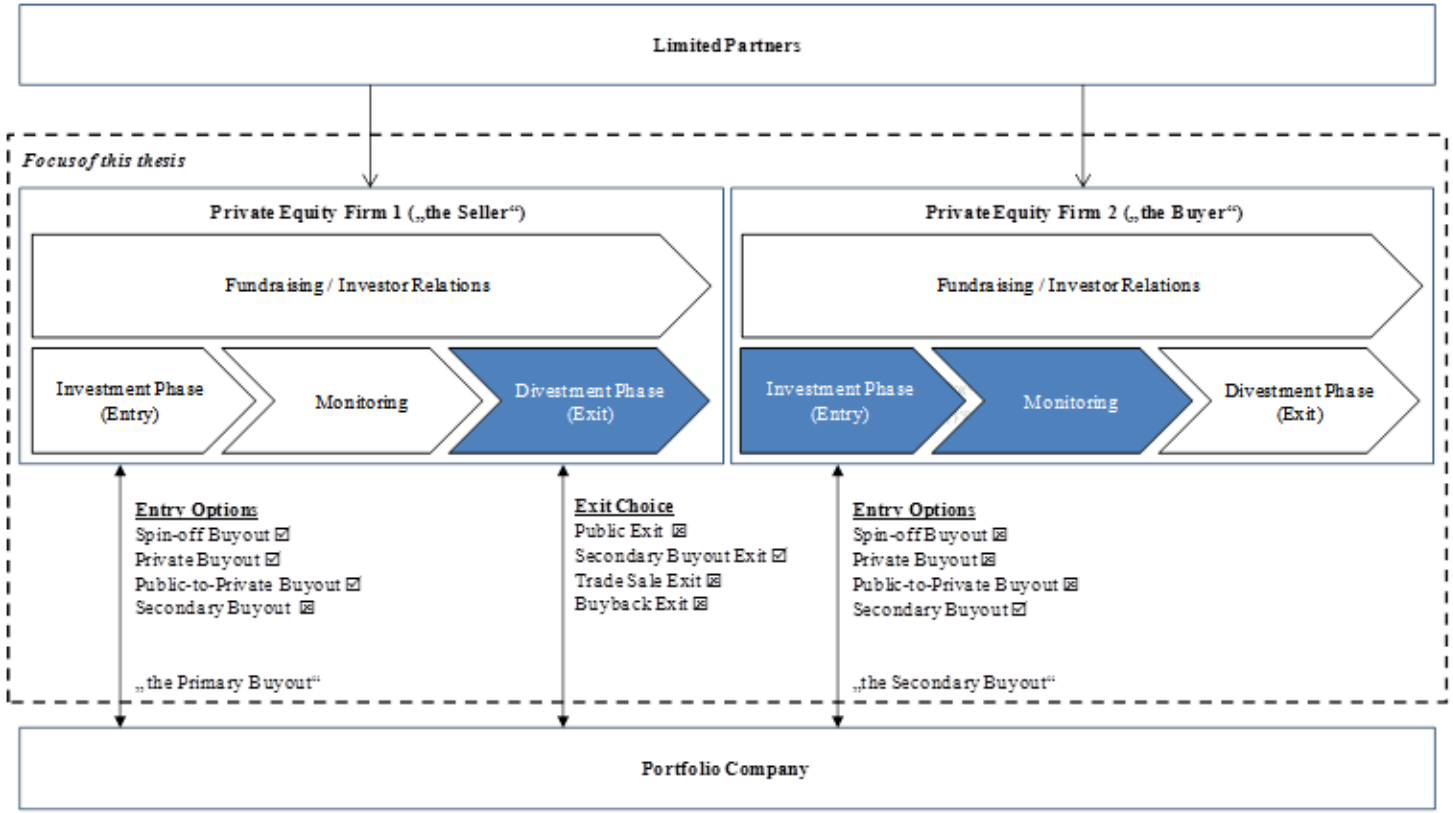


Figure I-2: Secondary Buyouts in the Private Equity Investment Cycle

This figure places the secondary buyout in the context of the private equity investment cycle,[25] where the dark areas reflect the elements of the investment cycle, which are different in the context of a secondary buyout. Furthermore, the figure lists the different entry and exit options available to a private equity firm.



[25] The investment cycle is based on Achleitner (2002), p. 748.

Next to the increasing importance of SBOs, a brief analysis of the private equity investment cycle, as laid out in Figure I-2, serves to highlight why this increasingly important transaction type should be further investigated. As mentioned before, a secondary buyout is a transaction between two private equity funds, the seller and the buyer. When selling a portfolio company, a private equity firm has different exit options at its disposal. The literature generally distinguishes three different exit types next to the sale to a fellow private equity firm.[26] The *public exit* describes the initial public offering (IPO) of the stock of the portfolio company on the stock exchange and subsequent sell-down of remaining shareholding once the lock-up period has expired. While the public exit has been widely regarded as the most attractive exit channel, both in terms of return potential and positive reputation effects,[27] it is not the most frequent one. According to data from CapitalIQ,[28] only 14% of all private equity transactions completed between 1970 and 2007 have been exited via the public exit channel. The *trade sale exit* refers to the sale of the portfolio company to a strategic buyer, which may actually be backed by a private equity firm itself.[29] 43% of all private equity transactions completed between 1970 and 2007 have been exited via trade sale. Finally, the *buyback exit* occurs if the portfolio company is sold to management. This is by far the most rare exit channel and only 1% of all private equity transactions completed between 1970 and 2007 were later exited via a

[26] Some authors list bankruptcies respectively write-offs as a fifth exit channel (Kaplan and Strömberg, 2009, Schmidt et al., 2009, Sousa, 2010), yet since this constitutes rather a necessity and not a true exit option, it is not listed here.

[27] Gompers (1996) showed that that young venture capitalists tend to pursue a public exit of their portfolio companies earlier than their more established peers in order to establish a reputation, which in turn should improve their outlook for future fundraising. Cumming and MacIntosh (2003), p. 170, come to a similar conclusion.

[28] Cf. Kaplan and Strömberg (2009), p. 129.

[29] Kaplan and Strömberg (2009), p. 129, distinguish between exits to a strategic buyer and exits to an LBO-backed firm.

management buyback. While the conventional wisdom among practitioners and researchers views the SBO as an 'exit of last resort',[30] this verdict may be just a little premature given the sheer number of SBO exits in the recent past. Nevertheless, since a rational private equity firm is assumed to only sell a portfolio company if the marginal cost exceeds the marginal benefit of its value creation strategy[31] and since private equity firms generally all rely on the same value creation strategy, the question "why […] private equity firms sell to each other […]" remains.[32]

For a private equity firm on the buy-side, the literature generally distinguishes four entry options next to the SBO. The *spin-off* buyout refers to the situation where a private equity firm acquires a division of a larger conglomerate that is looking to streamline its activities. According to data from CapitalIQ,[33] spin-offs accounted for 30% of all private equity transactions in terms of enterprise value in the period 1970 to 2007. A *private buyout* occurs if a company is acquired from a private shareholder[34] and accounted for 23% in the same period. When a private equity firm acquires the shares of a publicly traded company, this is known as a *public-to-private buyout* or take-private buyout. This buyout type accounted for 27% of all private equity transactions, driven mostly by the popularity of this transaction type in the US during the 1980s.[35] For all these traditional buyout entry types, the value creation approach of the purchasing private equity firm is clear. Using a mix of operational, governance and

[30] Cf. Sousa (2010), p. 8.

[31] Cf. Cumming and MacIntosh (2003), p. 111.

[32] Cf. Sousa (2010), p. 1.

[33] Cf. Kaplan and Strömberg (2009), p. 127.

[34] In most cases, the target companies are family-owned businesses, where the owners cannot find an internal solution to a succession problem. Cf. Achleitner and Fingerle (2003), p. 9.

[35] The high share of public to private buyouts is driven by the fact that this statistic is based on the share of each entry type in terms of enterprise value and public to private buyouts are significantly larger than other buyout types. Cf. Strömberg (2008), p. 17.

financial engineering,[36] the new owner will strive to improve the operations of the portfolio company and create economic value, which materializes with a successful exit. In an SBO setting, when the first private equity firm has already used its engineering toolkit to optimize the portfolio company, with at least some of the tools having only a one-off effect,[37] it is not clear whether this set of value creation strategies still suffices to improve the operations of the portfolio company and achieve attractive equity returns in an SBO transaction. Therefore, one can also pose the question why private equity firms buy from each other.[38]

Having considered the impact of SBOs on both the selling and buying private equity firm, it is also worth exploring the effects this buyout type may have on the portfolio company and limited partner (LP) level, as illustrated in Figure I-2. On the portfolio company level, two main questions emerge: First, it is important to understand whether the operating performance of the company is improved after an SBO transaction. Second, the role of management is different in an SBO transaction than in other buyout transactions, since it is both in the role of the selling and purchasing shareholder.[39] As far as the impact on the LP level is concerned, again two major issues arise in the context of SBOs. First, on a more general level, one can rightly question whether the current level of compensation[40] for private equity firms is

[36] Cf. Kaplan and Strömberg (2009), p. 130.

[37] Wright et al. (2009), p. 14, argue that especially governance engineering, which aims to resolve the agency conflict between management and the shareholders, should result only in a step change in performance at the time of the primary buyout.

[38] Cf. Manchot (2010), pp. 71-72, for a discussion of the strategic and operational value creation potential in an SBO.

[39] Cf. Cumming et al. (2007), p. 456, and Manchot (2010), p. 73, for a discussion of the conflict of interest of management in the context of an SBO. This situation is also similar to the context of a unit-management buyout, more commonly known as spin-off, explored by Davidson and Cheng (1994). They propose that management has two identities in the context of a spin-off, where it acts both as the buyer of the division to be sold and as employee of the seller. Here, management in its role as buyer of the division has an incentive to achieve a low valuation of the business.

[40] For a comprehensive summary of the compensation system of private equity firms, please see Metrick and Yasuda (2010).

still appropriate if an increasing number of apparently less complex SBO transactions[41] are conducted. Second, an LP could be invested both in the selling and the buying private equity firm. In this situation, the transaction costs and the compensation paid to the selling private equity firm reduce the pay-out to the LP, who still is still invested in the same company via the purchasing private equity firm.[42]

In the light of the issues that SBOs raise from the perspectives of the buying and selling private equity firm as well as the portfolio company and LPs combined with the increasing economic importance of this buyout type, it is not surprising that a number of studies have specifically focused on this buyout type in recent years. By far the most studies have focused on SBOs from the buyer perspectives in order to understand to what extent and in what form value creation occurs in after the SBO. In an early exploratory study, Wright et al. (2000) analyse the fundamental characteristics of SBOs based on a sample of 229 SBOs conducted in the United Kingdom between 1984 and 1997. Among their key findings are that 79.5% of all SBOs constitute so-called management buyouts (MBOs), and only in the remaining 21.5% of SBOs a new management is brought on board at the time of the buyout, which is defined as a management buyin (MBI). Furthermore, they were among the first to document the increasing share of SBOs among total private equity transactions. Finally, their data suggests that SBOs occur more often in traditional manufacturing industrial sectors.

In the last couple of years, a number of studies analysed the value creation potential offered in SBOs. Here, Gietl (2009) focused the operational value creation strategies employed by private equity firms in SBOs. Based on a questionnaire-based

[41] In an SBO, the target company already underwent a detailed due diligence process at the time of the primary buyout and, therefore, has a lower risk profile than a primary buyout. Cf. Bonini (2010), p. 9. Generally, the primary private equity firm spent significant time and resources to establish the governance structure and processes required in a leveraged buyout setting. The next financial sponsor finds a seasoned management team that is experienced in dealing with the constraints imposed by a highly geared capital structure and can immediately focus on operational improvements. Cf. Manchot (2010), p. 72.

[42] Cf. Manchot (2010), p. 74, and Sousa (2010), p. 4.

survey[43] he developed a structural equation model to analyze the operational value creation strategies employed by private equity firms from the perspective of the portfolio company. He finds that the effectiveness of the different value creation levers available to private equity firms varies between a primary buyout and SBO setting. Here, one of the key findings is that governance engineering is more effective in a primary buyout, thereby vindicating conventional wisdom.[44] Furthermore, he finds that there is little difference in the performance of the portfolio companies across the two buyout types. While employing a similar methodological approach,[45] Manchot (2010) focuses more generally on value creation in SBOs. He finds that financial engineering is the key value creation driver in an SBO, while operational engineering and the execution of market timing skills had no positive impact.

Besides these two rather explorative studies, Bonini (2010) focused on the question whether the operating performance of the target companies is improved in an SBO and whether the impact is different from that in primary buyouts. Analyzing a hand-collected sample of 111 deals which were subject to an SBO, he finds that the operating performance of the companies is not meaningly improved in the SBO compared to industry benchmarks, while there is a significant improvement during the first buyout. Indeed, value creation appears to be mainly driven by leverage as secondary buyers take advantage of (excess) liquidity in the financing markets. Similarly, Jelic and Wright (2011) analyse in their study the long-term operating performance of portfolio companies both after the first buyout and the first exit, based on a hand-collected sample of 1,222 UK private equity-backed and non-private equity-

[43] The total population comprised 3,567 European companies that were subject to a buyout in the period 2002 to April 2007. The final sample contained 210 observations, 72 of which constituted SBOs. Cf. Gietl (2009), pp. 137-165.

[44] Wright et al. (2009), p. 14.

[45] The total population comprised 274 European offices of private equity firms that had conducted an SBO between 1996 and June 2007. The final sample comprised 70 observations. Cf. Manchot (2010), p. 227.

backed buyouts completed between 1980 to 2004. Overall they find that SBOs exhibit no significant improvement in performance.

Wang (2012) analyses the operational performance of SBOs compared to matched primary buyouts. In addition she also analyses the pricing of SBOs. Her analysis is based on a hand-collected UK sample containing 465 primary buyouts and 485 SBOs completed between 1997 and 2008. Her findings do not suggest that SBOs perform any better or worse in terms of operational performance in the three years after the buyout, however, she finds that SBOs are more expensive than primary buyouts, which she attributes to the greater availability of debt capital at the time of an SBO exit.

Jenkinson and Sousa (2012) take a different approach to evaluate whether the operating performance in SBOs is still meaningfully improved. Using a hand-collected European sample of 194 companies exited via SBO and 114 companies exited via public exit, the compare the changes in operating performance in the three years after the exit and find that companies exited via SBOs perform significantly worse than companies exited via IPO in terms of sales and EBITDA growth, yet outperform in terms of operating cash flow development due to lower capital expenditures. Furthermore, they find that the operating performance after the SBO transaction is negatively correlated with the holding period of the primary buyout. Combining elements of Bonini (2010) as well Jenkinson and Sousa (2012), Zhou (2012) also analyses the post-buyout performance of both private equity-backed and non-private equity-backed SBOs using a hand-collected sample of 491 SBOs conducted in the UK between 2000 and 2010. His analysis compares post-buyout performance of SBOs

with both industry peers and primary buyouts. His findings on the operating performance of SBOs do not allow a clear verdict.[46]

Overall, the current research on SBOs from the buyer perspective has largely focused on the operating performance after the second buyout and the evidence is mixed. Furthermore, the analyses suffer from small sample and selection bias, which further complicates the attempt to draw definite conclusions. In addition, only Wang (2012) goes beyond operational value creation by addressing the issue of buyout pricing. However, all studies have in common that they do not address the overriding question from the buyer's perspective, namely what equity returns can be generated in an SBO transaction. Therefore, the first research topic to be addressed in this dissertation can be summarized as follows:

Topic 1: *Returns and Value Creation Drivers of SBO transactions.*

As far as the second topic of this dissertation, namely SBOs from the seller perspective, is concerned, Voigthaus et al. (2004) were the first to analyze in an empirical study whether an SBO constitutes a valid exit alternative to the traditional exit routes public exit, trade sale and buyback exit. They assume public exits to be a superior exit form, and, therefore, confine their analysis to a sample of 96 trade sale, 63 SBO and 36 buyback exits completed between 1999 and 2004, for which they analyze a set of different valuation multiples.[47] They take the valuation multiples as a proxy for the return achieved in each of the exit channels as well as an indication of

[46] Zhou (2012), p. 28, finds that the profitability measured in terms of return on asset is significantly lower in an SBO compared to industry peers, however, this result is not robust if profitability is measured using the more common, because less distorted by accounting policies, measure of return on sales. Furthermore he finds that SBOs exhibit sales growth, yet a decrease in number of employees compared to their industry peers. The results of the comparison between primary buyouts and SBOs have to be disregarded due to small sample size.

[47] Voigthaus et al. (2004) analyze turnover, EBITDA, EBIT and earnings multiples.

future value creation potential. Their results suggest that secondary buyouts do not result in a significantly higher or lower valuation than trade sale or buyback exits.

Sousa (2010) has put forward the first comprehensive analysis of SBOs as an exit channel, for which he identifies four different motivations:[48] First, SBO exits are really an 'exit of last resort' and help private equity firms to improve their return profile and track-record to the detriment of their LPs. Second, SBO exits occur as a reaction to changes in the capital market, i.e. as private equity firms try to achieve the best possible exit valuation, they arbitrage between debt and equity as well as private and public equity markets. Third, SBO exits occur because in reality private equity firms are actually not all the same, all relying on the same set of value creation strategies, but rather focus on different market segments and have different skill sets. Finally, he suggests that SBOs may actually serve as another exit option in the pecking order of exit channels available to a private equity firm. Using a European sample of 345 SBO exits, 297 trade sale exits and 117 public exits completed between 2000 and 2007, Sousa concludes that SBO exits occur mainly as a reaction to changes in capital market conditions. Furthermore, his analysis also suggests, similar to Voigthaus et al. (2004), that SBOs by no means constitute an 'exit of last resort'. He also provides evidence that SBO exits occur as a result of the apparent heterogeneity among private equity firms. By comparing different experience metrics for both selling and buying private equity firms, he finds that the buyer is usually less experienced than the seller, which suggests that it is harder for less experienced private equity firms to generate sufficient proprietary, primary deal flow to invest their funds.

In their study on post-buyout performance, Jelic and Wright (2011) also provide some interesting insights on SBO exits. First, their data suggests that SBO exits generate an equity return comparable to trade sale exits, yet significantly lower than

[48] Cf. Sousa (2010), pp. 11-15, for a detailed discussion of these motivations.

public exits. Furthermore, their data suggests that companies exited via SBO exhibit declining performance after the primary buyout and have a longer holding period than other exit types. Based on these findings, they conclude that SBO exits tend to be a back-up exit method if a public or trade sale exit are not feasible.

Finally, Wang (2012) also examines in her analysis the perspective of the seller, focusing especially on the drivers of this exit channel such as the impact of changing capital market conditions as well as on the hypothesis that SBO exits are a manifestation of collusion among private equity firms in their attempt to manipulate prices and returns, which is another popular criticism of SBOs. Similar to Sousa (2010), she finds that SBO exits occur in reaction to changes in capital markets. In particular, her findings suggest that SBO exits serve as a substitute to public exits in times of cold stock markets. Furthermore, she finds initial evidence that SBO exits are used if the selling private equity firm experiences a liquidity need, i.e. the selling private equity fund needs to demonstrate a successful exit to improve his track-record ahead of the next fundraising. Finally, she finds no evidence that the rising share of SBOs actually points towards increased conspirational behaviour among private equity firms.

Overall, most of the literature to date on SBOs as an exit channel suggests that SBOs are by no means an 'exit of last resort', but rather constitute an alternative to a public exit depending on the capital market conditions at the time of exit. However, Jelic and Wright (2011) findings, who are the only authors to also present evidence on the equity returns achieved in SBO exits, make this conclusion seem somewhat premature. Therefore, the second overarching topic to be addressed in this dissertation can be summarized as follows:

Topic 2: *Returns and Determinants of SBO Exits*

2. Structure of the Thesis and Main Findings

Next to the introduction in this chapter, the main body of this dissertation is made up of four essays, each of which represents a distinct academic contribution in its own right (sections II.I to II.IV). While all essays address at least one of the two overarching research topics, they are self-contained scholarly publications, which make independent academic contributions beyond these topics. The first essay presents an exploratory case study of an SBO to understand the value creation potential for a private equity firm in such a context. The second essay then presents a thorough empirical study of value creation drivers in SBO transactions. Essays 3 and 4 contribute to the question of the returns and determinants of SBO exits from the seller's perspective. Here, the first essay explicitly focuses on SBO exits, while the second essay generates valuable insights into how the exit choice of when and how to exit which portfolio firm is driven by fund level considerations.

Essay 1 examines the question of value creation drivers in an SBO in an exploratory case study of the SBO of Brenntag by BC Partners in 2006, which back then was the largest private equity transaction in Germany. The analysis is based on nine in-depth interviews with the key protagonists from both private equity firms involved in the transaction as well as advisors and company management, complemented with primary company data as well as secondary data sources. The essay starts by laying out the development of Brenntag from being part of a larger conglomerate through both the primary and secondary buyout until the IPO in 2010. This is followed by a thorough analysis of the value creation profile and underlying drivers in the SBO, examining the three value creation levers, namely operational

performance improvements, leverage and multiple expansion, which are commonly used in the literature.[49]

The findings suggest that potential for continued operational performance improvements exists in an SBO setting even if the skill sets of the two consecutive private equity funds are comparable.[50] An early exit of the first private equity firm as well as a greater effectiveness of management incentivisation systems are identified as the two key underlying drivers. In addition, the analysis of the case of Brenntag shows that informational asymmetries between the banks and the company are lower in an SBO setting, which leads in turn to a higher amount of leverage. Finally, the evidence suggests that given the sophisticated seller in an SBO setting, namely a private equity firm with market timing and negotiation skills as one of its core competencies, the opportunities for value creation via multiple expansion are limited in an SBO transaction.

This essay contributes to the literature in several ways. It is the first in-depth case analysis of an SBO transaction. This methodological design allows for a detailed analysis of not only the value creation profile, but also the underlying drivers. Next to the set of testable propositions on the core topic, which are examined in more detail in the second essay, the case analysis also provides initial evidence on the fact that private equity firms factor fund level considerations into their divestment decision making on portfolio company level. This link is examined in more detail in the final essay of this dissertation.

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[49] Several authors suggest that these three drivers are commonly used to analyse the value creation achieved in a private equity transaction (see e.g. Achleitner et al., 2010, Achleitner et al., 2011, Kaserer, 2011).

[50] Different skill sets between buyers and sellers are commonly assumed to be one of the main sources of continued operational value creation potential in an SBO setting. Cf. Sousa (2010), p. 4, and Wright (2009), p. 14. However, in the case of Brenntag, the selling private equity firm Bain Capital and the buying private equity firm BC Partners do not exhibit different characteristics in terms of size, geographic focus and experience.

The analyses presented in the following three essays are all based on subsamples[51] of the private equity database of the Chair in Entrepreneurial Finance at the Technical University (TU) Munich. This database, the compilation of which started in 2009, was originally based on the transaction database of two leading European funds-of-funds. As part of this dissertation, an update of the transaction database of one of these funds-of-funds was integrated and the data from a third fund-of-funds was collected by the author. In contrast to the databases used in existing research on SBOs, this database is not hand-collected from a variety of public sources, but the funds-of-funds have requested the data from private equity firms as part of their due diligence process. Therefore, this database should not meaningfully suffer from self-reporting and selection bias.[52] Furthermore, the database contains detailed deal level cash flows as well as a set of granular information on deal and fund characteristics that is not available in public databases. Based on this dataset a comprehensive analysis of the two overarching research topics appears feasible.

Essay 2 builds upon the exploratory case study analysis in the first essay and compares the value creation profile and equity returns of SBOs with primary buyouts. As far as the analysis of the value creation profile is concerned, three different levers are analysed, namely (i) operational performance improvements measured by EBITDA growth, sales growth and EBITDA margin expansion, (ii) leverage and (iii) multiple expansion. Thereby, this essay helps to answer the question what returns private equity firms can still generate in an SBO transaction and if these returns are generated in a different manner than in a primary buyout.

[51] For a description of the specific subsamples, please refer to the dataset section of each of the essays.

[52] For a discussion of the representativeness of the database respectively the subsamples, please refer to the dataset section of each of the essays.

As far as the value creation profile is concerned, the multivariate analyses show that the operational performance improvements achieved in SBOs are comparable to those achieved in primary buyouts. However, SBOs are 6-9% more expensive than primary buyouts. While these results appear at first sight to be driven by the sophisticated seller in an SBO setting as proposed in the case study of Brenntag, the analyses show that this result is actually driven by 28-30% higher leverage granted in an SBO transaction. This more in leverage can be attributed to the reduced information asymmetries in an SBO setting, analogue to the case analysis presented in the first essay. Furthermore, the analyses show that the above results also apply to the recent wave of SBOs completed prior to the financial crisis.

This essay tests many of the propositions formulated in the first essay and thereby adds to the current literature on the value creation potential of SBOs from the seller perspective. First, the analyses are based on a comprehensive international sample of primary buyout and SBO transactions, including information on all value creation drivers as well as equity returns. Second, the essay shows that SBO transactions offer equity returns and operational performance improvement potential similar to primary buyout transactions. Finally, this essay is the first to also provide comprehensive evidence on the value creation drivers leverage and multiple expansion in the context of an SBO.

Essay 3 then analyses SBOs from the perspective of the seller. Since data on the transaction level returns in general and on SBOs in particular is scarce, the question of where this increasingly important exit type ranks in the pecking order of buyout exit options has not been comprehensively analysed. Furthermore, while the drivers of the public and trade sale exit channels, the two dominant exit channels in the past, are fairly well understood, this is not the case for the SBO exit channel. Therefore, in the

second part of this paper, both deal and market related drivers of the SBO exit channel are analyzed in a multinomial regression analysis.

The multivariate analyses presented in this essay show that the SBO exit channel offers equity returns that are equally attractive as those achieved in the public exit channel. This confirms the research findings to date, which suggest that the SBO exit channel is by no means an exit of last resort. As far as the analysis of deal related exit drivers is concerned, this essay shows that the likelihood of an SBO exit increases with the lending capacity of the underlying portfolio company, which is approximated by the EBITDA margin[53] as well as the leverage at the time of exit. Furthermore, the analyses show that the likelihood of SBO exits is not negatively correlated to the operating performance of the portfolio company since the EBITDA margin at exit has a positive influence and the EBITDA growth over the holding period has no influence on the likelihood of an SBO exit. As far as the market related drivers of SBO exits are concerned, the essay focuses on two specific issues namely the liquidity of the LBO loan markets as well as the committed, but not yet invested funds – the 'dry powder' – of the private equity industry. According to the results presented in this essay, both factors positively influence the likelihood of SBO exits.

This essay comprehensively analyses the returns and determinants of the SBO exit channel. The return analysis can settle the debate on whether SBOs exits are an 'exit of last resort'. The results refute the popular notion[54] that a clear pecking order of private equity exits exist, since SBO exits offer returns similar to those of public and trade sale exits. The analysis of the drivers of the SBO exits further confirm this result because the likelihood of an SBO exit is not driven by negative operational

[53] Profitability is a key determinant of the lending capacity of a company, cf. Myers (2001), p. 83.

[54] Cf. Chapman and Klein (2009), p. 238.

performance after the primary buyout. Furthermore, the driver analysis shows that the SBO exit channel is chosen not only in reaction to specific deal characteristics, but also in response to specific market conditions. This suggests that private equity firms actively arbitrage between debt and equity as well as private and public equity markets to optimize their divestment decision.

Given that a number of authors[55] have recently suggested that fund level dynamics influence deal level decision making, *Essay 4* examines the link between fund level dynamics and the divestment decision on the level of the portfolio company from both a theoretical and empirical perspective. Since the divestment decision comprises both the choice of exit channel as well as the timing of an exit, this essay provides further insights into the drivers of the SBO exit channel. Similar to Axelson et al. (2009), the analysis applies the principal-agent framework to the private equity context, but instead of focusing on the investment behavior, the divestment decision is at the core of the analysis. Using a dataset, which draws on both fund and deal level information, the essay analyses three different fund level aspects, namely (i) fundraising, (ii) fund maturity and (iii) the cash distribution profile of the private equity fund. Next to the analysis of the impact these fund level factors may have on the divestment decision, this essay also analyses whether these factors have a negative impact on the equity return, which would hint at a moral hazard problem.

The essay finds that the divestment decision changes if a private equity firm is in the process of fundraising and if the private equity fund has distributed comparatively little capital back to its investors. In the first case, the public exit and SBO exit are preferred to a private exit due to the higher reputation signal of these exit channels. In

[55] Wang (2012) argues that if a PE firm is in the midst of fundraising, this will affect its exit choice. Achleitner et al. (2011) find that fund maturity has a negative impact on the exit valuation, which they attribute to reduced negotiation power.

the second case, SBO exits and trade sale exits are preferred since both exit channels allow an immediate realization of proceeds. However, both factors do not have a negative impact on deal level equity returns. In contrast, if a private equity fund approaches the end of its lifetime, this affects both the divestment decision and these exits also yield lower deal level equity returns. In this case, the private equity firm prefers the SBO exit and trade sale exit as both exit types allow for a full sell-down of the shareholding. The negative impact on returns can be attributed to the fact that the private equity firm is trying to rid itself of the remaining investments at the end of a fund's lifetime, since it is already overseeing the investment and divestment process of two to three new funds at this time.[56]

This essay contributes to the literature in two ways. First, it makes a significant contribution to the existing literature that analyses the relationship between private equity firms and their investors in the context of the principal-agent framework. Based on a unique dataset, the essay shows that fund level dynamics matter for the divestment decision on the level of portfolio company. However, only if a private equity fund approaches the end of its lifetime, fund level dynamics also have a detrimental influence on deal level equity returns. Therefore, we conclude that the industry only faces a limited moral hazard problem and that the private equity incentivisation system actually works. Second, this essay provides further insights into the drivers of the SBO exit channel and the findings further confirm that the SBO exit channel is by no means an exit of last resort or back-up exit option.

[56] Private equity firms raise a new private equity fund every three to five years, cf. Metrick and Yasuda (2010), p. 2304, which implies that by the end of the fund lifetime of ten years, cf. Kaplan and Strömberg (2009), p. 123, a successful private equity firm will manage two to three new funds.

In its last chapter this dissertation summarizes the results and derives practical implications, discusses the limitations of the analyses and provides an outlook on future research topics on SBOs.

II. Essays

II.I Essay 1 – Drivers of Value Creation in a Secondary Buyout: The Acquisition of Brenntag by BC Partners

Abstract

Purpose – While secondary buyouts have gained in importance in recent years, specific drivers of value creation of this type of private equity deal are not yet well understood. Through the in-depth analysis of the acquisition of Brenntag by BC Partners, we develop propositions on the value creation profile in secondary buyouts.

Design/methodology/approach – We use a single case study design to explore the information-rich context of a secondary buyout. The Brenntag case epitomizes the development of a company from being part of a large conglomerate to being private equity owned after the primary and secondary buyout up to being publicly listed. Our analysis is based on nine semi-structured interviews with key protagonists and the analysis of primary company data as well as additional secondary data sources.

Findings – We propose that even if the investment management and monitoring skills of the primary and secondary private equity group are similar there is still the potential to realize operational improvements in a secondary buyout due to either an early exit of the primary private equity group or measures that further enhance management incentivisation. Furthermore, the Brenntag case shows that low information asymmetries can lead to higher leverage and that opportunities for multiple expansion are limited in secondary buyouts.

Originality/value – While a secondary buyout has been a common exit route in recent years, we are the first to undertake an in-depth case analysis of a secondary buyout. Our study helps researchers and practitioners to enhance their understanding of drivers behind the value creation profile of secondary buyouts.

Keywords: Secondary buyouts, private equity, value creation

JEL Classification Code: G11, G24, G34

Authors: Achleitner, Ann-Kristin; Figge, Christian; Lutz, Eva

Current Status: Research paper submitted to and reviewed by *Qualitative Research in Financial Markets*; based on this research paper, three teaching cases and supplementary materials were complied and published in the European Case Clearing House.

1. Introduction

In recent years, the private equity value creation framework has been in the focus of researchers and practitioners alike. Three drivers are commonly distinguished, namely operational performance improvements, leverage and multiple expansion (Kaplan and Strömberg 2009). Plenty of theoretical and empirical work has analyzed the mechanics and impact of each of these drivers[57] and an increasing focus of private equity groups on operational value creation has emerged. This trend can be explained with an increase in the maturity of the private equity market over the last decade and, hence, improved investment management capabilities of private equity sponsors. Furthermore, the access to debt markets has been restricted due to the recent financial crisis. The traditional value creation strategies of "financial engineering" and "buy low-sell high" have hence lost in importance. Simultaneously, secondary buyouts have emerged as an important deal source in the mid-2000 boom period of private equity, then accounting for around a quarter of all deals conducted (Strömberg 2008). Since then, secondary buyouts continue to constitute an important deal source (Preqin 2011). At first sight, these two trends stand in conflict to each other: A private equity investor is commonly assumed to exit an investment once the marginal return equals the marginal cost of its value creation efforts (Cumming and MacIntosh 2003). Since both buyer and seller in a secondary buyout are generally assumed to rely on the same set of value creation tools, it is unclear how the second private equity fund can continue to create value and generate attractive equity returns.

Research on secondary buyouts to date has focused on quantitative empirical analysis based on large datasets. The current findings on value creation in secondary buyouts can be summarized as follows: First, secondary buyouts provide similar

[57] See for example Achleitner et al. (2010), Acharya et al. (2011) and Achleitner et al. (2011).

potential for operational performance improvement as primary buyouts (Wang 2011; Achleitner and Figge 2012). Second, more leverage is used in secondary than in primary buyouts (Achleitner and Figge 2012) and, third, secondary buyouts are more expensive than primary buyouts, which limits the opportunities for further multiple expansion ceteris paribus (Wang 2011; Achleitner and Figge 2012).

All of these articles can only speculate as to what determines this specific value creation profile of secondary buyouts, and in order to address this research gap, we undertake a detailed case analysis of the secondary buyout of Brenntag. Our aim is to extend and complement the current knowledge on value creation in secondary buyouts and to answer the following research questions: In circumstances of similar investment management capabilities of the primary and secondary private equity group, what are reasons for further operational improvements in a secondary buyout? How can the secondary private equity group reach higher leverage in a secondary buyout? Why are the opportunities for multiple expansion limited in a secondary buyout?

We use the case of Brenntag to analyze these questions in a distinct contextual setting. BC Partners, an international private equity investor, purchased Brenntag from the international private equity group Bain Capital in 2006, who itself had purchased the company from Deutsche Bahn in 2003. The transaction then constituted the largest private equity transaction in Germany. Using nine in-depth interviews with both investors, the management of Brenntag and advisors involved in the transaction and additional primary as well as secondary company data, we triangulate our findings on the sources of value creation in the secondary buyout of Brenntag. Based on the case analysis of Brenntag, we develop propositions which are helpful to condense our main findings and to give directions for future research on secondary buyouts.

The remainder of the paper is organized as follows: Section 2 describes our methodology. Section 3 then entails the description of the history of Brenntag with a

specific focus on the primary and secondary buyout. Section 4 presents the case analysis and the development of research propositions on the value creation profile of secondary buyouts. Section 5 summarizes our conclusions.

2. Methodology

Our study is based on a single case study methodology (Siggelkow 2007). By focusing on the case of Brenntag, we are able to describe and analyze the specific factors that led to value creation after the secondary buyout. With a qualitative case study approach the points of view of different parties can be exposed and a deep understanding of the local contextualization can be derived (Miles and Huberman 1994). We use evidence from multiple sources in order to strengthen our case study (Yin 2003). First, we screened and collected publicly available information on Brenntag's history including the primary and secondary buyout (e.g. using company websites, Google searches and databases such as LexisNexis and Genios). We then undertook in-depth semi-structured interviews with the key protagonists:

Stephen Clark,[58] Member of the Supervisory Board at Brenntag

Stefan Zuschke, Managing Partner at BC Partners

Torsten Mack, Principal at BC Partners

Dr. Michael Siefke, Managing Director at Bain Capital,

Georg Müller, Corporate Finance & Investor Relations at Brenntag

Dr. Nils Koffka, Partner at Freshfields Bruckhaus Deringer

Dr. Steffen Kastner, Managing Director at Goldman Sachs

[58] Stephen Clark joined Brenntag in 1981 and was a Brenntag board member since 1993. He was chief executive officer at Brenntag from 2006 until 2011.

Gerrit Frohn, Managing Director at Morgan Stanley

Karsten Hofacker, Executive Director at Morgan Stanley

At least two of the co-authors were present at each of the interviews which lasted between an hour and an hour and a half (total interview time c. 12 hours) and centered around changes in the company performance and leverage over time. In addition, motives for the two buyouts and the initial public offering (IPO) were discussed. The interviews were taped and transcribed which then allowed us to analyze common patterns in the qualitative data. In addition to the interview data, we collected additional primary company data directly through either the company or the private equity groups. Our interpretations and conclusions are based on these multiple sources to prevent a distortion due to an inaccurate interview or biased document. In fact, by undertaking interviews using largely the same questions with the private equity groups involved in the primary and secondary buyout, the management and other involved parties such as investment banks and lawyers, we were able to triangulate our results (Yin 2003).

3. Case Description

3.1 Brenntag: The Early Days

The roots of Brenntag go back to 1874 when Philip Mühsam founded an egg-wholesale business in Berlin. A few years later the business started to trade chemicals and in 1912 chemical distribution was added as additional line of business. By the mid 1930s, chemical distribution had become the core business and in 1937, the business was acquired by the Stinnes family and renamed Brennstoff-, Chemikalien- und Transport AG, shortly thereafter abbreviated as Brenntag. After a lengthy restructuring process among the family, the company was acquired by the logistics company Stinnes in 1964, which itself was acquired by VEBA, an energy company, one year later.

Brenntag had moved from being a stand-alone company to a subsidiary of an increasingly large, publicly quoted conglomerate. Shortly after the acquisition, international expansion of Brenntag began. Through the acquisition of the Belgian distribution company Balder in 1966, Brenntag became an international company. Throughout the 1970s Brenntag continued with its acquisition strategy and successfully established itself across Europe and in North America. In 1974, Brenntag celebrated its 100th anniversary, at which point the company recorded sales of DM 1 billion for the first time and had approximately 600 employees. In the late 1980s and throughout the 1990s, Brenntag laid the foundation for its present position as a global leader in chemical distributions through a large number of acquisitions.

A notable milestone in the company's corporate history was the acquisition of Holland Chemical International in 2000, which turned the European market leader Brenntag into the worldwide leader in chemical distribution. This acquisition granted access to Latin America and strengthened its position in Eastern Europe and North America. Brenntag recorded sales of €4.1 billion and had 8,550 employees in 2000. In the same year, VEBA and Viag merged to become E.ON, today one of the largest energy companies in Germany. As part of a portfolio restructuring, E.ON decided to sell off non-core businesses. Consequently, Stinnes was put up for sale in 2002 and sold to transport giant Deutsche Bahn in early 2003. Since Deutsche Bahn was primarily interested in the logistics business of Stinnes, both Brenntag and the steel trading subsidiary Stinnes Interfer were subsequently put up for sale.

3.2 The Primary Buyout of Brenntag

Deutsche Bahn considered a variety of different exit options together with its M&A advisor Metzler. However, since Deutsche Bahn preferably wanted to sell both Brenntag and Stinnes Interfer at the same time, and given the carve-out nature of the

transaction, there was no obvious strategic buyer for a trade sale, and an IPO would have required a lengthy preparation process. In addition, the depressed state of the capital markets at the time further reduced the attractiveness of an IPO. Therefore, a sale to a private equity sponsor was from the start the most likely outcome. Initially, a number of large private equity investors, including Bain Capital, BC Partners, Blackstone, Carlyle, CVC Capital Partners and Kohlberg Kravis & Roberts showed interest. Yet, very soon the field of potential acquirers narrowed down for two reasons: First, the business model of chemical distribution was new to investors and potential financing banks. It was not yet understood that the chemical distribution industry differed from the cyclical chemical industry, or, in the words of Kastner, Managing Director at Goldman Sachs:[59]

> *"... Especially from the debt side Brenntag was not an immediately obvious investment opportunity. The chemical industry is very cyclical and Brenntag's EBITDA[60] margins were very low at around 5%. We had no comparable company in our portfolio at the time and, therefore, it was a challenge to convince the investment committee that Brenntag presented an attractive investment ..."*

According to press articles from that time, the carve-out of Brenntag from the Stinnes Group was complex due to technical risks associated with potential legacy liability risks in the US subsidiary of Brenntag. While price was certainly one of the key decision items in the auction, finding a solution to the technical problems associated with the carve-out was key to success. Since Bain Capital knew how to deal

[59] Goldman Sachs invested in the mezzanine and equity capital of Brenntag in both the primary and secondary buyout.

[60] EBITDA is an abbreviation of Earnings Before Interest Tax Depreciation and Amortization, a measure of operating profit.

with these issues from other US investments and had significant experience with the distribution business model itself, it finally emerged as the winner of the auction process and the acquisition of both Brenntag and Stinnes Interfer was signed at the end of 2003. As laid out in Panel B in Table II-1,Bain Capital purchased Brenntag for a total consideration of €1.25bn, which is equivalent to a multiple of 5.3x EBITDA.[61] Bain Capital as the lead investor, Goldman Sachs and the management team together invested around €270m in equity, the remainder was financed by debt capital, equivalent to a multiple of 4.2x EBITDA.

Bain Capital's investment rationale was based on four main premises: First, Brenntag's business model was inherently downside protected. Besides its broad diversification across customers, products and regions,[62] the high working capital provided for a countercyclical positive cash impact, as Kastner explained:

> *"… It is simple math: with an EBITDA margin of 6% and a working capital to sales ratio of 12%, I gain two dollar in working capital reduction for every dollar in lost EBITDA. At least in the first year …"*

Accordingly, Brenntag's business proved to be less cyclical than initially anticipated. With a focus on maintaining a stable absolute gross profit per ton independent of the price fluctuations of the distributed products, the company actually managed to decouple from the cycles in the chemical industry to some extent.

Second, with Brenntag having been a subsidiary of a large conglomerate for almost 40 years, refocusing the business on operational efficiency provided ample room for improvement both in terms of profitability and cash management. Third,

[61] This is based on the last twelve months (LTM) EBITDA, measured from the time of signing the transaction.

[62] Brenntag served over 160,000 customers with 10,000 products and in 2011 commanded market leading positions in Europe, North and South America as well as Asia-Pacific.

Brenntag as the global market leader in chemical distribution fitted well in the traditional investment focus of Bain Capital on market leading companies. Finally, the global market for chemical distribution was still very fragmented. Brenntag as the global market leader had a market share below 7% and the top five players a combined market share of less than 18% (Elser et al. 2010). Hence, opportunities for further industry consolidation remained, which had already been a major growth driver for Brenntag in the past.

From early in the due diligence process, Bain Capital had positive impressions of Brenntag's management team and they did not intend to initiate changes in the team. The management incentive scheme involved 80 Brenntag employees from senior and middle management, yet the focus was on the top management, which comprised four managers: Dr. Klaus Engel as Chief Executive Officer (CEO), Jürgen Buchsteiner as Chief Financial Officer (CFO), Daniel Pithois who was Head of Brenntag Europe and Stephen Clark who was also President of Brenntag North America. Engel had joined Stinnes in 1998 and the management board of Brenntag in 1999. Shortly thereafter in 2000, Buchsteiner joined Brenntag's management board. Both of them had long term management and industry-specific experience from various management positions at chemical distribution or chemical production companies. Clark started his employment at Brenntag in 1981 and became a member of the management board in 1993. Although the potential earnings from the management package in case of a successful sale of the company exceeded the standard remuneration consisting of salary, pension and performance bonus, management focused in their negotiations on the terms of the latter, or in the words of Siefke, Managing Director at Bain Capital:[63]

[63] Siefke was a managing director in Bain Capital's Munich office. He was part of the team that conducted the primary buyout in 2003 and represented Bain Capital on the Board of Brenntag from 2005 until 2009.

> *"… Management focused on salary, bonus, pension and company car rules. And then came the equity stake. They were cautious about the potential outcomes that were linked to the management package …"*

Upon closing of the transaction in March 2004, Bain Capital initiated a strategy review with the help of management consulting firm McKinsey & Company. As a result, two main goals were defined for the time under Bain Capital ownership: First, the aim was to increase the organic growth trajectory of the business by (i) capturing a larger share of outsourced distribution from chemical producers and (ii) focusing on growth industries such as food and pharma. Second, by re-activating Brenntag's acquisition strategy, which had been dormant since the acquisition of Holland Chemical International in 2000, the company aimed to achieve above-market growth rates. Holland Chemical International had been roughly half the size of Brenntag and the company had to go through a rather intense integration process, particularly in the US but also in Europe. According to Siefke:

> *"… It took them about one and a half years to integrate Holland Chemical International. After this lengthy process, management was very tired of pursuing acquisitions and they were initially skeptical about further M&A activities. They questioned what could be next after such a huge and successful acquisition …"*

Additionally, after the sale to Deutsche Bahn in 2002 the focus was on finding a buyer for Brenntag and hence no further acquisition activities were initiated. As acquisitions constituted an important part of Bain Capital's value creation strategy, Bain Capital advised on the systemization of the mergers and acquisitions (M&A) process at Brenntag, including an expansion of Brenntag's M&A department and the

Table II-1: The Primary Buyout by Bain Capital

This table presents in Panel A the analysis of the operating performance of Brenntag under the ownership of Bain Capital. EBITDA refers to the Earnings before Interest, Depreciation and Amortization and is a measure of operating profit. Capex refers to capital expenditures. In Panel B, the deal structure at entry and exit is analyzed and Panel C presents the equity returns achieved by Bain Capital.

Panel A - Operating Performance			
	FY 2003	**FY 2006**	**CAGR**
Sales (€m)	4,220	5,958	*12.2%*
Gross Profit (€m)	974	1,170	
Gross Profit / Sales (%)	*23.1%*	*19.6%*	
EBITDA (€m)	235	331	*12.1%*
EBITDA / Sales (%)	*5.6%*	*5.6%*	
EBITDA / Gross Profit (%)	*24.1%*	*28.3%*	
Capex (€m)	113	88	*-8.0%*
Capex in % of Sales	*2.7%*	*1.5%*	

Panel B - Deal Metrics		
	Entry Mar 03	**Exit Jun 06**
Enterprise Value (€m)	1,250	3,100
EV / EBITDA	*5.4*	*8.9*
Net Debt (€m)	980	2,150
Net Debt / EBITDA	*4.2*	*6.2*
Equity (€m)	270	950
Net Debt / Equity	*3.6*	*2.3*

Panel C - Returns*	
IRR (%)	>100%
Money Multiple	5.3

** Return measures include recaps in 2004 and 2005.*

introduction of a standard investment appraisal process. Furthermore, they advised the local Brenntag management teams in each country to develop, competitive market maps to identify potential acquisition candidates. The reinvigorated focus on M&A also manifested itself in detailed discussions at every board meeting. As Siefke recalled:

> *"... During the board meetings, we spend about one third of the time on the financial performance and two thirds on organic growth initiatives and M&A ..."*

Finally, Bain Capital focused on improving operational effectiveness with a specific focus on reducing capital expenditures (capex). At the time of the acquisition in 2003, Brenntag's capex amounted to €113m, which was approximately three times higher than at the only slightly smaller competitor Univar.[64] According to Kastner:

> *"... Brenntag invested way more than they needed to maintain their asset base, all their plants were gold plated ..."*

The figures in Panel A in Table II-1, which illustrates the operating performance of Brenntag during the ownership of Bain Capital, show that these strategic goals were successfully implemented. As far as operational effectiveness is concerned, capex of Brenntag was reduced from 2.7% of sales in 2003 to 1.5% in sales in 2006 or reduced by €25m in absolute terms despite a strong growth in sales and EBITDA. Brenntag achieved an average sales growth of 12.2% p.a. and, more importantly, gross profit grew by 6.3% p.a. and EBITDA by 12.1% p.a.[65] One of the main drivers was the ten acquisitions undertaken under Bain Capital's ownership, as displayed in Panel A of

[64] Univar had capital expenditures of c. €30m in 2003.

[65] These results are based on the actual full year results of Brenntag for 2006. Brenntag conducted three large acquisitions in 2006 as displayed in Panel A of Table 3. Including the full year effect of these acquisitions, Brenntag's sales for 2006 would have been €6,100m, the gross profit €1,280m and the EBITDA €370m.

Table II-3. Stand-alone, these ten acquisitions generated cumulative sales of c. €700m or over 15% of Brenntag's 2003 sales or around 40% of the absolute increase in Brenntag sales over the period 2003 to 2006.

After having completed two recapitalizations in 2004 and 2005 to take advantage of the improved financing environment, Bain Capital started to discuss a potential exit of its investment in the second half of 2005. At the time, there were quite a few successful investments in the respective Bain Capital funds. Since it is in the interest of private equity funds to maintain an appropriate diversification of exits across time and thereby achieve a relatively stable cash distribution profile (Strömberg 2008), Bain Capital decided to sell Brenntag. However, the decision was based on a long internal discussion considering the trade-off between current valuation levels and further value creation potential in Brenntag. According to Siefke:

> *"... Our European fund looked fantastic on paper and we wanted to show an exit. You risk looking very stupid if you fail to realize an investment that promised to be great value. However, the issue was fiercely debated in the investment committee and deal team ..."*

In terms of exit route, a trade sale was deemed unlikely since (i) a horizontal merger with one of the large competitors such as Univar or Ashland would not be allowed by competition authorities and (ii) a vertical acquisition by a chemical producer was unrealistic given the ongoing trend towards outsourced chemical distribution. While an IPO was initially contemplated, the choice fell on a secondary sale to another private equity investor. In 2006, the leverage markets were very strong so that a secondary sale was more competitive than an IPO in terms of valuation. Furthermore, it would allow Bain Capital to fully realize the investment immediately. Therefore, Bain Capital initiated a mini-auction among a number of private equity

groups in late 2005. However, since none of these met Bain Capital's reserve price, the mini-auction was quickly abandoned.

3.3 The Secondary Buyout of Brenntag

Despite its early withdrawal in the first process in 2003, BC Partners closely followed the evolution of Brenntag under the ownership of Bain Capital and stayed in touch with the management team. Yet when Bain Capital invited BC Partners to the mini-auction, they declined to participate since they deemed the three weeks allotted for due diligence too short. However, once the mini-auction was abandoned, BC Partners decided to approach Bain Capital in early 2006 to negotiate a valuation and term sheet based on which Bain Capital would be willing to sell Brenntag. Subsequently, BC Partners commenced the due diligence process and on July 25, 2006 the transaction, which valued Brenntag at €3.02 billion[66] (equivalent to 8.7x EBITDA)[67] was signed. Since the valuation was pre-agreed and BC Partners had access to up-to-date due diligence material from the recapitalization in late 2005, the transaction was signed after a period of only six weeks. The total equity capital invested in this transaction amounted to €850m[68] pooled in Brachem Acquisition SCA of which BC Partners contributed 82% and the remainder came from Bain Capital, Goldman Sachs and management. Bain Capital reinvested €80 million, which served as a signal to the acquirer that they saw continued attractive value creation potential, or in the words of Siefke:

> *"… We really wanted the Brenntag reinvestment. We still thought it was a very good asset…"*

[66] Excluding transaction cost.

[67] This is based on the LTM EBITDA adjusted for the acquisitions undertaken by Brenntag in the last twelve months prior to the acquisition.

[68] The total equity capital consisted of €780m in straight equity and €70m to fund the transaction cost.

The remainder of the transaction was financed with debt capital, amounting to 6.5x EBITDA.

BC Partners' investment rationale centered on a continuation of the growth path that was initiated under Bain Capital ownership, driven by further consolidation of the still very fragmented chemical distribution market. In 2006, Brenntag's market share was still only 6.9% (Elser et al. 2010). Furthermore, BC Partners was also attracted by Brenntag's significant downside protection due to stable margins and the counter-cyclical cash effects from reduced working capital. Therefore, Brenntag was an ideal anchor investment for BC Partners' eighth fund BCEC VIII, which was raised in 2005, or as Koffka, partner at Freshfields Bruckhaus Deringer,[69] put it:

> *"... Even for a large fund like BC Partners, Brenntag was a sizeable investment. However it was not an overly risky investment and, therefore, this can serve to stabilize the fund from a portfolio management perspective ..."*

The secondary buyout overlapped with the departure of Engel who had received the offer to become CEO of specialty chemicals company Degussa which later became Evonik Industries. His decision to leave Brenntag was due to the attractive new opportunity on a professional as well as personal level and was not driven by the private equity sponsor. Clark became new CEO of Brenntag and William Fidler was appointed to President of Brenntag North America.[70] Furthermore, Steve Holland joined the management board as Head of Brenntag Europe,[71] as Chief Operating Officer (COO). Holland had led the acquired Albion Chemical Group which was

[69] Koffka is a partner at FreshfieldsBruckhausDeringer (FBD). FBD advised Deutsche Bahn on the sale of Brenntag in 2003, BC Partners on the acquisition of Brenntag in 2006 as well as the IPO in 2010.

[70] Fidler had been Executive Vice President of Brenntag North America since 1998.

[71] Steve Holland replaced Daniel Pithois, the former Head of Brenntag Europe, who left Brenntag by mutual consent in 2007.

acquired by Brenntag earlier in 2006. The negotiation of the management incentive scheme was a key priority for BC Partners. First, they pushed for a reinvestment of over 50% of the proceeds that top management had earned in the initial buyout to ensure their continued motivation, which implied a significantly higher financial commitment of management in the secondary buyout. Second, they extended the broader management incentive package to 120 Brenntag employees in order to reflect the importance of middle management in the decentralized organizational structure of Brenntag. Zuschke commented:

> *"… Brenntag has a very decentralized business model and therefore it was very crucial to have the middle management such as the country heads, the sales team and the finance team on board. As soon as they realize what they can do to improve the valuation of their shareholding, they tackle topics in a different manner…"*

BC Partners continued the strategic initiatives that were commenced under the ownership of Bain Capital, but for a slight change of the focus of the acquisition strategy: In the primary buyout, the majority of acquisitions were made in mature markets to increase local market share, now the focus turned to emerging markets such as Latin America and Asia (see Table II-3). Zuschke, Managing Partner at BC Partners,[72] said:

> *"… We changed the focus slightly, yet we did not change the strategy. Bain Capital did a great deal of groundwork …"*

Furthermore, in the advent of the financial crisis in 2008, Brenntag developed a contingency plan in close discussions with BC Partners, which involved various

[72] Zuschke was a managing partner at BC Partners. He was part of the deal team that evaluated Brenntag in 2003, led the team that conducted the transaction in 2006, and is head of the supervisory board of Brenntag since 2006.

measures to reduce the cost base. According to Kastner, the initiation of the contingency planning process was one of the "key value adding contributions of BC Partners." Finally, BC Partners initiated a capital increase of €40m in the beginning of 2009 to ensure continued funding for Brenntag's acquisition strategy.

This was received very positively by management, or as Müller, Head of Investor Relations at Brenntag,[73] said:

> *"... In the course of 2008, we were somewhat cash constrained when working capital increased due to a strong increase in chemical prices and mostly strong demand and we could not fully follow-up on our pipeline of acquisition candidates. As a reaction, BC Partners did a capital increase to support our growth strategy ..."*

Overall, the operating performance of Brenntag continued to improve during the ownership of BC Partners as the figures in Panel A in Table II-2 illustrate. Brenntag achieved sales growth of 6.4%, gross profit growth of 8.7% and EBITDA growth of 15.9% in the period 2006 to 2010. Acquisitions continued to be a strong growth driver, as displayed in Panel B in Table II-3. Stand-alone, these 21 acquisitions generated cumulative sales of about €500m over 8% of Brenntag's 2006 sales or over 30% of the absolute increase in Brenntag sales over the period 2006 to 2010. The regional split of these acquisitions shows that new focus on emerging markets set by BC Partners was implemented. Especially the acquisitions of Rhodia in 2008 and EAC in 2010 helped to establish Brenntag's presence in Asia, which was seen as an important strategic goal on route to a public listing. As far as operational effectiveness is concerned, capex of

[73] Müller was Head of Investor Relations at Brenntag. He joined Brenntag in 2003 to head the treasury and controlling department.

Table II-2: The Secondary Buyout by BC Partners

This table presents in Panel A the analysis of the operating performance of Brenntag under the ownership of BC Partners. EBITDA refers to the Earnings before Interest, Depreciation and Amortization and is a measure of operating profit. Capex refers to capital expenditures. In Panel B, the deal structure at entry and exit is analyzed and Panel C presents the equity returns achieved by BC Partners.

Panel A - Operating Performance			
	FY 2006	**FY 2010**	**CAGR**
Sales (€m)	5,958	7,649	*6.4%*
Gross Profit (€m)	1,170	1636	*8.7%*
Gross Profit / Sales (%)	*19.6%*	*21.4%*	
EBITDA (€m)	331	598	*15.9%*
EBITDA / Sales (%)	*5.6%*	*7.8%*	
EBITDA / Gross Profit (%)	*28.3%*	*36.6%*	
Capex (€m)	84	85	*0.3%*
Capex / Sales (%)	*1.4%*	*1.1%*	

Panel B - Deal Metrics		
	Entry Jun 06	**Exit (IPO) Mar 10**
Enterprise Value (€m)	3,020	3,900
EV / EBITDA	*8.7*	*7.9*
Net Debt (€m)	2,250	1,830
Net Debt / EBITDA	*6.5*	*3.7*
Equity (€m)	770	2,070
Net Debt / Equity	*2.9*	*0.9*

Panel C - Returns*	
IRR (%)	30%
Money Multiple (x)	2.8

** Return measures calculated based on realised proceeds and value of residual stake at the end of 2011.*

Table II-3: Acquisitions Undertaken in the Primary and Secondary Buyout

This table presents the acquisitions undertaken by Brenntag under the ownership of Bain Capital and BC Partners respectively. For BC Partners, all acquisitions until the end of 2010 were considered.

Panel A - Acquisitions under Bain Capital Ownership

Company	Country	Region	Sales prior to acquisition (€m)
2004			
Orlen Polimer	Poland	Eastern Europe	n/a
Aquacryl / Chemacryl	UK	Western Europe	12
2005			
South Texas Oil and Gas	USA	North America	n/a
Especialidade Puma	Spain	Southern Europe	n/a
Chem-On	Switzerland	Western Europe	11
Quadra Chemicals	USA	North America	66
Group Alliance		Africa	12
2006			
LA Chemicals		North America	139
Albion Chemicals Group		Europe	276
Schweizerhall Chemie		Europe	140

Total Number of Acquisitions	10
Total Acquired Sales (€m)	c. 700
Total Acquired EBITDA (€m)	c. 50

Panel B - Acquisitions under BC Partners Ownership

Company	Country	Region	Sales prior to acquisition (€m)
2006			
Wil-Chem Speciality Chemicals	Canada	North America	n/a
2007			
St. Lawrence Chemical	Canada	North America	87
Ulrich Chemcial	USA	North America	70
Natural World	Italy	Southern Europe	n/a
Abaci	Turkey	Middle East	n/a
2008			
Schoofs	USA	North America	n/a
BASF Distribution Center	Mexico	North America	n/a
Yara Chemical Distribution Division	Sweden	Northern Europe	n/a
Dipol Chemical International	Ukraine	Eastern Europe	68
C.N. Schmidt	The Netherlands	Western Europe	n/a
Rhodia	Several	Asia-Pacific	56*
Inquimex	Argentina	Latin America	n/a
Aeromaster	Turkey	Middle East	n/a
Trend Gida	Turkey	Middle East	n/a

Panel B - Acquisitions under BC Partners Ownership (continued)

Company	Country	Region	Sales prior to acquisition (€m)
2009			
Austro	Mexico	North America	n/a
CH Chemicals	South Africa	Africa	n/a
East-Chem	Canada	North America	n/a
2010			
EAC	Several	Asia Pacific	220
HCC Industrial Solvents Division	USA	North America	23
Metausel	France	Western Europe	n/a
Productos Riba Food & Water Treatment Division	Spain	Southern Europe	11

Total Number of Acquisitions	21
Total Acquired Sales (€m)	c. 500
Total Acquired EBITDA (€m)	c. 35

* Distribution sales only, in addition Rhodia acts as sales agent for third parties. These commission sales amount to c. €200m

Brenntag were further reduced from 1.4% of sales in 2006 to 1.1% of sales in 2010 and stayed constant in absolute terms.

3.4 The Initial Public Offering

Potential exit scenarios for Brenntag were initially discussed in mid-2009. A trade sale unlikely for the same reasons as in 2006. Zuschke commented:

> *"... There was no natural fit. Brenntag's business is so unique that there is no spot for it in another company's supply chain ..."*

Similarly, a tertiary buyout was highly unlikely given the sheer size of the company. Due to the depressed state of the leveraged loan markets at that time, it would have been impossible to obtain debt financing of such a transaction, as Frohn, Managing Director of Morgan Stanley,[74] explained:

> *"... The leverage loan markets were basically nonexistent in 2009/10. Since most of the Brenntag debt was syndicated, a mere roll-over of the debt was an impossible task. Similarly, it was impossible to build a new lending consortium for a €2bn loan during that time ..."*

Preparations for an IPO were started in late 2009 and on March, 29th 2010 Brenntag was successfully listed on the Frankfurt stock exchange. Close to 15 million shares, consisting of a capital increase of 10.5m shares and 4.45m shares from existing shareholders, were sold at a price of €50 per share, valuing the company at €3.9 billion (equivalent to 7.9x EBITDA). This reduced the shareholding of the Brachem Acquisition SCA to 71.0%. Initially, a larger sell down was envisaged, yet since the valuation was at the lower end of BC Partners' price expectation and the market

[74] Frohn was a managing director at Morgan Stanley. The investment bank advised BC Partners on the acquisition of Brenntag in 2006.

environment was far from ideal the proportion of existing shares to be sold in the IPO was reduced. Koffka recollects:

> *"... In the end the decision whether to proceed with the IPO was on the brink. BC Partners then decided to go through with it, but reduced the stake significantly. This was very clever: now they had a liquid asset and the subsequent share price performance proved them right ..."*

BC Partners' decision to go ahead with the IPO was driven by the fact that at the time of the IPO they already held the investment for close to four years, which is a typical holding period for private equity investments (Strömberg 2008). In addition, they took into account the positive effect this (partial) exit might have had on the fundraising of the ninth fund BCEC IX, the first close of which was held in March 2011. Zuschke comments:

> *"... We started preparations for fundraising in 2009, and this definitely had a big impact on our decision when to exit Brenntag. Many of our investors had suffered in the crisis and would only invest again if money from the prior fund was disbursed ..."*

Subsequently, the Brachem Acquisition SCA reduced its shareholding to 49.6% by selling further shares at a price of €60.75 on October, 1st 2010. On January, 19th 2011, Brachem Acquisition SCA sold a further 7m shares at a price of €71.50, thereby reducing its stake to 36%. As of December 2011, BC Partners' funds had realized proceeds of €1,145 million and including the BC Partners' funds' residual stake at €72.18 per share, equivalent to the closing price on December, 30th 2011, the investment was valued at 2.8x cost, with over 55% of proceeds realized. Overall, due to the share price appreciation post-IPO the exit valuation achieved by BC Partners,

taking account of the staged exit at different share prices, improved to around 8.1x EBITDA[75] per end of 2011.[76]

When considering overall equity returns of both transactions, it becomes clear that both transactions were successful in their own respect. Bain Capital realized an IRR of over 100%, equivalent to a money multiple of 5.3 times, in a very short holding period of only 2.6 years, while BC Partners achieved an equity IRR of 30%, equivalent to a money multiple of 2.9 times, over a holding period of 3.8 years. Accounting for the differences in transaction size as well as the macroeconomic environment, both transactions can be deemed very successful. Frohn commented:

> *"… Bain Capital realized over 5x money, which is very good for the first large transaction in Germany […]. BC Partners bought the company around the peak of the market and then barely scraped by to do the IPO in March 2010 when the markets were very volatile. They still made close to three times money, which is fantastic for such a large transaction …"*

4. Case Analysis and Development of Propositions

The value creation achieved in leveraged buyouts is usually split into three categories: (i) operational performance improvements, (ii) leverage and (iii) multiple expansion[77] (Kaplan and Strömberg 2009). In the following, we first present the limited theoretical and empirical evidence on the importance of each of these drivers in secondary buyouts, and then we discuss the quantitative and qualitative findings that

[75] Weighted average of IPO valuation, staged exits and valuation on December, 30th 2011.

[76] Subsequently, Brachem Acquisitions SCA reduced its shareholding to c. 27.3% in January 2012, selling 4.5m shares at a price of €70.00. In February 2012, it then further reduced its shareholding to 13.7%, selling 7m shares at a price of €82.50.

[77] See Achleitner et al. (2010) for a detailed discussion of methodologies to analyze value creation in private equity deals.

emerge from the case of Brenntag. Table II-4 presents a variety of variables to analyze each of the value creation categories for both the primary and secondary buyout of Brenntag. In the analysis of the Brenntag case, we build on these quantitative measures to compare value creation in the primary and secondary buyout. However, we go beyond a quantitative comparison and analyze contextual factors that led to these value creation outcomes. Our aim is to understand the specific drivers of value creation in the secondary buyout of Brenntag. Based on the case analysis, we then develop propositions on the value creation profile of secondary buyouts to guide future research in this field.

4.1 Operational Performance Improvements

Operational performance improvements in leveraged buyouts comprise measures that increase the cash flow of the portfolio company, namely sales growth, margin expansion as well as streamlining of capex and working capital (Kaplan 1989). Operational performance improvements are achieved by (i) improved incentive alignment via increased managerial ownership (Muscarella and Vetsuypens 1990; Leslie and Oyer 2009) or the use of leverage thereby exploiting the disciplining effect of debt (Jensen 1989), (ii) governance engineering through improved reporting procedures and active monitoring (Acharya et al. 2011), and, (iii) the provision of smart money and operational engineering by buyout executives (Kaplan and Strömberg 2009; Sousa 2010). The potential for further operational improvements could be limited in secondary buyouts because improved incentive alignment and governance engineering can be seen as a one-off event (Wright, Gilligan et al. 2009). Furthermore, a private equity investor will seek an exit for an investment when the projected marginal value that the investor can still add is higher than the projected marginal cost of that very value contribution (Cumming and MacIntosh 2003). Additional operational value creation in secondary buyouts could therefore stem

mainly from different skills among the primary and secondary private equity group (Sousa 2010; Wang 2011).

Both Wang (2011) and Achleitner and Figge (2012) find no evidence that secondary buyouts display less improvements in operating performance. It is questionable whether these non-results in the difference of operational value creation can fully be explained with different skill sets of the primary and secondary private equity group. The Brenntag case offers an interesting setting to delve deeper into explaining operational improvements in secondary buyouts. Since both Bain Capital and BC Partners constitute two large international, generalist private equity firms[78] with no clear differentiation in terms of general investment approach or industry focus, different skills are unlikely to be the main source of continued operational performance improvements. Accordingly, all participants agreed that BC Partners continued the investment strategy developed under the ownership of Bain Capital. Frohn commented:

> *"… Overall, BC Partners continued where Bain Capital had stopped. The management of Brenntag was very much focused to generate operational value over several financing rounds and across different financial sponsors …"*

Therefore, the Brenntag case offers the opportunity to gain further insights on drivers of operational value creation in secondary buyouts if the capabilities and strategies of the primary and secondary private equity group are similar. We find that in the primary buyout, an average annual growth in gross profits of 6.3% was reached,

[78] Bain Capital was established in 1984. Headquartered in Boston, they started making investments in Europe in 1989. At the time of the secondary buyout, its latest global (European) private equity funds were raised in 2006 (2004) with a committed capital of €8.0bn (€1.0bn). BC Partners eighth fund was raised in 2005 with a committed capital of €5.9bn in committed capital and closed its ninth fund with a size of €6.5bn in February 2012. Both firms were among the top 50 global private equity firms according to PEI's 2007 ranking.

while in the secondary buyout gross profits increased by an annual average of 8.7% (see Table II-4).

In order to further analyze operational performance, we consider two additional variables to analyze profitability growth and cash flow improvements. We use the EBITDA growth over the holding period of the investment to analyze improvements both in growth and profitability. Our results show that annual EBITDA growth was very strong both in the primary buyout (12.1%) and in the secondary buyout (15.9%).[79] A more granular analysis of sales growth and EBITDA margin improvements is not meaningful in the case of Brenntag since the sales growth is affected by fluctuations in the chemical price and sales volumes are not publicly reported by the company.

Furthermore, we use the delta capex in % of sales as a measure for cash flow improvements in the primary buyout (-1.2%) and the secondary buyout (-0.3%). Comparing these variables we see that in the primary buyout cash flow improvements by reducing capex, which had a positive impact on both the lending capacity valuation of Brenntag were a key value driver as initially envisaged by Bain Capital. It is important to note that the reduction in capex was by no means compromising Brenntag's capacity to grow, but rather the result of a more diligent investment approach with an increased focus on return on capital. In the secondary buyout, most of the operational value improvements were achieved from EBITDA growth. Acquisitions played a key role both under Bain Capital and BC Partner ownership. Even though a smaller number of acquisitions were realized in the primary buyout (10 vs. 21), the size of these acquisitions were on average larger with a total acquired sales of c. 700m compared to c. 500m in the secondary buyout (see Table II-3).

[79] These growth rates are based on reported figures. If one takes into account the full year impact of acquisitions, the EBITDA growth is c. 18% in the primary buyout and c. 13% in the secondary buyout.

In the case of Brenntag it is clear that continued operational performance improvements were achieved in the secondary buyout. We identified two general explanations for this continued operational value creation. First, every company continuously strives to improve its operational performance and faces every new challenges from a changing market and competitive environment. Furthermore, if a company offers no growth prospects beyond the exit, this will be reflected in a low exit valuation since the valuation is positively correlated with the company's future growth prospects. Siefke commented:

> *"... There is no such thing as all operational improvement measures. Every company has to become better in a sense, they are ever-evolving units. Furthermore, you want to sell companies with continued growth prospects, since this drives your exit multiple and valuation ..."*

However, these notions do not explain why this continued operational value creation has to be undertaken in a private equity governance model. This question, which has been subject of an ongoing debate, was kicked off by Jensen (1989) and Rappaport (1990). While the former argued that private equity will emerge as a new alternative form of governance, Rappaport (1990) purported that every company will only spend a limited period in private equity ownership to undertake structural adjustments, which then result in a step change of operating performance. While data from Strömberg (2008) suggests that companies are on average close to 9 years in private equity ownership, Jensen's (1989) notion has been readily accepted as of now and private equity is still seen as a temporary governance model. Therefore the question arises why attractive operational performance improvements can still be achieved in a secondary buyout. Based on our interviews, we found one central reason for the continued operational value creation in the absence of different skills among buyer and seller in a secondary buyout, namely the sale of a portfolio company by a

private equity sponsor before having realized all operational value creation measures (Sousa 2010; Achleitner and Figge 2012). First of all, the overall fund situation influenced Bain Capital's exit decision. As laid out in section 3.2, Bain Capital wanted to exit an investment in order to achieve an appropriate diversification of exits and thereby ensure a steady stream of distributions to its investors. On the other hand, it saw continued value creation potential and therefore invested alongside BC Partners in the secondary buyout.

Therefore, we argue that there are both structural and opportunistic reasons that drive a financial sponsor's decision to sell an investment although there is still significant potential to improve the operational performance. The structural argument relates to the fact that private equity fund lifetime is typically limited to ten years (see e.g. Kaplan and Schoar 2005), which leads to an average holding period of around four years (Strömberg 2008). Thus a financial investor may be forced to sell an investment either because the fund approaches the end of its lifetime or because the time needed to realize all value creation potential exceeds the typical holding period, as suggested by anecdotal evidence.[80] In the case of Brenntag this structural reason is reflected by the fact that Brenntag was overall in private equity ownership for seven years which is much longer than the typical private equity holding period and that Bain Capital illustrated by its follow-on investment that it saw room for further value creation after its initial exit.

In addition to these structural reasons, there are two opportunistic motivations for an early exit of the primary private equity group. Private equity sponsors usually raise a new fund around the time when the investment period of the current fund, which is typically around five years (Kaplan and Strömberg 2009), expires. As the performance

[80] See Achleitner et al.'s (2010) case study on New Look, where the management pursued a secondary buyout to continue the company's growth strategy.

of the current fund and especially returns on realized investments is one of the key focus areas for limited partners in their due diligence, private equity sponsors may be inclined to sell early to generate a track record in order to facilitate fundraising (Sousa 2010; Wang 2011). Although this was not one of the drivers that influenced Bain Capital's decision to sell Brenntag, it is a commonly observed phenomenon in the industry. Frohn commented:

"… Buying and selling are clearly driven by the fundraising cycle …"

Furthermore, private equity sponsors try to achieve a stable cash flow profile (Strömberg 2008) and are therefore limited in their holding period even when they are still well within the boundaries of fund lifetime. Although In the case of Brenntag, several interviews argued that the fundraising efforts for Bain Capitals global private equity fund in 2006 may have played a role in their exit timing. According to Siefke, fundraising dynamics did not play a role, but Bain Capital intended to distribute some cash back to its investors and this was one of the main drivers of the opportunistic decision from Bain Capital to pursue the secondary buyout of Brenntag even though potential for operational improvements still remained. Hence, we propose:

> ***Proposition 1:*** *Due to fund level considerations, the primary private equity group may be forced to exit the portfolio company prior to the full realization of operational improvements, thereby leaving operational value creation potential for the secondary private equity group.*

Table II-4: Value Creation in the Primary and Secondary Buyout

This table presents the acquisitions undertaken by Brenntag under the ownership of Bain Capital and BC Partners respectively. For BC Partners, all acquisitions until the end of 2010 were considered.

	Bain Capital 1st LBO	**BC Partners 2nd LBO**
Operating Performance		
Gross Profit Growth p.a. (%)	6.3%	8.7%
EBITDA Growth p.a. (%)	12.1%	15.9%
Delta Capex in % of Sales	-1.2%	-0.3%
Leverage Effect		
Net Debt / EBITDA at Entry	4.2	6.5
Net Debt / Equity at Entry	3.6	2.9
Multiple Expansion		
Delta Enterprise Value / EBITDA	3.6	-0.6*
Equity Returns		
IRR (%)	100+	30
Money Multiple (x)	5.3	2.9
Holding Period (years)	2.5	3.8

* Based on weighted aver exit valuation per December 2011.

An improved incentive alignment of the management team is commonly agreed to be one of the main drivers for operational value creation in a buyout. As already mentioned earlier, improved incentive alignment is achieved via increased managerial ownership (Muscarella and Vetsuypens 1990; Leslie and Oyer 2009), which is deemed to effect only a one-off step change in the performance of the portfolio company (Wright, Gilligan et al. 2009). As this one-off step change is usually already achieved in the primary buyout, further effects from an improved incentive alignment could be limited in a secondary buyout. Considering the findings that emerge from the Brenntag case, we propose to amend this conclusion to some extent. First, incentive systems only work if they are fully understood in their mechanics and (monetary) impact. Second, the impact of incentive systems is positively correlated to the absolute and relative amount of financial resources invested and the expected rewards.

In the primary buyout of Brenntag, management at first underestimated the effect of the management package and had relatively little resources to commit. By the time of the secondary buyout, they fully appreciated the intention and reward of the management package, illustrated by the more detailed and lengthy negotiation with BC Partners. Clark commented:

> *"... While we knew in the first buyout that there will be a significant reward from the management package, but we were not really believing it, it was simply not that tangible. And then there was a significant financial reward, and therefore it may have had a greater impact in the second time ..."*

Furthermore, after the successful primary buyout, they had significantly more financial resources to commit. Koffka commented:

> *"... In a secondary buyout, private equity investors are therefore free to structure a management incentive scheme that not only involves*

significant upside, but also downside due to the investment by management. This makes incentivisation much more effective …"

On the other hand, if one assumes a declining marginal benefit from financial compensation, it becomes more difficult to incentivize management in a secondary buyout, who have already earned a significant financial reward in the first buyout. Therefore, it is key to require management to reinvest a sufficiently high share of the proceeds from the primary buyout in the secondary buyout. In Zuschke's words:

"… It was a very important signal for us that management reinvested around half of their gross proceeds, which showed us that they believed in the continued value creation potential of Brenntag …"

In addition, the effect of the management package was further increased in the secondary buyout by including a larger group of middle managers in the general employee share ownership program. Müller recollects:

"… Middle management level had realized during the first buyout that the employee share ownership program proved to be very attractive. Therefore many of them pushed to be included in the program in the secondary buyout …"

Overall, we conclude with three propositions on the potential to enhance incentive alignment in a secondary buyout:

Proposition 2a: *In a secondary buyout, management's incentive alignment can be enhanced through an increased appreciation of the mechanics of the management package by the management team which can lead to operational value creation.*

Proposition 2b: *In a secondary buyout, management's incentive alignment can be enhanced through an increase in the financial commitment of the existing*

management team to the management package which can lead to operational value creation.

Proposition 2c: *In a secondary buyout, management's incentive alignment can be enhanced through an increase in the number of participants in the management package which can lead to operational value creation.*

4.2 Leverage

The use of leverage affects the return realized in a private equity transaction in two ways: First, it positively affects the cash flow generation due to the disciplining effect of debt (Jensen 1989) and the tax shield (Kaplan 1989). Second, the use of leverage helps to boost equity returns by increasing the financial risk of a transaction as exemplified in the leverage formula first developed by Modigliani and Miller (1958). In the case of secondary buyouts, leverage is commonly thought to be one of the main value creation drivers. (Achleitner and Figge 2012) find that leverage is 28-30% higher in secondary buyouts compared to primary buyouts. In order to analyze leverage in the case of Brenntag, we use two measures: Net debt / EBITDA at entry relates total net financial liabilities to the EBITDA as a measure of the debt redemption capacity of the company (Demiroglu and James 2010), while net debt / equity at entry is a measure of the financial risk a transaction can support. In line with Achleitner and Figge (2012), we find that at 6.5x net debt / EBITDA more leverage was granted in the secondary buyout, while the financial risk of the transaction measured was actually lower than in the secondary buyout at 2.9x net debt / equity (see Table II-4).

Our interviews highlight that the higher leverage is likely to be attributed to reduced informational asymmetries between the lender and the private equity group in a secondary buyout setting. The extent of such informational asymmetries is one of the

key drivers of how much leverage a bank grants at what conditions (Ivashina 2009). Prior to the primary buyout of Brenntag, the lenders had to collect relevant information about the asset in a relatively short time frame. As the same lenders who were involved in the primary buyout also provided the loan in the secondary buyout, information asymmetries were lower. The banks could base their lending decision on detailed information collected since the primary buyout of Brenntag, as Frohn recollects:

> *"... In a primary buyout, the credit officer has around two months to familiarize himself with the asset, while in a secondary buyout he has a much more detailed information set: a) the company's track record in operating with a highly levered capital structure for the past few years, b) due diligence information generated for the primary buyout, and, c) due diligence information generated for the secondary buyout. It is logical that based on these information he is likely to grant more leverage, or better terms or both ..."*

Therefore, we develop the following proposition.

Proposition 3: *In a secondary buyout, informational asymmetries between the lenders and the private equity group are lower than in a primary buyout which leads to higher leverage ratios in secondary buyouts.*

4.3 Multiple Expansion

Multiple expansion is the third value creation driver in private equity buyouts. According to Achleitner et al. (2011), two factors mainly drive multiple expansion: First, the market timing skills, commonly referred to as 'buy-low-sell-high' strategy, and, second, the negotiation skills of the private equity firm purchasing a target company. If one compares a secondary buyout to the other three predominant deal

sources for private equity firms, namely private-to-privates, corporate spin-offs and public-to-privates, it becomes clear that the room for multiple expansion should be lower in a secondary buyout. In both private-to-privates and corporate spin-offs, the seller arguably has less market-timing and negotiation skills than in a secondary buyout where the seller is a private equity firm. In public-to-privates, negotiation skills should be equivalent since the counter party is "the market", which should lead to a competitive pricing, yet market-timing is left to the financial sponsor undertaking the transaction. Therefore, only in a secondary buyout, the counterparty has both market timing and negotiation skills similar to those of the prospective buyer and therefore room for multiple expansion should be lower driven by a higher entry valuation.

Considering the case of Brenntag, we find ample evidence for this argument. We use the delta enterprise value / EBITDA to measure the multiple expansion, which measures changes in relative valuation between entry and exit. A first look at the numbers as laid out in Table II-4 shows that multiple expansion only contributed to value creation in the primary buyout: while Bain Capital managed to achieve a positive multiple expansion of 3.6, BC Partners had to cope with a multiple contraction of 0.6. Arguably, some of the multiple expansion achieved by Bain Capital was driven by the improved cash flow generation of Brenntag's business model, once the capex were streamlined. This improved the lending capacity of Brenntag and, therefore, had a positive impact on the valuation of the company. Siefke recollects:

> *"... We focused more on the EBITDA-capex multiple, a multiple that is often used as a cash flow proxy. Here, the multiple expansion that we achieved was far less pronounced. Therefore, one of the main drivers of the EBITDA multiple expansion was the reduction in capex ..."*

In addition, Bain Capital exercised both its market timing and negotiation skills in the sale of Brenntag to BC Partners in 2006. First of all, they timed the sale at

around the peak of the leveraged finance markets. In addition, in neither the mini auction initiated at the end of 2005 nor the negotiation with BC Partners did they show any willingness to compromise on their reserve price. Frohn recalls:

> *"… Bain sold more or less on the peak of the market and their demands in terms of valuation were ambitious and non-negotiable …"*

Therefore, we formulate the following proposition.

Proposition 4: *In a secondary buyout, the negotiation and market timing skills of the seller and the buyer are similar which reduces the opportunity to realize a multiple expansion*.

5. Conclusion

The case of Brenntag, the largest (secondary) buyout in Germany at its time, provides an information-rich context to analyze the drivers behind the value creation profile of secondary buyouts and thereby helps researchers and practitioners to understand the rationale for this increasingly important buyout form. Our main findings from the case analysis on the levers of value creation in the secondary buyout of Brenntag are summarized in Figure II-1.

As far as operational value creation is concerned, the analysis showed that continued operational performance improvements can be an important source of value creation even if the buyer does not possess skills and capabilities different to the seller. First, the primary private equity group may pursue an exit before the marginal benefit equal the marginal costs of an investor's value creation efforts thereby leaving the potential for further operational value creation after the secondary buyout. The reasons to pursue an early exit include both structural as well as opportunistic motives. The seller may have to exit an investment early because the time to carry out all operational improvement measures exceeds the typical private equity holding period.

Furthermore, the private equity group may decide voluntarily to pursue an early exit to support its current fundraising efforts or to maintain a certain cash flow profile promised to its investors.

Second, we propose that the positive effect of increased managerial ownership does not necessarily have to be of a one-off nature: the increased appreciation of the mechanics of the management incentive schemes employed in private equity transactions, the greater financial resources of management and the opportunity to increase the pool of managers participating in the scheme help to reinforce, if not increase the impact of management incentivisation and, therefore, governance engineering in a secondary buyout.

Third, the Brenntag case shows that the greater amount of leverage granted in a secondary buyout can be attributed to reduced informational asymmetries between the lender and the secondary private equity group. Fourth, the analysis of Brenntag confirms that secondary buyouts are more expensive than primary buyouts and, consequentially, the opportunities for multiple expansion are limited in such as setting. This is likely to be driven by the degree of seller sophistication in a secondary buyout – the selling private equity sponsor will use his market timing and negotiation skills to maximize his exit valuation.

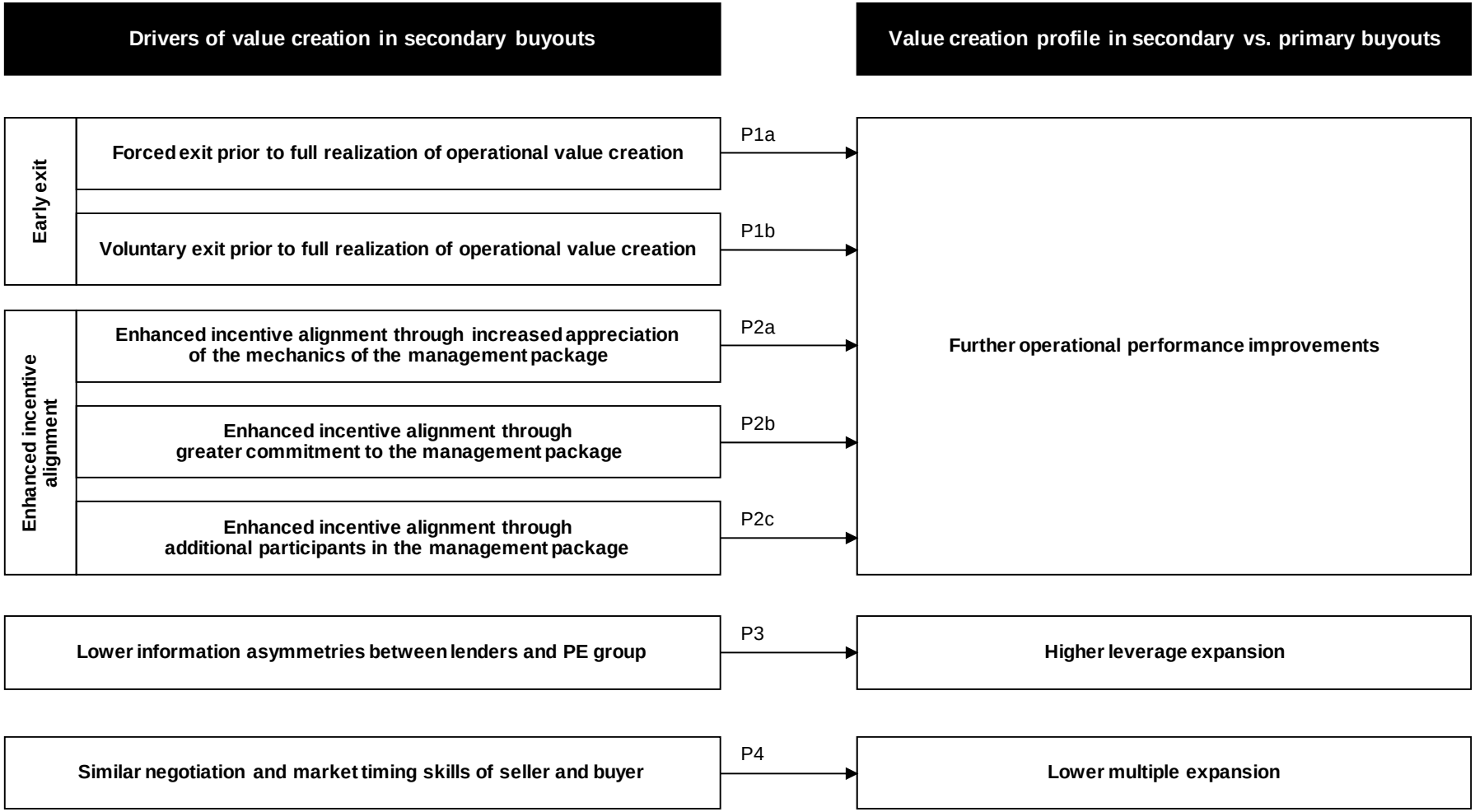
Even though the Brenntag case offers detailed insights on the value creation profile of a specific secondary buyout, further larger-scale research is still required to confirm and generalize the findings from our single-case study. While empirical evidence based on large sample studies already show operational value creation, higher leverage (Achleitner and Figge 2012) and less room for multiple expansion (Sousa 2010, Wang 2010) in secondary buyouts, the drivers of this value creation profile remain underexplored. Our propositions may help to kick start further empirical

research in this field, particularly on the motives to pursue an early exit and on the measures to enhance incentive alignment.

Overall, the case of Brenntag questions the common notion that an IPO is superior to cash exits such as a secondary buyout or a trade sale. Regarding the ranking among different exit choices, a pecking order of exit choices for private equity investments emerged in the venture capital and broader private equity literature (Cumming and MacIntosh 2003; Bienz and Leite 2008; Cumming and Johan 2008). Here, an IPO is usually seen as the preferred exit channel for more successful deals both due to superior returns (Schmidt et al. 2010) and the associated positive reputation effects (Gompers 1996), followed by a trade sale. Secondary buyouts have to date not been integrated in this framework.

However, evidence from the Brenntag case suggests that contrary to conventional wisdom, an IPO does not necessarily have to be the exit of choice for a successful portfolio company. Siefke raised the notion of cash exits comprising both trade sales and secondary buyouts, where the exit proceeds are realized in full upon closing of the transaction, while in an IPO, usually private equity investors only sell a small part of their shareholding. The full realization of exit proceeds in the case of an IPO can take several years. In the case of Brenntag, Brachem Acquisition SCA still had a substantial shareholding of c. 13.7% at the end of March 2012, two years after the IPO in March 2010. According the Siefke, the valuation risk associated with this long tailed realization of exit proceeds in the case of an IPO combined with the detrimental effect on the investment's internal rate of return, render a cash exit often more attractive even if the valuation is lower than the one achieved in the IPO. It would be a fruitful avenue for further research to examine the advantages of cash exits and to thereby challenge the commonly perceived exit pecking order.

Figure II-1: Levers of Value Creation in the Secondary Buyout of Brenntag



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II.II Essay 2 – Private Equity Lemons? Evidence on Value Creation in Secondary Buyouts

Abstract

This paper analyses whether secondary buyouts have a value creation profile and offer equity returns different to that of primary buyouts. Using a sample of 2,456 buyout transactions (including 448 secondary buyouts), we find no evidence that secondary buyouts generate lower equity returns or offer fundamentally lower operational value creation potential. However, we can show that secondary buyouts obtain 28-30% more leverage (measured in terms of debt / EBITDA) than primary buyouts, even after having controlled for debt market conditions. Furthermore, we find evidence that secondary buyouts are 6-9% more expensive than other buyouts.

Keywords: secondary buyouts, private equity, value creation

JEL Classification Code: G11, G24, G34

Authors: Achleitner, Ann-Kristin; Figge, Christian

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1. Introduction

Since Akerlof's (1970) seminal paper on the impact of asymmetric information on the market for used cars, the term 'lemon' has been associated with a defective used car. This paper addresses the question whether the private equity market has its very own lemons problem. 'Used' private equity deals, commonly known as secondary buyouts (SBO), denote the situation where both buyer and seller are financial sponsors. Data on the evolution of the worldwide private equity market from Kaplan and Strömberg (2009) show that while SBOs only accounted for 2% in terms of total enterprise value in the first boom phase of private equity, 1985-1989, their share significantly increased in due course. In the second boom phase, 2005 until mid-2007, every fourth private equity transaction was a secondary buyout, when measured in value terms.

This trend towards SBOs has been met with a certain amount of skepticism in the practical and research community (see e.g. Bonini 2010, Sousa 2010, Wang 2011) for three reasons: First, the operational value creation potential in SBOs is thought to be limited since the first private equity sponsor will already have realized all the 'low hanging fruit', i.e. the easy to realize value creation measures with the largest impact. According to Cumming and MacIntosh (2003), a private equity investor will only sell a portfolio company once the expected marginal return of value creation through his own effort and investment is lower than the marginal cost represented by that very effort and investment. Since private equity investors essentially all rely on the same tools, it is questionable why a follow-on investor would consider the company still a worthwhile investment opportunity. Second, the above mentioned increase in SBO activity coincided with the greater liquidity of the leverage markets during the last

boom period, which may suggest that SBOs only present an attractive deal option if the second financial sponsor is able to take advantage of attractive debt market conditions to increase the financial risk of the transaction in order to make up for the reduced operational value creation potential. Finally, critics argue that SBOs are overpriced since the selling financial sponsor will exercise his market timing and negotiation skills in order to achieve the highest possible value at exit. Taken together, these three arguments paint a very bleak picture of the value creation profile of SBOs, which we call the conventional wisdom on value creation in SBOs: they are expected to be more expensive, while offering less operational value creation potential than deals sourced elsewhere. This should lead to lower returns, unless the leverage effect is used to inflate returns.

However, recent data from Preqin (2011) show that again in 2010 and 2011 – arguably a period where leverage markets were far from overheated – SBOs accounted for roughly a quarter of all private transactions in terms of deal value. Critics may argue that this is driven by the tremendous overhang in private equity funds that could not be invested during the crisis (Lerner 2011). Financial sponsors are under considerable pressure to invest unused funds to catch up on their investment rate and may not act in the interest of investors, the limited partners (LPs). Thus a classic agency conflict would be at work as suggested by Axelson et al. (2009). On the other hand, financial sponsors may find significant operational value creation potential in an SBO setting making them a worthwhile investment opportunity even in times of 'cold' debt markets. Two main reasons are generally put forward to explain this. First, the first financial sponsor may be forced to sell the investment early as (i) the fund

approaches the end of its lifetime (Sousa 2010)[81] or as they (ii) aim to generate a tangible track record in order to facilitate fundraising (Sousa 2010, Wang 2011) or (iii) try to achieve a stable cash flow profile (Strömberg 2008). Second, several authors (Sousa 2010, Wang 2011) suggest that differing skill sets among financial sponsors allow for different value creation strategies. Both reasons support the hypothesis that SBOs still offer ample room for operational value creation potential.

Overall, it is clear that SBOs are an important, yet controversially discussed phenomenon in the realm of private equity and, therefore, SBOs have been identified as one of the most promising research areas in this field (Cumming et al. 2007, Wright et al. 2009). To enrich the ongoing discussion on SBOs and their drivers, this paper addresses two main questions. First, it analyzes the value creation profile of SBOs compared to primary buyouts considering all three value creation levers: (i) operating performance, (ii) leverage, and, (iii) pricing. Then, it tests whether SBOs offer lower equity returns than primary buyouts. The analyses are based on a proprietary sample of 2,456 private equity deals (including 448 Financial Buyouts, SBOs or later stage) completed between 1990 and 2010. 1,300 of these deals are realized transactions (including 173 Financial buyouts). For most of these deals we have information on key operating and financial metrics at entry and exit or last valuation date, as well as all cash flows between portfolio company and private equity sponsor over the holding period as well as the net asset value for all unrealized deals at the last valuation date. To our knowledge, this allows for the first conclusive analysis of the value creation potential of SBOs using a large dataset of transaction level data with granular value

[81] The private equity fund lifetime is typically limited to ten years (see e.g. Kaplan and Schoar 2005, Metrick and Yasuda 2011)

creation information in order to answer the questions whether, and if so, how financial sponsors generate value in 'round two'.

This paper is closely related to three recent working papers which examine empirical evidence on SBOs (Bonini 2010, Sousa 2010, Wang 2011). Bonini (2010) focuses on the question whether the operating performance of the target companies is improved in an SBO and whether the impact is different from that occurring in primary buyouts. Analyzing a sample of 111 deals which were subject to an SBO, Bonini finds that the operating performance of the companies is not meaningfully improved in the SBO compared to industry benchmarks, while there is a significant improvement during the first buyout. Indeed, value creation appears to be mainly driven by leverage as secondary buyers take advantage of (excess) liquidity in the financing markets, which confirms conventional wisdom. Bonini's (2010) sampling strategy is definitely innovative. He collected data in a panel structure on companies over their entire time in private equity ownership and can therefore easily control for a variety of firm specific unobserved effects. However, his analyses focus on the very short performance window of one year prior and post transaction. While this captures the 'low hanging fruit' effect, it cannot be used to adequately assess the actual realized performance over the total holding period. Therefore we believe that Bonini's (2010) findings are not sufficient to close the chapter on SBO value creation and accept conventional wisdom yet.

Sousa (2010) and Wang (2011) focus on SBOs from an exit perspective and examine the motives that drive a financial sponsor to sell to a fellow financial sponsor as opposed to pursuing a trade sale or initial public offering (IPO). Both find that favorable debt market conditions increase the likelihood of an SBO, which again confirms conventional wisdom. Furthermore, Wang (2011) asserts that the sellers'

need to raise new funds increases the likelihood of SBOs and some evidence, albeit mixed, suggests that the operating performance of target firms is still increased in an SBO. We take this as initial evidence that SBOs offer continued potential for operational performance improvement.

The remainder of the paper is organized as follows: Section 2 discusses the theoretical rationales for SBOs. Section 3 presents summary statistics for our data. Section 4 focuses on the value creation profile and return impact of SBOs. Section 5 concludes.

2. Theoretical Background

The value creation achieved in leveraged buyouts is usually split between three drivers: (i) operational performance improvements, (ii) the leverage effect and (iii) pricing82 (Kaplan and Strömberg 2009). While the value creation profile of leveraged buyouts has increasingly moved into the focus of deal level private equity research (see e.g. Acharya et al. 2011, Achleitner et al. 2011), this paper aims to provide a comprehensive discussion of the value creation profile of secondary buyouts compared to primary buyouts, leading to a set of testable hypotheses. Since we have in our data set secondary buyouts as well as some tertiary and even quaternary buyouts (i.e. a third and respectively fourth consecutive financial sponsors is purchasing the company from a fellow financial sponsor), we will use the term Financial buyout in the remainder of the paper.

[82] See Achleitner et al. (2010) for a detailed discussion of methodologies to analyse value creation in private equity deals.

Operational performance improvements in leveraged buyouts comprise all measures that increase the cash flow of the portfolio company, namely sales growth, margin expansion as well as streamlining of capital expenditures and working capital (Kaplan 1989). Several studies (e.g. Kaplan 1989, Muscarella and Vetsuypens 1990) showed that private equity-backed companies outperform peers in terms of operating performance. In an update of Kaplan's (1989) study, Guo et al. (2011) show that operating performance is one of the key value creation drivers in private equity transactions, although their findings on outperformance of private equity companies compared to industry peers is mixed. Two arguments are generally put forward to explain this improvement in operating performance during private equity ownership (i) improved incentive alignment as well as governance engineering, and, (ii) the provision of smart money and operational engineering by buyout executives (Kaplan and Strömberg 2009). Improved incentive alignment is achieved via increased managerial ownership (Leslie and Oyer 2009, Muscarella and Vetsuypens 1990) and the use of leverage to discipline management and use a firm's free cash flow most effectively (Jensen 1989). Governance engineering is achieved through improved reporting procedures and active monitoring of operations by private equity professionals (Acharya, Gottschalg, Hahn and Kehoe 2011, Metrick and Yasuda 2011). Furthermore, financial sponsors increasingly try to build specific operational expertise and industry-specific capabilities to actively support their portfolio companies in improving their operations (see e.g. Kaplan and Strömberg 2009, Sousa 2010).

Despite the fact that in a Financial buyout, the first financial sponsor will already have resolved conflicts arising from misaligned incentives (Wright, Gilligan and Amess 2009) and used his operational skills to reap all the 'low hanging fruit' (i.e. the

easy to realize measures with the largest value creation potential) we argue that there is continued potential for operational performance improvements. First, financial sponsors may exit an investment early even if there is significant operational performance improvement potential left as (i) the fund approaches the end of its lifetime (Jelic and Wright 2011, Sousa 2010)[83] or as they (ii) aim to generate a tangible track record in order to facilitate fundraising (Sousa 2010, Wang 2011) or (iii) try to achieve a stable cash flow profile (Strömberg 2008). Furthermore, the time needed to realize all value creation potential exceeds the typical holding period, as suggested by anecdotal evidence.[84] In addition, we note that while financial sponsors provide active support to their portfolio companies, they may have differing skill sets and resources (see e.g. Acharya, Gottschalg, Hahn and Kehoe 2011, Wang 2011), which can occur along several dimensions, namely (i) size and geographic reach, (ii) network, (iii) industry or (iv) functional expertise[85]. These differences in skill sets and resources imply that a second financial sponsor may still find operational value creation potential, despite the first one having already exhausted all operational value creation potential from his perspective. For these reasons, we assume that Financial buyouts offer continued operational performance improvement potential. We measure this by analyzing the EBITDA growth of Financial and other buyouts.

> ***Hypothesis 1a*** *Financial Buyouts exhibit EBITDA growth similar to that of primary buyouts.*

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[83] The private equity fund lifetime is typically limited to ten years (see e.g. Kaplan and Schoar 2005, Metrick and Yasuda 2011)

[84] See the Achleitner et al. (2010) case study on New Look, where the management pursued a secondary buyout to continue the company's growth strategy.

[85] By functional expertise we mean that private equity sponsors can have expertise in specific strategic areas such as buy-and-build strategies.

Nevertheless, the sources of EBITDA growth may differ for Financial and other buyouts. In a primary buyout, financial sponsors reap the 'low hanging fruit' and focus on efficiency improvements. Therefore, we argue that there is less room for efficiency improvements in the form of EBITDA margin expansion in a Financial buyout.

Hypothesis 1b *Financial Buyouts exhibit lower EBITDA margin expansion than primary buyouts.*

On the other hand, in a primary buyout, financial sponsors have to establish the governance structure and processes required in a leveraged buyout setting – often a lengthy process (Manchot 2010) while in a Financial buyout, the financial sponsor finds a seasoned management team and can immediately focus on operational improvements. Yet these are more likely to come in the form of growth since the efficiency measures will most likely have been realized in the first buyout (Wang 2011).

Hypothesis 1c *Financial Buyouts exhibit higher sales growth than primary buyouts.*

The second value creation driver from an equity holder perspective is the use of leverage, which helps to boost equity returns by increasing the financial risk of a transaction analogous to the body of theory that is grounded on Modigliani and Miller's (1958) seminal work. Via the tax shield, the use of leverage obviously also has a direct effect on company value by increasing the cash flow available to equity holders (Kaplan 1989). In a Financial buyout, the banks are already familiar with the underlying asset, which reduces informational asymmetries. This should have a positive impact on leverage levels and conditions granted for a Financial buyout, as plenty of theoretical and empirical evidence suggests (see e.g. Demiroglu and James

2010, Ivashina 2009). We measure leverage using both the debt / equity and debt / EBITDA ratios, where the debt / equity ratio measures the financial risk a transaction can support in line with the leverage formula of Modigliani and Miller (1958) and the debt / EBITDA ratio approximates the debt redemption capacity of a buyout company (Demiroglu and James 2010). Therefore, we test the following two hypothesis in our analysis.

Hypothesis 2a *Financial buyouts should exhibit higher debt / equity ratios than primary buyouts.*

Hypothesis 2b *Financial buyouts should exhibit higher debt / EBITDA ratios than primary buyouts.*

The third value creation driver concerns the valuation of buyouts. Analogous to Wang (2011) we will focus on buyout pricing at entry in the context of Financial buyouts, as only this variable should be directly influenced by the nature of the seller. Buyout pricing is mainly explained by market timing skills,[86] commonly dubbed 'buy-low-sell-high' strategy, which depends upon the positioning skills both in terms of industry and geography, as well as the negotiation skills of the financial sponsors (Achleitner, Braun and Engel 2011). In a Financial buyout setting, the selling financial sponsor will aim to use his market timing and negotiation skills to realize the highest exit valuation.

Hypothesis 3 *Financial buyouts exhibit higher entry prices than primary buyouts.*

[86] See Kaplan and Strömberg (2009) for an overview of empirical studies on market timing.

Finally, in order to assess the effect of the different value creation profiles of Financial and primary buyouts on overall transaction returns, we also analyze equity returns. Given the Hypotheses 1a through 3, we posit that Financial buyouts should not display lower equity returns than primary buyouts.

Hypothesis 4 *Financial buyouts do not offer lower equity returns than primary buyouts.*

In addition to testing the above hypothesis we control for a variety of factors that could influence the different value creation levers as well as equity returns. Please refer to sections 4.1.1 through 4.4.1 for further detail on these variables.

3. Data Set and Key Descriptives for Financial Buyouts

3.1 Data Set

Our sample forms a subset of data bases compiled by three European funds-of-funds as part of their due diligence effort and represents an updated version of the dataset used in Achleitner et al. (2011). It contains data on transaction level including sponsor level cash flow data of 2,465 buyout transactions entered between 1990 and 2010. Table II-5 presents the key sample characteristics, Table II-6 contains descriptions of the relevant variables used in this paper and Table II-7 shows the correlations for the independent variables used in the subsequent regression analyses.

For all 2,465 transactions we have sponsor level cash flows (i.e. the cash flows between financial sponsor and portfolio company), which allows us to compute gross equity returns (i.e. returns before deduction of management fees and carried interest). For unrealized transactions, which account for 47% of all transactions, our dataset also includes the net asset value of the investment at the latest valuation date. In addition to

general company and deal characteristics (e.g. investment entry and exit year, industry affiliation, country, etc.), our data set includes for most observations the following variables, both for the entry and exit respectively last valuation date of the transaction: enterprise value (EV), debt, equity, EBITDA and sales. We also have information on private equity sponsor characteristics such as headquarter location, fund size, foundation year and fund generation.

A further strength of our data set is its diversity in terms of geographic coverage and financial sponsors. 73% of the transactions involve companies headquartered in Europe, 27% in North America. The United States and the United Kingdom are the two countries with the most observations. The transactions are from 138 different financial sponsors and 357 different funds, where the top 5 financial sponsors account for 21% and the top 5 funds for 9% of all transactions. The average age of a financial sponsor at the time of investment entry is 13.9 years. 25% of all transactions were conducted by first-time funds and 24% by funds of the fifth or older generation. On average, the fund generation stands at 3.2.

As far as any potential survivorship and performance related bias is concerned, we already gained some comfort from our sample diversity, especially in terms of financial sponsors. Two further reasons lead us to believe that the impact of potential sample selection biases on our analyses is very limited. Firstly, our sample contains transactions from all funds that the three funds-of-funds conducted due diligence on and not only those that they actually chose to invest in. Secondly, our sample favorably compares to other studies on private equity transactions across a variety of metrics. Our median IRR and cash multiple (gross of management fees and carried interest) for realized (unrealized) transactions are 29% (9%) and 2.72x (1.25x) respectively (see Table II-8, Panel A). This is within the range of recent studies that

also analyze transaction level data: Acharya, Gottschalg, Hahn and Kehoe (2011) report a median IRR of 43.2% and a median cash multiple of 3.0x for 395 European buyouts. Using a large and representative sample of 5,106 realized buyout transactions, Lopez-de-Silanes et al. (2011) report a median IRR of 26% and a median cash multiple of 2.1x. In addition, our sample contains 5.4% write-offs, which is very close to the long-run average reported by Strömberg (2008).

Since the focus of this paper is on Financial buyouts, Panel B in Table II-5 presents the distribution of entry types for the entire sample and realized transactions only. For information purpose, we also show the LBO universe as presented by Strömberg (2008), arguably the most comprehensive review of the global private equity market to date. The definitions of the entry types follow Kaplan and Strömberg (2009) with one minor amendment: we have included Distressed sales in the category Private-to-Private. For realized transactions, the share of Financial buyouts at 13.3% matches that of Strömberg (2008). For unrealized transactions, the share of Financial buyouts is even higher at 18.2%, which reflects the fact that our sample covers the period up to 2010, in which the share of Financial buyouts was much higher than in the previous time periods. For the other entry types, the frequencies in our sample are also very much comparable to Strömberg's (2008) data.

In Panel C in Table II-5 we further present the distribution of our sample by country of origin for both the total sample and unrealized deals as well as the share of Financial buyouts by country. While there are large variations in the share of Financial buyouts, we refrain from drawing any definite conclusions, since the number of observations is often very small on an individual country level.

Table II-5: Sample Characteristics

This table presents in Panel A some basic descriptives of our sample. Panel B presents the entry type, Panel C presents the country and Panel D the time distribution of our sample for both the entire sample and realized transactions only.

Panel A - Total Sample	
Number of observations	2,456
Number of realized oberservations	1,301
Fund Manager Characteristics	
Number of different fund managers	138
Number of different funds	357
Average fund generation	3.2
Average age (in years) of fund manager at entry	13.9
Median fund vintage year	2000

Panel B - Entry Type Distribution

	Number of Transactions					
	Sample		Sample		LBO Universe	
Entry Types	Total	*in percent*	Realized	*in percent*	(1970-2007)	*in percent*
Private-to-Private	1,099	*44.7%*	535	*41.1%*	8,987	*52.2%*
Corporate Spin-Off	719	*29.3%*	527	*40.5%*	4,497	*26.1%*
Financial	448	*18.2%*	173	*13.3%*	2,329	*13.5%*
Public-to-Private	190	*7.7%*	66	*5.1%*	999	*5.8%*
Other / Unkown	0	*0.0%*	0	*0.0%*	391	*2.3%*
Total	*2,456*	*100.0%*	*1,301*	*100.0%*	*17,203*	*100.0%*

Panel C - Country Origin and Share of Financial Buyouts

	Number of Transactions					
	Sample	thereof	*Financial*	Sample	thereof	*Financial*
	Total	Financial	*in percent*	Realized	Financial	*in percent*
Canada	18	3	*16.7%*	9	1	*11.1%*
United States	642	102	*15.9%*	301	39	*13.0%*
Total North Americ	*660*	*105*	*15.9%*	*310*	*40*	*12.9%*

Panel C - Country Origin and Share of Financial Buyouts (continued)

	Number of Transactions					
	Sample Total	thereof Financial	*Financial in percent*	Sample Realized	thereof Financial	*Financial in percent*
Austria	12	4	*33.3%*	7	1	*14.3%*
Belgium	23	3	*13.0%*	9	1	*11.1%*
Denmark	38	6	*15.8%*	12	1	*8.3%*
Finland	34	8	*23.5%*	18	1	*5.6%*
France	341	95	*27.9%*	184	52	*28.3%*
Germany	193	39	*20.2%*	91	10	*11.0%*
Italy	154	17	*11.0%*	96	2	*2.1%*
Netherlands	137	22	*16.1%*	56	4	*7.1%*
Norway	22	1	*4.5%*	8	0	*0.0%*
Poland	29	5	*17.2%*	17	3	*17.6%*
Spain	69	7	*10.1%*	35	3	*8.6%*
Sweden	165	27	*16.4%*	95	11	*11.6%*
Switzerland	31	3	*9.7%*	15	1	*6.7%*
United Kingdom	494	99	*20.0%*	314	42	*13.4%*
Other Europe	54	7	*13.0%*	34	1	*2.9%*
Total Europe	*1,796*	*343*	*19.1%*	*991*	*133*	*13.4%*
Total	*2,456*	*448*	*18.2%*	*1,301*	*173*	*13.3%*

Panel D - Transaction Timing and Share of Financial Buyouts

	Number of Transactions					
	Sample Total	thereof Financial	*Financial in percent*	Sample Realized	thereof Financial	*Financial in percent*
1990-1994	172	6	*3.5%*	169	6	*3.6%*
1995-1999	586	59	*10.1%*	494	49	*9.9%*
2000-2004	976	167	*17.1%*	549	97	*17.7%*
2005-2010	722	216	*29.9%*	89	21	*23.6%*
Total	*2,456*	*448*	*18.2%*	*1,301*	*173*	*13.3%*

Finally Panel D in Table II-5 analyses the distribution across time both for all transactions, and for realized transactions only as well as for the share of Financial buyouts, grouped by year of investment. The share of Financial buyouts increases vastly from the 1990s to the 2000s. The high share of Financial buyouts in 2005-2010 corresponds to the overheating of the leverage and private equity markets. When considering these time patterns, two findings emerge: firstly, these patterns are very much comparable to those observed by Kaplan and Strömberg (2009) for the entire private equity universe. Secondly, Financial buyouts are by no means a phenomenon exclusively confined to the 2000s as already suggested by the earlier study on the SBO phenomenon by Wright et al. (2000). The rising share of Financial buyouts may partly be attributed to the increasing maturity of the private equity market (Manchot 2010). This is due to the installed base effect: the more private equity deals there are, the higher the potential number of Financial buyouts.

3.2 Key Descriptives for Financial Buyouts

We now turn to a comparison of Financial and other buyout types in a univariate setting for an initial evaluation of our hypotheses on the value creation and return profile of Financial buyouts. Table II-8 Panel B presents the key descriptives for the two groups, grouped by measures for operating performance, leverage and pricing as well as equity returns. We present both mean and median for Financial and Other buyouts.

Table II-6: Variable Definitions

This table presents the variable definitions for the relevant variables used in this paper.

Variable	Description
Equity Returns	
IRR	The equity IRR is calculated from monthly cash flows between PE sponsor and the portfolio company gross of fees and carried interest. For unrealized transactions we use the last net asset value reported by the financial sponsor as last cash flow. The variable is winsorized at the 1% level.
MM	The equity money multiple (MM) is calculated from monthly cash flows between PE sponsor and the portfolio company gross of fees and carried interest. It represents the ratio of all positive and negative cash flows. For unrealized transactions we use the last net asset value reported by the financial sponsor as last cash flow. The variable is winsorized at the 1% level.
Deal Characteristics	
Financial Dummy	This dummy takes a value of 1 if the entry type is Financial and 0 otherwise.
Sales	Portfolio company's sales at investment entry, reported in USDm. The variable is winsorized at the 1% level.
Sales Growth	Portfolio company's sales compound annual sales growth, achieved between investment entry and exit. For unrealized transactions, the sales figure reported at the last valuation date is used instead of the exit value.
EBITDA Growth	Portfolio company's EBITDA compound annual sales growth, achieved between investment entry and exit. For unrealized transactions, the EBITDA figure reported at the last valuation date is used instead of the exit value.
EBITDA/Sales Margin	Portfolio company's EBITDA margin at investment entry. The variable is winsorized at the 1% level.
EBITDA/Sales Margin Delta	Portfolio company's change in EBITDA margin between entry and exit, i.e. Log(1+EBITDA Margin@Exit) - Log(1+EBITDA Margin@Entry). The variable is winsorized at the 1% level.
Enterprise Value (EV)	Portfolio company's enterprise value at investment entry, reported in USDm.
EV/EBITDA Multiple	Portfolio company's enterprise value to EBITDA ratio. The variable is winsorized at the 1% level.

Variable	Description
Deal Characteristics (continued)	
Debt to EBITDA Ratio	Portfolio company's net debt to EBITDA ratio at investment entry. The variable is winsorized at the 1% level.
Debt to Equity Ratio	Portfolio company's net debt to equity ratio at investment entry. The variable is winsorized at the 1% level.
Time Dummies	Time category dummies similar to Strömberg (2007) to control for systematic time patterns in the buyout market. We distinguish the periods 1990-1994, 1995-1999, 2000-2004, 2005-2007, 2008-2010.
Financial Sponsor and Fund Variables	
Financial Sponsor Age	Financial sponsor age at investment entry, based on the foundation year of the financial sponsor.
Fund Size	Fund size of the investing PE fund, reported in USDm.
GP Dummies	Dummies to control for effects of financial sponsor structure and investment style.
Market and Institutional Factors	
LBO Spreads	Yield spread of corporate bonds (Moody's BAA bond index) on the risk free rate (10-year US government bonds) in the quarter prior to investment entry.
MSCI Annual Return	Annualized return of the MSCI World Index, over the holding period of the financial sponsor.
Market Based Financial System	This dummy equals to 1 if the deal was conducted in a country with a market based financial system.
Creditor Rights	This variable indicates how sophisticated creditor protection is in a country. A higher value indicates a "better" creditor protection.
Corruption Perception Index	This variable measures the perceived level of corruption in a country and is issued by Transparency International. The higher value, the less corrupt is a country perceived.

Variable	Description
Industry Variables	
EBITDA Growth Industry	Median EBITDA growth ratio of public companies with the same three-digit ICB code matched by investment entry and exit/last valuation year. Benchmarks were drawn from the Stoxx Americas 600 and the EURO Stoxx Total market Index. The variable is winsorized at the 1% level.
Sales Growth Industry	Median sales growth ratio of public companies with the same three-digit ICB code matched by investment entry and exit/last valuation year. Benchmarks were drawn from the Stoxx Americas 600 and the EURO Stoxx Total market Index. The variable is winsorized at the 1% level.
Margin Delta Industry	Median relative EBITDA margin change of public companies with the same three-digit ICB code matched by investment entry and exit/last valuation year. Benchmarks were drawn from the Stoxx Americas 600 and the EURO Stoxx Total market Index. The variable is winsorized at the 1% level.
Debt/Equity Industry	Median net debt / equity ratio of public companies with the same three-digit ICB code in the year of investment entry. Benchmarks were drawn from the Stoxx Americas 600 and the EURO Stoxx Total market Index. The variable is winsorized at the 1% level.
Debt/EBITDA Industry	Median net debt / EBITDA ratio of public companies with the same three-digit ICB code in the year of investment entry. Benchmarks were drawn from the Stoxx Americas 600 and the EURO Stoxx Total market Index. The variable is winsorized at the 1% level.
EV/EBITDA Industry	Median EV / EBITDA ratio of public companies with the same three-digit ICB code in the year of the investment entry. Benchmarks were drawn from the Stoxx Americas 600 and the EURO Stoxx Total market Index. The variable is winsorized at the 1% level.
Industry Dummies	Industry dummies based on one-digit ICB codes (http://www.icbenchmark.com)

Table II-7: Correlation Matrix

This table presents a correlation matrix for the independent variables used in the regression analysis.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1)	EBITDA Growth	1.000																
(2)	EBITDAMargin	-0.082	1.000															
(3)	Enterprise Value	-0.077	0.136	1.000														
(4)	Debt/EBITDA Ratio	-0.030	0.002	0.097	1.000													
(5)	Financial Sponsor Age	-0.033	0.038	0.191	0.010	1.000												
(6)	Fund Size	-0.037	0.169	0.378	0.042	0.321	1.000											
(7)	LBO Spreads	0.054	0.027	-0.022	-0.103	-0.012	0.075	1.000										
(8)	MSCI Annual Return	0.027	0.049	0.069	0.090	0.022	0.039	-0.226	1.000									
(9)	Market Based Financial System	0.004	0.105	0.064	0.082	0.023	0.126	-0.042	0.059	1.000								
(10)	Creditor Rights	-0.033	0.018	-0.084	0.001	0.053	-0.033	0.010	-0.004	0.250	1.000							
(11)	Corruption Perception Index	0.012	-0.089	0.017	0.075	0.021	0.048	0.018	0.037	0.246	0.218	1.000						
(12)	Sales Growth Industry	0.031	0.031	-0.017	0.015	-0.048	0.018	0.049	0.119	0.008	0.022	0.014	1.000					
(13)	EBITDA Growth Industry	0.041	0.019	-0.010	0.031	-0.027	0.026	0.193	0.227	0.025	-0.016	0.031	0.554	1.000				
(14)	Margin Delta Industry	0.058	-0.006	-0.006	0.007	-0.051	-0.019	0.300	0.204	0.005	-0.052	0.031	0.211	0.538	1.000			
(15)	Debt/Equity Industry	-0.005	0.003	-0.024	0.065	0.028	-0.011	0.136	-0.118	-0.105	0.010	-0.013	-0.061	-0.077	-0.040	1.000		
(16)	Debt/EBITDA Industry	-0.003	0.016	-0.048	0.053	0.035	-0.005	0.181	-0.093	-0.090	0.041	-0.004	-0.029	-0.033	-0.014	0.883	1.000	
(17)	EV/EBITDA Industry	0.040	0.113	0.072	-0.090	0.050	0.157	-0.099	0.061	0.149	0.022	0.036	0.088	0.102	-0.010	-0.571	-0.427	1.000

For the variables that measure operating performance or equity returns over the holding period of the investment, we only present statistics for realized transactions, while for the size, profitability, leverage and pricing variables, that are all reported at investment entry, we include both realized and unrealized transactions, to fully exploit the advantages of our very recent and sizeable dataset.

In terms of operating performance, both Financial and other buyouts display similar average (median) annual EBITDA growth rates of 13% (12%) and 14% (12%). Yet, this EBITDA expansion is driven by different underlying dynamics. While Financial buyouts exhibit higher average (median) annual sales growth sales of 13% (12%) compared to other buyouts 12% (9%), the potential for relative EBITDA/Sales margin expansion over the holding period is higher in other buyouts at an average (median) value of 15% (8%) compared to 5% (3%) in Financial buyouts. We take these results as an initial confirmation of our *Hypotheses 1a through 1c*.

Looking at leverage and pricing, we obtain mixed results in terms of leverage. In terms of the debt / EBITDA ratio at entry, Financial buyouts obtain significantly more leverage with an average (median) of 4.52 (4.70) compared to other buyouts at 3.62 (3.62). Yet this does not hold true for the debt / equity ratio at entry, where Financial buyouts have an insignificantly higher average (median) of 2.01 (1.59) compared to other buyouts at 1.89 (1.47). On the other hand, the results in panel B confirm our *Hypothesis 3*: Financial buyouts are significantly more expensive than other buyouts at an average (median) EV / EBITDA multiple at entry of 8.32 (7.83) compared to 7.73 (6.88) for other buyouts. We attribute the inconclusive result on leverage to the very nature of the two ratios we used: The debt / EBITDA ratio relates the leverage of a company to its EBITDA as a cash flow proxy and is therefore an adequate

Table II-8: Sample Descriptives

This table presents in Panel A basic return descriptives for our total sample of 2,456 buyout transactions, split into Realized and Unrealized Transactions. Panel B presents detailed descriptives for Financial and Other Buyouts. For variables marked with and asterix (*), only statistics for realized transactions are presented, for all "at Entry" variables, statistics including unrealized buyouts are presented. In addition, each analysis includes the t-statistic for the one-sided T-Test as well as the chi2-statistic of the one-sided Fisher's Exact Test. For variable definitions please refer to Table II-6.

Panel A: Descriptive Statistics Total Sample

	Realized Transactions			Unrealized Transactions			Difference Tests	
	Obs.	Mean	Median	Obs.	Mean	Median	T-Test (t-statistic)	Median (Pearson Chi²)
Equity IRR	1,301	0.36	0.29	1,155	0.26	0.09	4.35***	144.17***
Cash Multiple	1,301	3.31	2.72	1,155	1.94	1.25	14.33***	344.35***
Holding Period (years)	1,301	4.51	4.00	1,155	3.14	2.70	-14.09***	144.17***

*** p<0.01, ** p<0.05, * p<0.1

Panel B: Descriptive Statistics - Financial vs. Other

		Financial			Other			Difference Tests	
	Hypothesis	Obs.	Mean	Median	Obs.	Mean	Median	T-Test (t-statistic)	Median (Pearson Chi²)
Operational Performance									
Sales at Entry (USDm)		381	418.07	154.10	1,782	466.97	117.48	-0.88	5.94***
Sales Growth p.a. (%)*	1c	138	0.13	0.12	912	0.12	0.09	0.66	4.81**
EBITDA Growth (%)*	1a	157	0.13	0.12	998	0.14	0.12	-0.75	0.07
EBITDA/Sales Margin at Entry (%)		377	0.18	0.16	1,743	0.18	0.14	0.94	13.84***
EBITDA/Sales Margin Delta (%)*	1b	134	0.05	0.03	881	0.15	0.08	-2.33**	5.52**

Panel B: Descriptive Statistics - Financial vs. Other (continued)

		Financial			Other			Difference Tests	
	Hypothesis	Obs.	Mean	Median	Obs.	Mean	Median	T-Test (t-statistic)	Median (Pearson Chi²)
Leverage and Pricing									
Enterprise Value (EV) at Entry (USDm)		441	586.04	197.64	1,944	535.50	115.20	0.73	33.17***
Debt to Equity Ratio at Entry	2a	441	2.01	1.59	1,943	1.89	1.47	1.10	1.27
Debt to EBITDA Ratio at Entry	2b	433	4.52	4.70	1,894	3.62	3.62	6.74***	38.97***
EV/EBITDA Multiple at Entry	3	433	8.32	7.83	1,898	7.73	6.88	3.17***	37.06***
Equity Returns									
Equity IRR (%)*	4	173	0.37	0.30	1,128	0.35	0.29	0.41	0.07
Cash Multiple*	4	173	3.14	2.70	1,128	3.34	2.72	-0.95	0.00
Holding Period (years)*		173	3.80	3.44	1,128	4.62	4.08	-4.96***	16.91***

*** p<0.01, ** p<0.05, * p<0.1

measure of the lending capacity of a company (see e.g. Demiroglu and James 2010). On the other hand, the debt / equity ratio is a measure of the financial risk implied by the capital structure of a company. This means while Financial buyouts have a higher lending capacity, this does not result in riskier deals from a debt / equity perspective, because financial sponsors also invest more equity, which also explains the difference in pricing. Therefore, the univariate results on leverage and pricing lend support to our *Hypotheses 2b and 3*.

Finally, in line with our *Hypothesis 4*, we find very little evidence that Financial buyouts generate lower returns than primary buyouts both in terms of IRR and cash multiple. Financial buyouts achieve an average (median) IRR of 37% p.a. (30%) and cash multiple of 3.14 (2.70). In comparison to that, other buyouts achieve an average (median) IRR of 35% p.a. (29%) and cash multiple of 3.34 (2.72). It appears that overall the gain from greater leverage due to an increased lending capacity and the loss from higher acquisition prices cancel each other out on the level of equity returns. In the following sections we will falsify these findings in a multivariate setting to control for a variety of fixed effects such as time, industry or region.

4. Value Creation Profile and Returns of Financial Buyouts

4.1 Operational Performance

4.1.1. Variables

To further evaluate the operational performance improvement potential of Financial buyouts as captured in *Hypotheses 1a through 1c*, we perform a set of multivariate regressions with the EBITDA growth, sales growth and change in EBITDA margin as dependent variables. Our only explanatory variable is the

Financial dummy, in order to evaluate whether the operational value creation potential of Financial buyouts is different from that of primary buyouts. Furthermore, we control for industry-specific effects by including the industry median figures for EBITDA growth, sales growth and EBITDA margin delta respectively. In calculating this variable we draw on all companies in North America (Stoxx Americas 600) and Europe (EURO Stoxx Total Market Index) from Thomson One Banker, which are matched with each transaction by ICB sector codes and either year of entry or year of exit for realized transactions respectively year of last valuation for unrealized transactions.

As far as deal specific control variables are concerned, we control for size effects using the logarithm of the enterprise value at entry since this can affect the operational value creation profile of a transaction. In larger transactions, operational value creation is often driven by margin improvements, while in smaller transactions, sales growth is the main source of operational performance improvements (Achleitner et al. 2010). We further include the EBITDA margin at entry to account for the fact that further margin expansion may be less likely for profitable firms.

Since private equity returns on fund level are influenced by financial sponsor experience (see e.g. Kaplan and Schoar 2005, Kaserer and Diller 2009), this may also have an effect on operational performance we use financial sponsor age at entry as a proxy (Kaplan and Schoar 2005, Meulemann et al. 2009). Furthermore, several recent studies have shown that fund size has significant impact on private equity returns (see e.g. Cumming and Dai 2011, Humphrey-Jenner 2011) and we assume that similar arguments hold when evaluating the operating performance of private equity transactions. Especially when large funds aim to exploit economies of scale by increasing the number of investments per staff, this may have a detrimental effect on

operating performance which arguably requires close control and monitoring (see e.g. Cumming and Dai 2011, Lopez-de-Silanes, Phalippou and Gottschalg 2011).

We control for institutional and cultural factors that possibly affect operational performance since several authors found these to influence buyout returns (see e.g. Cao et al. 2010, Cumming et al. 2010, Cumming and Walz 2010, Nahata et al. 2011). Similar to Cuming et al. (2010) we found very high cross-correlation between some institutional and country factors and, therefore, we chose to include the following three factors in all of our regressions:[87] (i) a dummy if a transaction was conducted in a country with a market-based financial system (*Market Based Financial System*), (ii) an index for the degree of creditor protection (*Creditor Rights*), and, (iii) an index for the degree of local corruption (*Corruption Perception Index*).[88] We also include industry and time dummies to account for industry-specific aspects as well as macroeconomic factors at the time of the deal.

4.1.2. Empirical Results

Table II-9 reports the results of the regression analysis. In specifications (1), (3) and (5) we present the results of the OLS regression for EBITDA growth, sales growth and EBITDA margin delta respectively, using only fully realized deals. Since a large part of the sample consists of unrealized deals, we also ran a set of Heckman correction regressions to test the robustness of the result in light of the potential selection bias as PE sponsors may choose not to exit underperforming investments. As

[87] We ran robustness checks for each of this and subsequent regression analyses with different sets of institutional and cultural factors, but chose not to present these as they are not within the focus of our paper and did not materially affect our results.

[88] Please refer to Cao et al. (2011) and Cumming et al. (2011) for more detailed definitions of these institutional and cultural factors.

usual the Heckman correction involves two steps: in step one, the probability of a realized investment is determined using the age of the investment as an identifier variable (Cochrane 2005, Cumming and Dai 2011). In step two, a linear regression is conducted to determine the drivers of the respective operational performance measure. In specifications (2), (4) and (6) we present the results of this Heckman correction.

Looking at specifications (1) and (2), the results show that Financial buyouts do not exhibit EBITDA growth different to other buyouts, thereby confirming our Hypothesis 1a. Specifications (3) and (4) serve to compare the sales growth in Financial buyouts with that in other buyouts. While the coefficient of the Financial dummy is positive, it is not significant, thereby contradicting Hypothesis 1b. Now we consider specifications (5) and (6), which show the results for margin expansion over the holding period. Again in neither specification is the coefficient of the Financial dummy significant, and, therefore, we conclude that Hypothesis 1c cannot be confirmed. Overall, our findings on the operational performance of Financial buyouts suggest that they still offer potential for operational performance improvements similar to other buyout types both in terms of sales growth and margin expansion. To check the robustness of this result, we performed a variety of robustness tests such as using fund generation as a different proxy for financial sponsor experience and gained similar results.

4.2 Leverage

4.2.1. Variables

We now turn to the question whether Financial buyouts use more leverage than primary buyouts and present a set of multivariate regressions using both the debt / equity ratio and the debt / EBITDA ratio at entry as dependent variables in Table II-10.

Table II-9: Regression Results Operational Performance

This table presents the results of ordinary least squares and Heckman correction regressions on the determinants of various measures of operational performance using a sample of over 900 realized and 949 unrealized private equity (PE) sponsored buyouts. The results from the Heckman correction in the first step are not reported, but include all variables from the second step (including industry and time dummies) as well as the age of the investment (in days) for identification. For variable definitions please refer to Table II-6. We double cluster standard errors by time (quarterly per year) and industry (three-digit ICB codes) in the OLS regressions. Generally, the numbers in the upper rows represent the regression coefficients. *, ** and *** indicate p-values of 10 percent, 5 percent, and 1 percent significance level, respectively. In the lower rows the standard errors are reported in parentheses.

		Log(EBITDA Growth+1)		Log(Sales Growth+1)		Margin Delta	
		OLS	Heckman 2nd step	OLS	Heckman 2nd step	OLS	Heckman 2nd step
Variables	Hypotheses	(1)	(2)	(3)	(4)	(5)	(6)
Financial Dummy	1a, 1b, 1c	-0.007	-0.004	0.003	0.004	-0.075	-0.068
		(0.023)	(0.024)	(0.013)	(0.013)	(0.049)	(0.048)
Log(Enterprise Value)		-0.005	-0.003	-0.024***	-0.023***	0.055***	0.061***
		(0.009)	(0.006)	(0.005)	(0.004)	(0.018)	(0.013)
Log(EBITDA Margin)		-0.053***	-0.057***	0.026***	0.025***	-0.264***	-0.273***
		(0.015)	(0.012)	(0.009)	(0.007)	(0.039)	(0.024)
Log(EBITDA Growth Industry +1)		0.005	-0.026				
		(0.089)	(0.071)				
Log(Sales Growth Industry +1)				0.018	0.025		
				(0.078)	(0.070)		
Margin Delta Industry						-0.041	-0.100
						(0.063)	(0.089)
Financial Sponsor Age at Entry		-0.003**	-0.004***	0.000	-0.000	-0.004**	-0.006**
		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Log(Fund Size)		0.001	0.018*	0.007	0.014**	-0.024**	0.019
		(0.006)	(0.011)	(0.006)	(0.006)	(0.011)	(0.022)
Market Based Financial System		0.011	0.029	0.007	0.014	0.056	0.100**
		(0.024)	(0.019)	(0.010)	(0.011)	(0.042)	(0.039)
Creditor Rights		-0.004	-0.011	-0.003	-0.005	-0.009	-0.026
		(0.006)	(0.007)	(0.004)	(0.004)	(0.012)	(0.014)
Corruption Perception Index		0.000	-0.001	0.000	-0.000	0.015	0.013
		(0.006)	(0.007)	(0.004)	(0.004)	(0.012)	(0.014)
Industry Dummies		YES	YES	YES	YES	YES	YES
Time Dummies		YES	YES	YES	YES	YES	YES
Constant		0.119	0.376**	0.351***	0.445***	-0.986***	-0.369
		(0.081)	(0.145)	(0.072)	(0.079)	(0.178)	(0.292)
Observations		936		917		903	
Uncensored Observations			936		917		903
Censored Observations			949		949		949
Adj. R-squared		0.06		0.13		0.15	
Mills Lambda			-0.157**		-0.059*		-0.372***
Chi-Squared			72.56		131.03		163.05

*** p<0.01, ** p<0.05, * p<0.1

Our dependent variable in specifications (1) and (2) is the logarithm of the debt / equity ratio, a measure of the financial risk implied by the capital structure employed to finance the buyouts of the company. In specifications (3) and (4), we use the logarithm of the debt / EBITDA ratio, a measure of how highly levered the company is with respect to its ability to generate cash flows. Again, the Financial dummy is our only explanatory variable.

Our key control variables to account for debt market conditions are the LBO spreads in the quarter prior to transaction entry in order to measure the liquidity of the debt markets at the time of the transaction following Axelson et al. (2010). Any extra in leverage that Financials use, once we have controlled for debt market conditions, can be attributed to reduced information asymmetries, as we suggested in *Hypotheses 2a and 2b*. In specification (2) and (4), we perform a robustness check by including the interaction term *Financial*Entry 2005-2007* to specifically test whether the boom period has any significant effects on the leverage of Financial buyouts. We further include industry leverage benchmarks to control for variations in leverage across industries although Axelson, Jenkinson, Strömberg and Weisbach (2010) showed that these have little explanatory impact since leverage structures used in buyouts are mainly driven by the current market environment.

We also use two deal level control variables, namely transaction size measured by the logarithm of the enterprise value at entry and profitability measured by the logarithm of the EBITDA margin at entry, since these should positively affect the lending capacity of the target company. Since more reputed funds obtain more leverage (see e.g. Demiroglu and James 2010), we include financial sponsor age at entry as experience proxy. Further we include the logarithm of fund size to account for any size effects on fund level. We also include the same set of institutional and cultural

factors as in our regressions as these may have an influence on the liquidity of the local leverage markets. Finally, we include industry dummies in all specifications and time dummies in specifications (2) and (4).

4.2.2. Empirical Results

Table II-10 presents the results of the regression analysis, which confirm our findings from the univariate comparison in 3.2. We find only slight indications that Financial buyouts have a higher debt / equity ratio than primary buyouts. In economic terms, Financial buyouts obtain a c. 12% higher debt / equity ratio than primary buyouts ($e^{(0.127)}$-1 = 0.135). Using the mean debt / equity ratio for other buyouts, which is 1.89 (see Table II-8), this implies an average debt / equity ratio of 2.15 for Financial buyouts. Furthermore, we find strong indications that Financial buyouts obtain more leverage in terms of debt / EBITDA, which is significant at the 1% level. In economic terms, Financial buyouts obtain 28-30% more leverage than primary buyouts. Using the mean debt / EBITDA ratio for other buyouts, which is 3.62 (see Table II-8), this implies an average net debt / EBITDA ratio of 4.6-4.7 for Financial buyouts. Furthermore we find that the interaction term *Financial*Entry Year 2005-2007* does not have a significant effect on leverage. Given these results combined with the fact that we have included the LBO spreads at entry in all four specifications to control for market conditions we conclude that Financial buyouts have a meaningfully increased lending capacity independent of current market conditions, which we attribute to reduced asymmetric information in a Financial buyout setting. Therefore we find strong support to our Hypothesis 2b, and some indications that Financial buyouts also have a higher debt / equity ratio, as Hypothesis 2a suggests. To check the robustness of

Table II-10: Regression Results Leverage

This table presents the results of the ordinary least squares regressions on the determinants of various measures of leverage using a sample of over 1,600 private equity (PE) sponsored buyouts. For variable definitions please refer to Table II-8. We double cluster standard errors by time (quarterly per year) and industry (three-digit ICB codes). Generally, the numbers in the upper rows represent the regression coefficients. *, ** and *** indicate p-values of 10 percent, 5 percent, and 1 percent significance level, respectively. In the lower rows the standard errors are reported in parentheses.

		Log(Debt/Equity)		Log(Debt/EBITDA)	
		OLS	OLS	OLS	OLS
Variables	Hypotheses	(1)	(2)	(3)	(4)
Financial Dummy	2a, 2b	0.098	0.127*	0.265***	0.246***
		(0.077)	(0.073)	(0.057)	(0.091)
Financial Dummy*Entry 2005-07			-(0.038)		(0.127)
			(0.210)		(0.098)
LBO Spreads at Entry		-0.167**	-0.142**	-0.119***	0.083*
		(0.070)	(0.072)	(0.020)	(0.044)
Log(Debt/Equity Industry)		0.049	0.047		
		(0.045)	(0.043)		
Log(Debt/EBITDA Industry)				-0.032	-0.04
				(0.048)	(0.048)
Log(Enterprise Value)		0.105***	0.106***	0.191***	0.191***
		(0.034)	(0.034)	(0.028)	(0.028)
Log(EBITDA Margin)		0.008	0.008	-0.067*	-0.055
		(0.049)	(0.051)	(0.036)	(0.038)
Financial Sponsor Age at Entry		-0.005	-0.005	0.007	0.008
		(0.004)	(0.004)	(0.007)	(0.007)
Log(Fund Size)		0.019	0.022	-0.146**	-0.136**
		(0.039)	(0.038)	(0.063)	(0.060)
Market Based Financial System		0.152***	0.143**	0.168***	0.144***
		(0.053)	(0.056)	(0.052)	(0.046)
Creditor Rights		0.000	0.000	-0.017	-0.015
		(0.033)	(0.032)	(0.016)	(0.017)
Corruption Perception Index		0.113***	0.111***	0.016	0.026
		(0.027)	(0.028)	(0.028)	(0.028)
Industry Dummies		YES	YES	YES	YES
Time Dummies		NO	YES	NO	YES
Constant		-0.369	-0.406	-1.301**	-1.914***
		(0.554)	(0.596)	(0.659)	(0.732)
Observations		1,617	1,617	1,672	1,672
Adj. R-squared		0.07	0.07	0.09	0.11

*** p<0.01, ** p<0.05, * p<0.1

these results, we performed a variety of robustness tests such as using fund generation as a different proxy for financial sponsor experience and gained similar results.

4.3 Pricing

4.3.1. Variables

The sole dependent variable for deal pricing is the logarithm of the EV / EBITDA multiple at entry. Our explanatory variable of interest remains the Financial dummy, which takes the value of 1 if the deal is a Financial buyout and 0 otherwise. Other deal level control variables include the EV / EBITDA multiple for public industry benchmarks in the entry year of the deal. To control for size effects, we include the logarithm of the enterprise value at entry. Furthermore, in specification (2), (3) and (5), we include the EBITDA development, measured by the logarithm of EBITDA Growth+1 over the holding period. Thereby we account for the fact that the EV / EBITDA multiple is positively correlated with the company's growth prospects. We further control for financial sponsor experience using the fund manager age at entry, which may have two opposing effects on pricing. On the one hand, more reputed players are expected to have greater negotiation skills and therefore achieve lower acquisition prices (Achleitner et al. 2011). On the other hand, reputation is positively related to leverage levels and conditions (see e.g. Demiroglu and James 2010), which may in turn lead to higher acquisition multiples. Further we use the logarithm of fund size to account for any size effects on fund level. We also include the same set of institutional and cultural factors as in our regressions as these may have an influence on deal pricing markets. Finally, we include industry dummies in all specifications and time dummies as a robustness check in specification (3).

Arguably, deal pricing is closely correlated to the leverage conditions at the time of the deal. Therefore, we conduct two different sets of analyses to control for leverage conditions. In specifications (1), (2) and (3) we include the LBO spreads at the time of the transaction. Obviously, actual deal leverage is a better variable to control for the effects of leverage on pricing and, therefore, in specifications (4) and (5), we include the logarithm of debt / EBITDA at entry. Due to the well documented endogeneity between leverage and pricing (see e.g. Achleitner et al. 2011, Axelson et al. 2010, Demiroglu and James 2010), we switch from the standard ordinary least squares (OLS) regression model to the instrumental variable (IV) regression model, using the two-stage least square (2sls) estimator. In our just identified model, we use LBO spreads at entry as our sole instrument. LBO spreads have a significant influence on leverage levels and conditions granted in a leveraged buyout transaction (Achleitner et al. 2011, Axelson et al. 2010), yet should not have a further direct influence on deal pricing other than through its effect on leverage. We, therefore, feel comfortable in excluding it from our structural, second-stage regression. As far as instrument relevance is concerned, we present a number of test statistics in the subsequent discussion of our empirical results.

4.3.2. Empirical Results

Table II-11 presents the results of the regression analysis on deal pricing. Specifications (1) to (3) suggest that Financial buyouts are 6-9% more expensive than other buyouts. This result, which is significant at the 1% level, is much lower than the results that Wang (2011) reports, who finds that Financial buyouts command a premium of 15%. She argues that this premium may reflect either the market timing skills of the seller or higher growth prospects of Financial buyouts, or both, since the

EV / EBITDA multiple is also a measure of the future prospects of the target firm. We can rule out the latter argument because in specifications (2) and (3) we included actual operating performance using the logarithm of EBITDA Growth+1 over the holding period, which should be an adequate proxy of expected operating performance. These results are in line with our findings from the univariate comparison and confirm Hypothesis 3. Financial buyouts are more expensive than primary buyouts, which can be attributed to the fact that the company is bought from a smart seller who uses his market timing and negotiation skills to achieve the best possible price.

However, a brief look at the IV regressions in specifications (4) and (5) shows us that this conclusion would be premature. Once we control for debt / EBITDA at entry, the sign of the Financial dummy turns negative, albeit not significantly. This means that the apparent premium paid for Financial buyouts is just a function of the higher leverage levels granted for these buyouts due to reduced informational asymmetries (see section 4.2). Since the results of the Durbin-Wu-Hausman (DWH) test (Cameron and Trivedi 2010) are a strong sign of endogeneity, we focus on the IV instead of the simple OLS approach to interpret the impact of Financial buyouts on deal pricing. We are confident that our analyses is not affected by a weak instruments problem, which may lead to misleading results (Angrist and Pischke 2009). Firstly, the pairwise correlations between net debt / EBITDA at entry and LBO spreads is -0.16, which should be sufficient as far as instrument relevance is concerned. This is confirmed by the robust F statistic from the first stage, which are both well above the rule of thumb of 10 suggested by Stock et al. (2002).

Table II-11: Regression Results Pricing

This table presents the results of the ordinary least squares and instrumental variable regressions on the determinants of pricing at entry using a sample of over 1,600 private equity (PE) sponsored buyouts. Debt / EBITDA at Entry are the fitted values from the first stage regression of Debt / EBITDA at Entry on all variables in the second stage regression as well as the instrument LBO Spreads. For variable definitions please refer to Table II-6. Standard errors are double clustered by time (quarterly per year) and industry (three-digit ICB codes) in the OLS regressions and by time (quarterly per year) in the instrumental variable regressions. Generally, the numbers in the upper rows represent the regression coefficients. *, ** and *** indicate p-values of 10 percent, 5 percent, and 1 percent significance level, respectively. In the lower rows the standard errors are reported in parentheses.

		Log(EV/EBITDA)				
		OLS	OLS	OLS	IV 2sls	IV 2sls
Variables	Hypotheses	(1)	(2)	(3)	(4)	(5)
Financial Dummy	3	0.083***	0.070***	0.056***	-0.017	-0.033
		(0.018)	(0.015)	(0.017)	(0.040)	(0.041)
Log(EV/EBITDA Industry)		0.085	0.065	0.088	0.250***	0.262***
		(0.061)	(0.062)	(0.061)	(0.080)	(0.093)
Log(Enterprise Value)		0.080***	0.078***	0.076***	0.003	-0.008
		(0.008)	(0.007)	(0.007)	(0.027)	(0.029)
Log(EBITDA Margin)		-0.098***	-0.067***	-0.066***	-0.064***	-0.044**
		(0.023)	(0.021)	(0.021)	(0.021)	(0.022)
Log(EBITDA Growth+1)			0.271***	0.270***		0.191***
			(0.067)	(0.066)		(0.071)
Log(Debt/EBITDA)					0.378***	0.447***
					(0.125)	(0.135)
Financial Sponsor Age at Entry		-0.015	-0.009	-0.012	-0.006**	-0.007**
		(0.023)	(0.022)	(0.021)	(0.003)	(0.003)
Log(Fund Size)		0.003	0.01	0.006	0.064***	0.076***
		(0.018)	(0.017)	(0.019)	(0.025)	(0.027)
LBO Spreads at Entry		-0.066***	-0.084***	-0.052		
		(0.022)	(0.023)	(0.034)		
Market Based Financial System		0.046*	0.042*	0.047**	-0.028	-0.035
		(0.026)	(0.024)	(0.022)	(0.032)	(0.022)
Creditor Rights		0.023***	0.024***	0.024***	0.028***	0.026**
		(0.007)	(0.006)	(0.006)	(0.010)	(0.011)
Corruption Perception Index		-0.019*	-0.012	-0.011	-0.018*	-0.010
		(0.012)	(0.011)	(0.011)	(0.011)	(0.013)
Industry Dummies		YES	YES	YES	YES	YES
Time Dummies		NO	NO	YES	NO	NO
Constant		1.360***	1.486***	1.310***	1.516***	1.562***
		(0.304)	(0.304)	(0.253)	-0.257	-0.253
Observations		1,917	1,738	1,738	1,838	1,682
Adj. R-squared		0.15	0.17	0.18	nm	nm
Root MSE		0.41	0.39	0.38	0.45	0.51
DWH robust F					5.81**	9.79***
robust F (first stage)					14.82	11.63

*** p<0.01, ** p<0.05, * p<0.1

4.4 Return on Equity

4.4.1. Variables

Our primary dependent variable used in specifications (1) through (3) and (7) through (9) is the equity IRR, the most common return measure in private equity (see e.g. Kaplan and Schoar 2005, Nikoskelainen and Wright 2007). This variable is calculated from monthly cash flows between the financial sponsor and the portfolio company gross of fees and carried interest and reflects the discount rate that equates the present value of the cash flows to zero in percent. In specifications (4) to (6) we present robustness checks using alternative dependent variables, namely the logarithm of IRR+1, the money multiple (MM) and the logarithm of MM+1, where the money multiple is the ratio of all positive to negative cash proceeds. Our sole explanatory variable is the Financial dummy variable, which takes the value of 1 if the seller is a financial sponsor and 0 otherwise. In specification (2) and (8), we perform a robustness check by including the interaction term Financial*Entry 2000-10 to specifically test whether Financial buyouts have exhibited any significant performance differences in the period where they constituted a significant share of the buyout market as shown in Table II-5 Panel D.

In terms of control variables, we firstly control for transaction size. Furthermore, we also want to control for fund manager characteristics, namely (i) experience using fund manager age at entry as proxy (Kaplan and Schoar 2005, Meulemannet al. 2009) and (ii) fund size effects on private equity returns (Cumming and Dai 2011, Humphrey-Jenner 2011) using the logarithm of fund size. To capture potential further financial sponsor-specific effects such as style drift, focus (Cumming et al. 2009) or

structure (Cumming and Johan 2006), we introduce financial sponsor dummies in specifications (3) and (9) as a robustness check of our results.

We also control for the LBO spreads at entry as a proxy for the liquidity of the debt markets at the time of the transaction and the annualized return of the MSCI World Index between entry and exit as a measure of the development of the general market environment over the course of the holding period. In addition, we include the same set of institutional and cultural factors as in our previous regressions as these may have an influence on private equity returns (Cao, Cumming, Qian and Wang 2010, Cumming, Fleming, Johan and Takeuchi 2010, Cumming and Walz 2010, Nahata, Hazarika and Tandon 2011). Furthermore we include industry and time dummies to account for industry-specific aspects as well as macroeconomic factors at the time of the deal.

4.4.2. Empirical Results

Table II-12 reports the results of the regression analysis for equity returns. Specifications (1) through (6) are based on realized transactions only. Since a large part of the sample consists of unrealized deals, we also ran a set of Heckman correction regressions to test the robustness of the result in light of the potential selection bias as PE sponsors may choose not to exit underperforming investments. As in section 4.1., we used investment age as an identifier variable in the selection process. (Cochrane 2005, Cumming and Dai 2011). In step two, a linear regression is conducted to determine the drivers of the respective operational performance measure. In specifications (7) through (9) we present the results of this Heckman correction. The sign of the coefficient for the Financial dummy is consistently insignificant for all

Table II-12: Regression Results Equity Returns

This table presents the results of the ordinary least squares and Heckman correction regressions on the determinants of various measures of equity returns using a sample of over 1,100 realized and 1,074 unrealized private equity (PE) sponsored buyouts. The results from the Heckman correction in the first step are not reported, but include all variables from the second step (including industry and time dummies) as well as the age of the investment (in days) for identification. For variable definitions please refer to Table II-6. We double cluster standard errors by time (quarterly per year) and industry (three-digit ICB codes) in the OLS regressions. Generally, the numbers in the upper rows represent the regression coefficients. *, ** and *** indicate p-values of 10 percent, 5 percent, and 1 percent significance level, respectively. In the lower rows the standard errors are reported in parentheses.

		IRR	IRR	IRR	Log(IRR+1)	MM
		OLS	OLS	OLS	OLS	OLS
Variables	Hypotheses	(1)	(2)	(3)	(4)	(5)
Financial Dummy	4	-0.050	0.026	-0.059	0.004	-0.230
		(0.053)	(0.072)	(0.047)	(0.032)	(0.253)
Financial Dummy*Entry 2000-10			-0.114			
			(0.112)			
Log(Enterprise Value)		0.040**	0.040**	0.039**	0.037***	0.104
		(0.018)	(0.018)	(0.019)	(0.011)	(0.089)
Financial Sponsor Age at Entry		-0.006**	-0.006**	-0.013	-0.005*	-0.024
		(0.003)	(0.003)	(0.018)	(0.003)	(0.017)
Log(Fund Size)		-0.038*	-0.038*	0.019	-0.030**	-0.238**
		(0.021)	(0.021)	(0.037)	(0.013)	(0.106)
LBO Spreads at Entry		0.021	0.021	0.02	0.023	-0.027
		(0.038)	(0.038)	(0.042)	(0.034)	(0.199)
MSCI Annual Return		1.900***	1.921***	2.191***	1.272***	3.671**
		(0.345)	(0.334)	(0.298)	(0.204)	(1.431)
Market Based Financial System		0.026	0.025	0.067	0.018	0.388
		(0.044)	(0.044)	(0.068)	(0.036)	(0.301)
Creditor Rights		-0.006	-0.005	0.007	-0.009	-0.139*
		(0.014)	(0.014)	(0.023)	(0.010)	(0.079)
Corruption Perception Index		0.032**	0.032**	-0.022	0.019*	0.127*
		(0.012)	(0.012)	(0.018)	(0.011)	(0.070)
Industry Dummies		YES	YES	YES	YES	YES
Time Dummies		YES	YES	YES	YES	YES
GP Dummies		NO	NO	YES	NO	NO
Constant		-0.334	-0.330	0.571	-0.279*	0.328
		(0.265)	(0.266)	(0.405)	(0.158)	(1.113)
Observations		1,152	1,152	1,152	1,121	1,152
Uncensored Observations						
Censored Observations						
Adj. R-squared		0.11	0.11	0.14	0.11	0.04
Mills Lambda						
Chi-Squared						

*** p<0.01, ** p<0.05, * p<0.1

Variables	Hypotheses	Log(MM+1) OLS (6)	IRR Heckman 2nd step (7)	IRR Heckman 2nd step (8)	IRR Heckman 2nd step (9)
Financial Dummy	4	-0.039	-0.059	-0.006	-0.058
		(0.051)	(0.060)	(0.103)	(0.046)
Financial Dummy*Entry 2000-10				-0.080	
				(0.116)	
Log(Enterprise Value)		0.033*	0.059***	0.058***	0.046***
		(0.019)	(0.017)	(0.017)	(0.015)
Financial Sponsor Age at Entry		-0.007*	-0.011**	-0.011**	-0.136**
		(0.004)	(0.003)	(0.003)	(0.066)
Log(Fund Size)		-0.048**	0.037	0.036	0.044
		(0.022)	(0.026)	(0.026)	(0.027)
LBO Spreads at Entry		0.025	-0.051	-0.050	-0.017
		(0.046)	(0.058)	(0.057)	0.042
MSCI Annual Return		0.921***	2.420***	2.431***	2.228***
		(0.325)	(0.340)	(0.337)	(0.255)
Market Based Financial System		0.076	0.063	0.062	0.036
		(0.062)	(0.048)	(0.048)	(0.048)
Creditor Rights		-0.031**	-0.030	-0.029	0.017
		(0.014)	(0.017)	(0.017)	(0.017)
Corruption Perception Index		0.046***	0.032*	0.032*	-0.035
		(0.016)	(0.018)	(0.018)	(0.020)
Industry Dummies		YES	YES	YES	YES
Time Dummies		YES	YES	YES	YES
GP Dummies		NO	NO	NO	YES
Constant		0.467*	0.972**	0.964**	1.274**
		(0.259)	(0.400)	(0.397)	(0.435)
Observations		1,152			
Uncensored Observations			1,143	1,143	1,143
Censored Observations			1,074	1,074	1,074
Adj. R-squared		0.05			
Mills Lambda			-0.786***	-0.780***	-0.250***
Chi-Squared			107.30	109.61	350.60

*** p<0.01, ** p<0.05, * p<0.1

specifications. Furthermore, specifications (2) and (8) show that Financial buyouts do not generate a worse performance than other buyouts for the period 2000 to 2010 where they accounted for a sizeable share of the buyout market. Again these results are similar to the results that emerge from the univariate comparison presented in section 3.2. and, therefore, we conclude that Financial buyouts do not offer significantly reduced returns on equity, which confirms *Hypothesis 4*.

5. Conclusion

The trend towards secondary buyouts or more generally Financial buyouts has been met with skepticism among researchers and practitioners alike, who doubt that the follow-on financial sponsor can still create (operational) value. This argument, which we referred to as the conventional wisdom on Financial buyouts, can be summarized as follows. The primary financial sponsor is assumed to only sell a company once he has realized all potential for operational improvements and will use his market timing and negotiation skills to achieve the best possible value at exit. Thus a Financial buyout is expected to have lower equity returns unless the follow-on financial sponsor uses excessive leverage to inflate returns. Since the rise of Financial buyouts in the 2000s coincided with the overheating of the leverage markets, many took this as sufficient proof that Financial buyouts are private equity 'lemons'.

This paper provides the first comprehensive analysis of the return profile of Financial buyouts. We found no robust evidence that Financial buyouts have lower equity returns than other buyouts or offer less potential for operational performance improvements. However, Financial buyouts use 28-30% more leverage measured in terms of Debt / EBITDA than other buyouts even after having controlled for debt market conditions at the time of the transaction. This plus in leverage can thus be

attributed to the reduced informational asymmetries in a Financial buyout setting. Furthermore, similar to Wang (2011), we find evidence that Financial buyouts are 6-9% more expensive than other buyouts. Since we control for future profitability, we can attribute this premium exclusively to the market timing / negotiation skills of the seller. However, it appears that the follow-on financial sponsor is also exercising his market timing skills. The premium appears to be driven by the greater availability of debt financing for Financial buyouts.

Overall, secondary buyouts are by no means second-rate deals, both from the perspective of the target company and the equity holder. They still display equity returns and operational performance improvements comparable to primary buyouts. This shows that the high share of Financial buyouts after the crisis is not simply another manifestation of the 'money chasing deals' phenomenon, but rather illustrates that financial investors expect to generate attractive returns through Financial buyouts even when debt markets are not 'hot'. We also believe that the continued operational performance improvements in Financial buyouts is evidence for Jensen's (1989) vision of private equity as a new form of governance, but, admittedly, further research is needed to determine the definite source of the operational performance improvements: Did the primary private equity sponsor sell too early or do follow on private equity sponsors have skills different to those of the primary sponsors.

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II.III Essay 3 – Exit of Last Resort? Empirical Evidence on the Returns and Drivers of Secondary Buyouts as Private Equity Exit Channel

Abstract

Despite the increasing importance of secondary buyouts in the private equity market, little is known about the perspective of the seller and his motives for choosing this exit type. Do private equity firms have a clear pecking order regarding the exit channels for their portfolio companies? Is a secondary buyout only an ’exit of last resort’? And furthermore, have company or market related factors an influence on the decision to pursue a secondary buyout?

Based on a proprietary dataset of 1,112 leveraged buyouts exited in North America or Europe between 1995 and 2008, the authors analyzed the return potential of public, private and financial exits. Based on the realized returns, there is no clear pecking order of exit types. Secondary buyouts, i.e. financial exits, deliver returns that are equally attractive to the ones achieved through public exits.

In addition, the authors assessed the relationship between the likelihood to choose a financial exit and company as well as market related factors. Portfolio companies with a higher lending capacity are more likely to be exited via a secondary buyout. Furthermore, the liquidity of debt markets and the amount of undrawn capital commitments to the private equity industry increase the probability of a secondary buyout. Overall, the authors conclude that private equity firms engage in market arbitrage between debt and equity as well as private and public equity markets.

Keywords: private equity, exits, secondary buyouts

JEL Classification Code: G11, G24, G34

Authors: Achleitner, Ann-Kristin; Bauer, Oliver; Figge, Christian; Lutz, Eva

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1. Introduction

Whether it is their 'circular logic',[89] or because they appear to be 'pass-the-parcel' deals or 'exits of last resort': the motivation for secondary buyouts is still poorly understood, despite the fact that since the 2000s, secondary buyouts have constituted an increasingly important segment in the private equity (PE) market. Between 2000 and 2004 secondary buyouts, where one PE firm sells to a fellow PE firm, accounted for 20% of the combined enterprise value of leveraged buyout (LBO) transactions closed globally. For the time period 2005 to mid 2007, this figure even increased to 26% epitomizing the relevance of secondary buyouts during the upswing of the global LBO market.[90] The trend also continued beyond the financial crisis, with nearly 50% of all transactions in 2011 being secondary buyouts.[91]

The secondary buyout phenomenon can be analyzed from three different perspectives, namely from the perspective of (i) the company, (ii) the buyer and (iii) the seller. As far as the perspective of the company is concerned, recent research[92] suggested that companies continue to achieve significant operational performance improvements after a secondary buyout. Regarding the perspective of the buyer, research showed that the second PE firm still earns attractive equity returns similar to those of the primary PE firm. In addition, an analysis of the value creation profile of

[89] See The Economist, Feb. 25 2010, "Secondary buyouts: circular logic."

[90] See Kaplan and Strömberg, "Leveraged Buyouts and Private Equity," Journal of Economic Perspectives, Vol. 23 (2009), 121-146.

[91] See Preqin, 2011, "Private Equity Spotlight."

[92] See Bonini, S., "Secondary Buy-outs," Working Paper, Bocconi University (2010), Wang, Y., "Secondary buyouts: why buy and at what price?," Working Paper, California State University – Fullerton (2011) and Achleitner, A.-K. and C. Figge, "Private equity lemons? Evidence on the value creation in secondary buyouts," European Financial Management, Forthcoming.

secondary buyouts showed that, next to operational performance improvements comparable to primary buyouts, secondary buyouts are slightly more expensive and use more leverage than primary buyouts.[93]

This paper focuses on the perspective of the seller, i.e. the primary PE firm, and tackles two fundamental issues. First, we analyzed whether a secondary buyout is an 'exit of last resort' by comparing equity returns of public, private and financial exits as the three main PE exit channels. Second, we explored how company and market related factors are related to the likelihood that PE firms choose a secondary buyout as an exit channel for their portfolio companies. These factors include the lending capacity of the portfolio company, the liquidity of the debt markets and the amount of committed capital to the PE market. Our study is based on a proprietary dataset of detailed company level financials and equity returns of 1,112 LBOs undertaken by European and North American PE firms and exited between 1995 and 2008.

While our paper is closely related to recent research on the private equity divestment choice,[94] we can add to the body of literature since we can distinguish between private and financial exits and have information of equity returns and underlying company performance for each transaction. Therefore, we were able to answer the question as to whether secondary buyouts are 'exits of last resort'. Furthermore, in our analysis of the drivers of secondary buyouts as an exit channel, we

[93] See Achleitner, A.-K. and C. Figge, "Private equity lemons? Evidence on the value creation in secondary buyouts," European Financial Management, Forthcoming.

[94] See Schmidt, D., S. Steffen, et al., "Exit strategies of buyout investments: an empirical analysis," Journal of Alternative Investments, Vol. 12 (2010), 58-84, Sousa, M., "Why do private equity firms sell to each others?," Working Paper, University of Oxford - Said Business School (2010) and Wang, Y., "Secondary buyouts: why buy and at what price?," Working Paper, California State University - Fullerton (2011).

found that PE firms choose this exit due to company and market specific factors that have not been discussed in a comprehensive fashion to date.

The remainder of the paper is organized as follows: Section 1 discusses the theoretical background and develops testable hypotheses regarding the returns and determinants of secondary buyouts as an exit channel. Section 2 presents summary statistics for our data. Section 3 presents and discusses our empirical results and section 4 concludes.

2. Theoretical Background and Hypotheses

A general partner (GP) has several exit channels at his disposal in order to realize the value created over the holding period of an investment, i.e. the time since acquisition of the company. The literature generally distinguishes three main exit routes: The public exit channel involves an initial listing on a stock exchange, the IPO, and subsequent sell-down of the stake once the lock-up period expires.[95] The private exit channel refers to the sale of a portfolio company to a strategic acquirer, buy-backs and management buyouts or buyins without the involvement of PE. The financial exit is the sale of a portfolio company to another PE firm and is often referred to as a secondary buyout.[96] In the following, we discuss the current research on financial exits

[95] See Lin, T. H. and R. L. Smith, "Insider reputation and selling decisions: the unwinding of venture capital investments during equity IPOs," Journal of Corporate Finance, Vol. 4 (1998), 241-263.

[96] In contrast to other researchers, e.g. Schmidt, D., S. Steffen, et al., "Exit strategies of buyout investments: an empirical analysis," Journal of Alternative Investments, Vol. 12 (2010), 58-84, we choose not to include write-offs as a separate exit channel in our analysis since we believe that this is not a mutually exclusive exit channel but refers to the return realized by the PE fund. A written-off company can still be exited via private or financial sale. Differently, bankruptcy constitutes a mutually exclusive exit channel, but arguably this cannot be considered as an exit option, but rather a necessity.

in order to develop hypotheses regarding the return profile and determinants of this increasingly important exit channel.

When considering the exit choice, the question arises whether an optimal exit channel or a pecking order of exit channels exists. Research on the pecking order of venture capital exits[97] suggested that the exit channel choice was predominantly driven by firm quality and that a public exit was more likely for firms with better quality. Similarly for the PE context, researchers found that the exit channel has a significant influence on the equity IRR without controlling for firm quality.[98] Therefore, these results do not allow a conclusion as to the existence of a pecking order of PE exit channels.

As far as the financial exit is concerned, three main arguments regarding the expected return potential can be found in the literature. From the perspective of the seller, recent research[99] suggested that rather than being an 'exit of last resort', PE sponsors use this exit channel to take advantage of favorable debt market conditions, which have a positive influence the valuations,[100] which PE firms are willing to pay and should, therefore, positively influence the returns from selling to another PE firm.

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[97] See Cumming, D. and J. MacIntosh, "Venture-Capital Exits in Canada and the United States," The University of Toronto Law Journal, Vol. 53 (2003), 101-199.

[98] See Schmidt, D., S. Steffen, et al., "Exit Strategies of Buyout Investments: An Empirical Analysis," Journal of Alternative Investments, Vol. 12 (2010), 58-84.

[99] See Sousa, M., "Why do private equity firms sell to each others?," Working Paper, University of Oxford - Said Business School (2010) and Wang, Y., "Secondary buyouts: why buy and at what price?," Working Paper, California State University - Fullerton (2011).

[100] See Axelson, U., T. Jenkinson, et al., "Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts," Working Paper, Charles A. Dice Center (2010).

From the perspective of the buyer, recent research[101] found that rather than resembling a 'squeezed lemon', a secondary buyout still offers attractive value creation potential and does not command a lower valuation than primary buyouts, which again refutes the 'exit of last resort' notion. Finally, from the perspective of the company, Jensen[102] argued that PE will emerge as a new form of corporate governance and does not merely serve as a temporary 'shock therapy' for underperforming companies[103] as suggested by. In support of this, Strömberg[104] found that the median company stays in PE ownership for nine years, which is in line with anecdotal evidence that companies offer value creation potential in a PE ownership structure beyond the typical four year holding period.[105] Therefore, the rise of financial buyouts may actually confirm Jensen's vision of PE as a new corporate governance pillar. Hence, we propose:

Hypothesis H1: *An equity return pecking order of private equity exit channels exists.*

The choice of exit channel has been shown to depend on both (i) company-level factors and (ii) market-level factors.[106] In the following we will address both areas

[101] See Wang, Y., "Secondary buyouts: why buy and at what price?," Working Paper, California State University - Fullerton (2011) and Achleitner, A.-K. and C. Figge, "Private equity lemons? Evidence on the value creation in secondary buyouts," European Financial Management, Forthcoming.

[102] See Jensen, M. C., "Eclipse of the Public Corporation," Harvard Business Review, Vol. 67 (1989), 61-74.

[103] See Rappaport, A. S., "The Staying Power of the Public Corporation," Ibid.Vol. 1 (1990), 96-104.

[104] See Strömberg, P., "The new demography of private equity," Globalization of Alternative Investments Working Papers Volume 1: The Global Impact of Private Equity Report, (2008).

[105] See Achleitner, A.-K., E. Lutz, et al., "New Look: Going Private with Private Equity Support," Journal of Business Strategy, Vol. 31 (2010), 38-49, and Achleitner, A.-K., C. Figge, et al., "Drivers of value creation in a secondary buyout: the acquisition of Brenntag by BC Partners," Working Paper, TU Munich (2012).

[106] See Schmidt, D., S. Steffen, et al., "Exit strategies of buyout investments: an empirical analysis," Journal of Alternative Investments, Vol. 12 (2010), 58-84.

with specific respect to secondary buyouts. As far as company-level factors are concerned, we already raised Jensen's notion of PE as a new form of corporate governance. He further argued that the disciplining role of leverage plays an important role in the PE governance model. Accordingly, we argue that secondary buyout targets have a business model that has proven to be suitable for the leveraged buyout model used in the PE governance model. The suitability of the business model is determined among others by its cash-flow generation and the stability of these cash flows, which both positively impact the lending capacity. In case of a relatively high lending capacity, we therefore expect that the PE firm is more likely to choose a financial exit:

> ***Hypothesis H2:*** *The likelihood of a financial exit is positively related to the lending capacity of the portfolio company.*

In terms of market related factors that drive the exit choice, a rational PE player will exercise his market timing skills not only with respect to timing of the exit, but also choice of exit route. The analysis of the capital structure in PE transactions showed that PE firms explicitly arbitrage between debt and equity markets.[107] In line with recent research on secondary buyouts,[108] we argue that this arbitrage between debt and equity markets takes place not only 'at entry', but also 'at exit'. In times of 'hot' debt markets and/or 'cold' equity markets, PE firms will opt for an exit via sale to another financial investor in order maximize their exit valuation and we therefore hypothesize:

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[107] See Axelson, U., T. Jenkinson, et al., "Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts," Working Paper, Charles A. Dice Center (2010).

[108] See Wang, Y., "Secondary buyouts: why buy and at what price?," Working Paper, California State University - Fullerton (2011) and Sousa, M., "Why do private equity firms sell to each others?," Working Paper, University of Oxford - Said Business School (2010).

Hypothesis H3: *The likelihood of a financial exit is positively related to the liquidity of the debt markets.*

A second market related factor that should influence the likelihood of a financial exit is the amount of undrawn capital commitments in the PE market. We know that the amount of capital committed to the venture capital (VC) asset class is positively correlated to the valuations.[109] With a limited pool of attractive investments for VC firms and therefore a static supply curve, a capital inflow results in an outward shift of the demand curve for such investments leading to a price increase. A similar dynamic is thought to apply to the PE asset class and it can be expected that valuations of LBOs increase in times of high capital inflows. A financial exit can then be a particularly attractive exit channel for PE firms. With a large pool of undrawn capital commitments in the PE market, valuation levels will increase and financial exits are a more probable exit channel. It is hence likely that the exit choice of PE firms is related to the amount of capital overall committed to PE funds and, hence, we propose:

Hypothesis H4: *The likelihood of financial exits is positively related to the pool of undrawn capital commitments to the PE asset class.*

3. Dataset and Description

Our sample is based on data compiled by three European funds of funds. Their databases contain the transactions from all the PE firms which they screened as part of their due diligence efforts and not only those funds in which they choose to invest. The dataset entails general transaction information such as industry, headquarter location

[109] See Gompers, P. and J. Lerner, "Money chasing deals? The impact of fund inflows on private equity valuations," Journal of Financial Economics, Vol. 55 (2000), 281-325.

as well as entry and exit type. In addition, financial figures of the portfolio company at entry and at exit such as enterprise value, equity value, net debt, sales, EBITDA and the corresponding ratios are also included. Furthermore, the dataset contains monthly deal level cash flows between the portfolio company and the fund, i.e. before the deduction of management fee and carried interest, which allows us to calculate the gross equity return. The dataset also contains fund level information including the headquarter location, the foundation year of the GP, fund generation, vintage year and size. In addition, we collected several market variables from Thomson ONE Banker that may influence the exit decision of PE firms, for example, the development of the MSCI World Index over the holding period, the spreads and volumes of leveraged buy-out (LBO) loans as well as the capital commitments to the PE asset class.

For the purpose of this paper, we focused on PE deals that are fully realized and exited via the public, private or financial exit channel. We chose not to include write-offs and bankruptcies, since these refer to the performance of a transaction and do not really present an exit option, but rather a necessity. Our dataset includes companies headquartered in Europe or North America which were exited between 1995 and 2008. Table II-13 presents some summary statistics on our dataset. It contains 1,112 transactions, financed by 229 funds and conducted by 100 GPs.

We have little concern regarding the representativeness of our sample for two reasons. First, the database contains all PE funds that the fund of funds collected as part of their due diligence, i.e. not only those that they actually invested in but also those that they declined to invest and successor funds to the ones that they considered

Table II-13: Descriptives

This table presents the summary statistics of the sample. Panel A provides general information, panel B summarizes the frequency of the exit types and panel C gives an overview on transaction charactertistics.

Panel A: General Dataset Information

Number of Transactions	1112	Total Transaction Value in Mio. USD	607,534
Number of GP	100	Number of Transactions of Top 5% GP	246
Number of Funds	229	Number of Transactions Top 5% Funds	217

Panel B: Frequency of exit types

	Private		Financial		Public		
	No.	%	No.	%	No.	%	Total
Total	610	55%	340	31%	162	15%	1112
Region							
Europe	457	55%	270	32%	110	13%	837
Northern Americas	146	56%	65	25%	51	19%	262
Exit Year							
1995-1999	115	59%	22	11%	59	30%	196
2000-2004	213	57%	95	25%	65	17%	373
2005-2008	282	52%	223	41%	38	7%	543

Panel C: Information about Deal Characteristics

	Obs.	Mean	SD	Median	Min	Max
Equity IRR (%)	1109	50%	31%	69%	-84%	438%
Money Multiple	1112	3.67	2.89	3.08	0.00	18.43
Holding Period (in Years)	1093	4.25	2.29	3.83	0.33	11.84

for investment, which should alleviates potential sample selection concerns.[110] Second, our dataset compares favourably to similar datasets across a variety of metrics such as the distribution of exit types across time, the holding period of the investments and the gross equity IRR.[111]

4. Empirical Analysis

4.1 Univariate Results on the Returns and Determinants of Financial Exits

Before we turned towards regression models to test our hypotheses, we first examined the explanatory variables in a univariate comparison of means and medians across the three different exit types. Table II-14 presents an overview of the variables that we used in our empirical analyses.

Panel A in Table II-15 reports the means and medians for the equity IRR, the money multiple and the holding period by exit type. In the interpretation of our results we focused on the median in order to reduce the problem of outliers. The median IRR of both the public (36.0%) and financial exit (35.1%) channels is significantly higher than that of the private exit channel (28.9%), yet there is no statistical significant difference between the public and financial exit channel. In terms of money multiple, a clear pecking order emerges: the public exit channel (3.45x) generates a higher money multiple than the financial exit channel (3.09x), which itself generates a higher money

[110] See Metrick, A. and A. Yasuda, "The economics of private equity funds," The Review of Financial Studies, Vol. 23 (2010), 2303-2341.

[111] See Strömberg, P., "The new demography of private equity," Globalization of Alternative Investements Working Papers Volume 1: The Global Impact of Private Equity Report (2008), Chapman, J. and P. G. Klein, "Value Creation in Middle-Market Buyouts," in D. J. Cumming, Private equity: fund types, risks and returns, and regulation (Hoboken (NJ): Wiley, 2009), Schmidt, D., S. Steffen, et al., "Exit strategies of buyout investments: an empirical analysis," Journal of Alternative Investments, Vol. 12 (2010), 58-84.

multiple than the private exit channel (2.52x). Therefore, we concluded that private exit channels appear to offer the lowest returns. Furthermore, it emerged that the financial exit is by no means an 'exit of last resort', but offers attractive returns, particularly in terms of IRR. In order to determine whether there is a clear ranking among public and financial exits and whether the pecking order is driven by market and company fundamentals we then turned to a multivariate regression analysis which is presented in section 3.3.

Turning to Panel B of Table II-15, this presents deal related factors for each of the exit types, which allows us to investigate the typical anatomy of each of the PE exit channels. It emerges that the financial exit is predominantly chosen for medium sized deals with above average EBITDA margins and EBITDA growth. Furthermore, they have the highest leverage at exit. Therefore, both of our proxies indicate that financial exits have a higher median EBITDA margin at exit (17%) than public (15%) and private (14%) exits. Furthermore, financial exits have a higher leverage at exit (2.41x) than public (1.63x) and private exits (2.20x).

Panel C of Table II-15 then allowed us to analyze differences between the exit channels as to market related factors. As far as liquidity of the debt markets is concerned, we found that median LBO debt proceeds are higher in the year of a financial exit (20.0) than in the year of a public (4.6) or private (10.9) exit. Regarding capital commitments to the PE asset class, the median dry powder in the year of a financial exit (-0.034) is lower than for both the private (0.024) and public exit (0.016). Since the dry powder variable is subject to a strong time effect (please refer to Figure II-2), empirical investigation based on multivariate

Table II-14: Variable Descriptions

This table describes all variables used in the subsequent analyses. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile.

Variable	Description
Dry powder$_{Exit}$	The ratio between the committed, but not yet invested capital and the amount of capital raised in Europe or North America within 4.5 years and 0.5 years before the exit.
LBO debt proceeds$_{Exit}$	The proceeds amount of LBO related loans in the region of the portfolio company (North America or Europe) within the penultimate quarter of the exit.
Exit type	A categorical variable that takes the value *Public*, *Financial* or *Private* depending on the exit channel chosen.
Equity IRR	The gross equity IRR of the transaction that was calculated from the monthly cash flows between the fund and the portfolio company.
Sales$_{[Exit]}$ (h)	The amount of sales of the portfolio company in million USD at exit or entry, respectively.
Margin$_{[Exit\|Entry]}$ (w)	The margin, defined as sales divided by EBITDA, at exit or entry, respectively.
Leverage$_{[Exit]}$ (w)	The leverage of the portfolio company, defined as defined as net debt divided by EBITDA, at the exit or entry.
Debt/Equity$_{[Entry]}$ (w)	The debt-to-equity ratio of the portfolio company, defined as net debt divided by the equity value, at the exit or entry.
Enterprise Value$_{[Entry]}$ (h)	The amount that the PE firm received for the sale at exit or paid for the company at entry in million USD.
Multiple$_{[Entry]}$ (w)	The ratio between the enterprise value of the portfolio company and the EBITDA at entry or exit.
EBITDA$_{CAGR}$ (w)	The compound annual growth rate of the EBITDA between the entry and the exit of the PE firm.
Dummy First time fund	A dummy variable that takes the value of 1 if the fund is the first one of the PE firm and 0 otherwise.
LBO spread$_{Exit}$	The spread between Moody's yield on BAA-rated seasoned corporate bonds and the market yield of US government securities at 10-year constant maturity.
MSCI$_{CQGR}$	The compound quarterlized growth rate of the MSCI World Standard Price Index between entry and exit.

Table II-15: Univariate Analysis of the Returns and Determinants of Exit Types

The table presents the univariate comparison of different characteristcs of the company for different exit types at exit. The first test statistic column presents the t-values of the unequal one-sided T-Test with Welch correction, the second one represents the chi2-value of the non-parametric Fisher's exact test. The variables used are described in Table II-14.

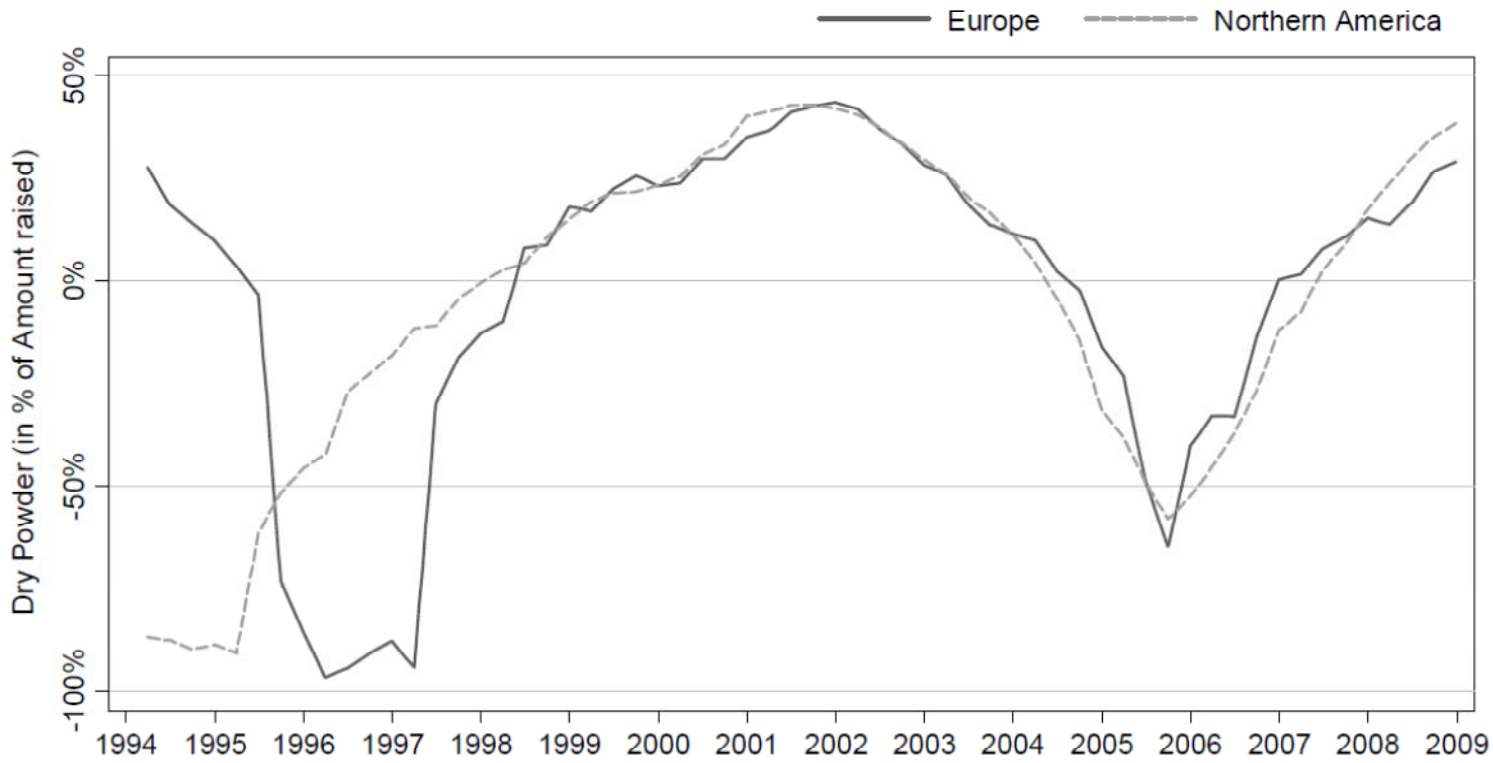
		Group I			Group II			Test Statistic	
VARIABLES	COMPARISON	Obs.	Mean	Median	Obs.	Mean	Median	T-Test t-value	Fisher's exact chi2-value
Panel A: Returns									
Equity IRR	Financial vs Private	339	0.484	0.351	608	0.471	0.289	0.328	7.645***
	Public vs Private	162	0.610	0.360	608	0.471	0.289	2.009**	7.235***
	Public vs Financial	162	0.610	0.360	339	0.484	0.351	1.825**	0.049
Money Multiple	Financial vs Private	340	3.761	3.085	610	3.283	2.520	2.493***	22.906***
	Public vs Private	162	4.954	3.450	610	3.283	2.520	4.890***	38.740***
	Public vs Financial	162	4.954	3.450	340	3.761	3.085	3.328***	4.674**
Holding Period	Financial vs Private	334	4.258	3.760	597	4.305	3.920	-0.303	0.434
	Public vs Private	162	4.033	3.750	597	4.305	3.920	-1.384*	1.652
	Public vs Financial	162	4.033	3.750	334	4.258	3.760	-1.073	0.038
Panel B: Deal related factors									
Enterprise Value$_{Exit}$	Financial vs Private	340	536.1	232.6	610	389.7	110.3	2.333***	37.102***
	Public vs Private	162	1119.2	362.0	610	389.7	110.3	4.854***	55.122***
	Public vs Financial	162	1119.2	362.0	340	536.1	232.6	3.774***	6.161***

		Group I			Group II			Test Statistic	
VARIABLES	COMPARISON	Obs.	Mean	Median	Obs.	Mean	Median	T-Test t-value	Fisher's exact chi2-value
Panel B: Deal related factors (continued)									
EBITDA margin$_{Exit}$	Financial vs Private	340	0.19	0.17	610	0.17	0.14	2.416***	16.261***
	Public vs Private	162	0.17	0.15	610	0.17	0.14	0.083	0.781
	Public vs Financial	162	0.17	0.15	340	0.19	0.17	-1.524*	5.859***
EBITDA Growth	Financial vs Private	329	0.20	0.17	565	0.17	0.12	1.112	11.547***
	Public vs Private	154	0.22	0.14	565	0.17	0.12	1.685**	2.741*
	Public vs Financial	154	0.22	0.14	329	0.20	0.17	0.971	0.894
Leverage$_{Exit}$	Financial vs Private	340	2.72	2.41	610	2.52	2.20	1.184	3.896**
	Public vs Private	162	1.92	1.63	610	2.52	2.20	-3.086***	5.375**
	Public vs Financial	162	1.92	1.63	340	2.72	2.41	-3.909***	14.582***
Panel C: Market related factors									
LBO debt proceeds$_{Exit}$	Financial vs Private	335	24.7	20.0	603	17.3	10.9	5.278***	26.647***
	Public vs Private	161	10.0	4.6	603	17.3	10.9	-5.766***	13.919***
	Public vs Financial	161	10.0	4.6	335	24.7	20.0	-9.619***	56.774***
Dry powder$_{Exit}$	Financial vs Private	335	-0.102	-0.034	603	-0.039	0.024	3.183***	16.685***
	Public vs Private	161	-0.102	0.016	603	-0.039	0.024	1.765**	0.386
	Public vs Financial	161	-0.102	0.016	335	-0.102	-0.034	0.004	0.966

*** p<0.01, ** p<0.05, * p<0.1

Figure II-2: Development of Dry Powder between 1994 and 2009

The figure exhibits the development of PE dry powder, the amount of committed, but not yet invested capital. The variables takes values between -96% (indicating that approximately twice the amount of committed capital has been spent) and 43% (implying that approximately half of the commitments had been taken down). The underlying data of commitments and takedowns was retrieved from Thomson ONE Banker.



analysis was required to draw a conclusion on the relationship between the amount of committed capital and the exit choice.

4.2 Regression Results on the Returns of Financial Exits

We now turn to the analysis of a pecking order of PE exits in terms of equity returns, which is presented in Table II-16. The dependent variable is the equity IRR. Our independent variables are two dummy variables $Exit\ Channel_{Public}$ and $Exit\ Channel_{Financial}$, and private exits constitute the base category. In specification 1, we wanted to test whether there is a pecking order before controlling for market and company level factors. We controled for the holding period and transaction size and for GP experience by including a dummy for first generation PE funds. Finally, we included region, industry and time dummies to ensure that these factors do not affect our results. In specification 2, we added two variables to control for the market environment at the time of exit, namely the LBO spreads at exit and the MSCI growth rate over the holding period. Finally, in order to test whether firm quality has an influence on the pecking order of PE exits we included in specification 3 deal level variables to control for company performance. These include the debt / equity ratio, the acquisition multiple and EBITDA margin at entry as well as the EBITDA growth over the holding period.

Our findings led us to reject hypothesis H1, even when not explicitly controlling for market and company specific factors, there is no clear pecking order among PE exit channels. Nonetheless, the coefficients of both the public and financial exit channel are positive and the t-statistics are relatively high. This does not change when including the market factors in specification 2. However, when the company specific

Table II-16: OLS Regression Analysis on the Impact of Exit Types on the Equity IRR

The table reports the ordinary least squares regression results with heteroscedasticity and autocorrelation consistent (HAC) error estimation using multi-way clustering. The dependent variable is the equity IRR winsorized at the 99th percentile. The independent variables are described in Table II-14. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. In all models, dummy variables for time, industries and region are included to account for fixed effects. Furthermore, errors are clustered at the dimensions industry and time using multi-way clustering proposed by Cameron et al. (2006). T-statistics are presented in the lower rows in parenthesis under the coefficients. ***, ** and * indicate p-values of 1 percent, 5 percent and, 10 percent, respectively.

		IRR (h)	
VARIABLES	(1)	(2)	(3)
$Exit\ Channel_{Public}$	0.056	0.044	0.007
	(1.527)	(1.268)	(0.179)
$Exit\ Channel_{Financial}$	0.100	0.081	0.031
	(1.331)	(1.050)	(0.400)
$LBO\ spread_{Exit}$		-0.005	-0.052
		(-0.054)	(-0.549)
$MSCI_{CQGR}$		3.038***	1.560*
		(4.044)	(1.900)
$Debt/Equity_{Entry}$ (w)			0.032**
			(2.054)
$Log(1+Multiple_{Entry})$ (w)			-0.256***
			(-4.856)
$Log(1+Margin_{Entry})$ (w)			0.365*
			(1.806)
$EBITDA_{CAGR}$ (w)			0.544***
			(4.238)
Log(Holding Period) (h)	-0.580***	-0.548***	-0.458***
	(-7.424)	(-7.151)	(-5.966)
$Log(Enterprise\ Value_{Entry})$ (h)	0.009	0.010	0.031**
	(0.635)	(0.745)	(2.022)
Dummy First time fund	-0.006	-0.007	0.008
	(-0.098)	(-0.123)	(0.149)
Time, Industry, Region Fixed Effects	Yes	Yes	Yes
Constant	1.054***	0.941***	1.190***
	(7.406)	(4.927)	(5.801)
Observations	1,040	1,040	988
R-squared	0.312	0.322	0.399
t-statistics in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

factors are included in specifications 3, the t-statistic drops to insignificant levels. Therefore, we concluded that there is no clear pecking order among PE exit routes, but that it is mainly driven by market and company-level factors. Overall, we can conclude that the financial exit is not an 'exit of last resort'.

4.3 Regression Results on the Determinants of Financial Exits

Given that a financial exit is not merely an 'exit of last resort', we then turned to the analysis of the drivers of this increasingly important PE exit channel, which is presented in Table II-17. We used a multinomial logistic regression model. Our dependent variable is categorical and has three different outcomes (*Public*, *Private*, *and Financial*). We used two independent variables to test whether financial exits are preferred for companies with a higher lending capacity (H2). First, we used the *EBITDA margin*$_{Exit}$ as a cash flow proxy and, second, we use *Leverage*$_{Exit}$, which relates the net debt of a company to its EBITDA. Both proxies are positively correlated with the lending capacity of a company. Furthermore, in specification 1 we included the independent variable *LBO debt proceeds*$_{Exit}$ which measures the annual amount of LBO loans issued in the region of the portfolio company (North America or Europe) within the penultimate quarter of the exit and is a proxy for the liquidity of the debt markets (H3).[112]

In order to analyze the relevance of undrawn capital commitments to the PE market (H4), we introduced the independent variable *Dry powder*$_{Exit}$ in specification 2. In order to normalize the different sums in both regions, the amount of the committed,

[112] Again, the delay represents the duration for deal structuring and closing. Example for the delay: if the exit was on 08/31/2001, the variable takes the value of the proceeds amount of loans issued in the range from 01/01/2001 until 03/31/2001.

Table II-17: Multinomial Logistic Regression Analysis of the Market Related Drivers and Determinants of Exits

The table reports the multinomial logistic regression results with heteroscedasticity and autocorrelation consistent (HAC) error estimation using multi-way clustering. The dependent variable is the exit type with the categorical values Public (Pu), Private (Pr) and Financial (Fi). The independent variables are described in Table II-14. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. Dummies for time and ICB industries are also included to account for time-specific (e.g., market cycles) and industry-specific (e.g., higher leverage) effects. Furthermore, errors are clustered at the dimensions industry and time using multi-way clustering proposed by Cameron et al. (2006). Each model comprises three columns, each representing the logits of an exit type compared to a base group (e.g., Pu/Fi means Public over Private). Z-statistics are presented in the lower rows in parenthesis under the coefficients. ***, ** and * indicate p-values of 1 percent, 5 percent and 10 percent, respectively.

	(1)			(2)			(3)		
VARIABLES	Pu/Fi	Pu/Pr	Pr/Fi	Pu/Fi	Pu/Pr	Pr/Fi	Pu/Fi	Pu/Pr	Pr/Fi
$Log(1+Margin_{Exit})$ (w)	-0,660	2.674**	-3.334***	-0,944	2.562**	-3.506***	-0,817	2.706**	-3.523***
	-0,451	2,041	-2,768	-0,693	1,997	-3,000	-0,579	2,076	-2,996
$Log(1+Leverage_{Exit})$ (w)	-0.656***	-0.425**	-0,230	-0.692***	-0.442**	-0,250	-0.648***	-0.420**	-0,229
	-2,922	-2,266	-1,324	-2,976	-2,322	-1,393	-2,860	-2,260	-1,275
$Log(LBO\ debt\ proceeds_{Exit})$	-0.335**	0,039	-0.374***				-0,284	0,042	-0.326***
	-1,967	0,200	-2,664				-1,507	0,215	-2,896
$Dry\ powder_{Exit}$				-1.929*	0,296	-2.226**	-2.766***	-0,263	-2.503***
				-1,710	0,326	-2,571	-3,633	-0,312	-3,943
$Log(Sales_{Exit})$ (h)	0.546***	0.774***	-0.228**	0.532***	0.775***	-0.244**	0.519***	0.774***	-0.254***
	3,784	7,991	-2,309	3,634	8,031	-2,479	3,561	7,927	-2,592
$EBITDA_{CAGR}$ (w)	0,035	-0,010	0,045	0,031	-0,074	0,105	0,143	0,000	0,143
	0,090	-0,024	0,165	0,077	-0,186	0,394	0,374	0,000	0,570
Dummy First time fund	-0,217	-0,291	0,074	-0,254	-0,323	0,069	-0,262	-0,293	0,031
	-0,709	-1,085	0,498	-0,858	-1,283	0,468	-0,846	-1,102	0,201
$MSCI_{CQGR}$	9.052*	17.218***	-8.166***	8.964*	17.753***	-8.789***	8.879*	17.299***	-8.420***
	1,923	3,616	-4,671	1,949	3,785	-4,234	1,845	3,592	-4,640
Included Fixed Effects	Time, Industry, Region			Time, Industry, Region			Time, Industry, Region		
Observations	956			963			956		
R-squared	0.186			0.186			0.193		
Log pseudolikelihood	-762.253			-768.015			-755.623		

*** p<0.01, ** p<0.05, * p<0.1

but not yet invested capital is related to the takedowns in the same period. Technically, the variable is defined as $Dry\ powder_{Exit} = 1 - \frac{\text{Takedowns}_{\ period,region}}{\text{Amount Raised}_{period,region}}$ where the period is defined as four years prior to the exit[113] and the region is either Europe or North America. A higher value implies higher investment pressure of the private equity industry.

In specification 3, we included both market level variables as a robustness check. As far as control variables are concerned, we included company size and EBITDA growth on company level. In addition, we controlled for GP experience by including a first time dummy and the development of the general market environment by including the MSCI development over the holding period. Finally, we included region, industry and time dummies to ensure that these factors do not affect our results.

Turning to the interpretation of the results in Table II-17, we found that more profitable companies are more likely to be exited via the public or financial exit channel. On the other hand, companies with a higher leverage at exit are more likely to be exited via the financial or private exit channel. We took this as confirmation of our hypothesis H2: a financial exit is more likely if the company has a high lending capacity. Turning to the market level determinants of the exit choice, we found that the liquidity of the debt markets increases the likelihood of the financial exit. Similarly, we found that the amount of undrawn committed capital in the PE market positively influences the likelihood of a financial exit. These findings confirmed our hypotheses

[113] The range of four years corresponds to the investment and fundraising behaviour of private equity funds. We conducted several robustness checks for the range of four years and a longer or a shorter period leads to the same results.

H3 and H4 and we conclude that PE firms engage in market arbitrage between debt and equity as well as private and public equity markets.

5. Conclusion

In this paper, we analyzed secondary buyouts from the perspective of the seller, i.e. the primary PE firm. Our aim was to understand whether PE firms have a clear pecking order as to the exit channels they choose for their portfolio companies. Furthermore, it was analyzed whether certain company or market related factors have an influence on the probability that a secondary buyout is pursued.

Our study was based on a proprietary dataset of three European funds of funds and in total entails 1,112 leveraged buyouts closed between 1995 and 2008 in North America or Europe. We showed that secondary buyouts deliver returns that are comparable to the ones achieved through IPOs, even after controlling for company or market related factors. Hence, we concluded that there is no clear pecking order of exits for PE firms and secondary buyouts are not an exit choice of last resort.

Furthermore, we analyzed the relationship between the probability of a secondary buyout and company as well as market related factors. We found that PE firms are more likely to choose a secondary buyout if the portfolio company has a higher lending capacity. In addition, the probability of a secondary buyout increases with an increase in the liquidity of debt markets or an increase in the amount of undrawn capital commitments. Our findings lead to the conclusion that PE firms engage in market arbitrage not only between debt and equity markets but also between private and public equity markets.

While we shed light on important drivers of a PE firm's decision to exit via a secondary buyout, some open questions for future research remain. We focused on the perspective of the seller and thereby complemented existing research on this perspective as well as the impact of a secondary buyout on the target company as well as the value creation potential from the perspective of a buyer. It would be interesting to examine the secondary buyout phenomenon also from the perspective of the investors in the PE asset class, the so-called limited partners (LP), e.g. Is a secondary buyout also attractive for an LP who is invested in both the selling and buying PE firm? Are secondary buyouts as complicated as primary buyouts and is the current compensation structure still adequate given the rising importance of secondary buyouts as a deal source for the PE industry?

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II.IV Essay 4 – The GP-LP Conflict in Private Equity Funds Revisited: The Impact of Fund Level Considerations on the Divestment Decision

Abstract

This article examines the impact of private equity (PE) fund level dynamics on the PE fund's general partner's (GP) divestment decisions and whether these decisions are to the detriment of the PE fund's limited partners, indicating a moral hazard problem. We use a unique sample of 1,112 buyout transactions realized between 1995 and 2008 which allows us to link fund- and deal level data. We find that the exit routes chosen change (i) if a PE GP is in the process of fundraising and if the PE fund (ii) has distributed comparatively little capital back to its investors. However, as related deal level equity returns are not lower, we observe no moral hazard problem associated with these fund dynamics. In contrast, if a PE fund (iii) approaches the end of its lifetime, not only the exit route decision is affected but these exits also yield lower deal level equity returns. We conclude that GPs do not maximize income from the current and next fund, but all future funds. Hence, they refrain from divestment decisions harming their limited partners' returns. However, this relationship breaks down as a fund approaches the end of its lifetime and the GP increasingly focuses on managing subsequent funds.

Keywords: principal agent conflict, private equity, divestment decision, buyouts

JEL Classification Code: G11, G24, G32

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1. Introduction

Achieving a successful exit of a portfolio company is a key element of the private equity (PE) business model (Gompers and Lerner 2001). In our view the divestment decision has two dimensions. First, there may be different exit options for a portfolio company, and, second, at any point during the fund lifetime, several companies are potential exit candidates. Clearly, exit timing and choice of exit channel are critical determinants of the investment returns (Sousa 2010, Schmidt et al. 2010). Company performance and market environment are commonly accepted as key drivers of both the exit choice and transaction returns. Recently, a number of authors have suggested that fund level dynamics influence the decisions on portfolio company level (Wang 2011, Achleitner et al. 2011). Wang (2011) argues that if a PE firm is in the midst of fundraising, this will affect its exit choice. Particularly, she finds that PE firms needs to demonstrate their ability to exit portfolio companies to facilitate fundraising. Similarly, Achleitner et al. (2012) analyze the case of Brenntag, one of the largest PE transactions in Germany, and propose that fundraising as well as the need to distribute cash to PE fund investors affect the decision when and how to exit a specific portfolio company.

The latter proposition is analogue to Strömberg (2008), who argues that PE firms try to achieve a stable cash flow profile in order enhance predictability of funds flow, which is an important factor for PE fund investors when determining their allocation to this asset class (Fraser-Sampson 2010, Meyer and Mathonet 2005). Moreover, if a fund approaches maturity, this is thought to affect the choice of exit channel (Sousa 2010) and negatively impact returns (Achleitner et al. 2011), with one potential reason being that negotiation power is severely limited when time is running up.

If such fund level considerations really matter in a PE firm's divestment decisions, there may be a principal agent conflict between the PE general partner (GP)

and its investors, the limited partners (LPs). This agency conflict arises through the typical compensation structure of PE funds (Axelson et al. 2009). GPs earn a management fee on the total capital committed to the fund, which is independent from the fund's performance. In addition, the GP earns a performance based carried interest, i.e. a share of the excess returns above a certain hurdle rate (Chung et al. 2011, Metrick and Yasuda 2010). However, Chung et al. (2011) show that the implicit compensation of a GP is not confined to the income stream from the current fund, but also comprises expected income from future funds. Hence, from a GP's perspective it is rational to optimize expected income from both the current fund and future funds. However, this is not necessarily in the interest of the LPs as their income depends on the performance of the current fund.

We argue that this agency conflict is of particular importance for the divestment decision on portfolio company level. Consider the following situation, which is based on anecdotal evidence: A GP is in preparation of fundraising. The GP team knows that historic performance is one of the key drivers of fundraising success (Gompers and Lerner 1998) and that historic performance is best measured using realized returns. Therefore, they review their current portfolio to determine which transactions could be sold prior to fundraising. Having identified a short list of companies to be exited, one investment manager adds that Chung et al. (2011) show that an initial public offering (IPO) of an existing portfolio company positively influences fundraising success. Therefore, the team ponders which company on the short list would be the most likely IPO candidate, probably disregarding whether such an IPO might be premature, resulting in underpricing and reduced returns to LPs. Similar situations, where fund level dynamics affect the divestment decision, could arise (i) when a fund has not been able to exit an investment for quite some time and therefore not returned cash to its investors or (ii) when the fund approaches its maturity and the GP is already actively

managing subsequent funds. These examples suggest that a GP does not exclusively base its decision when to exit and how to exit on company performance and market environment. Whether this also has an effect on transaction returns, is not entirely clear. On the one hand, this should have a detrimental effect on transaction returns since the exit decision is not only driven by company or market fundamentals. On the other hand, future fundraising success is most likely determined by the entire historic performance of the GP and not only the performance of the last fund. Therefore, one may also argue that it is not rational for a GP to sacrifice returns on deal level in reaction to fund level dynamics. Even if it improves the likelihood of a successful fundraising for the next fund, it will have a negative impact on the overall track record and, therefore, haunt the GP in subsequent fundraising efforts.

Similar to Axelson et al. (2009) we apply the principal-agent framework to the PE setting. While they analyze the impact of the GP-LP conflict on the investment decision, we focus on the divestment decision. Furthermore, our theoretical motivation grounds on recent works on the compensation structure of PE GPs (Chunget al. 2011, Metrick and Yasuda 2010). As far as the analysis of the exit choice in PE transactions is concerned, our analysis is related to the article of Schmidt et al (2010), who were among the first to analyze the impact of market variables on the exit choice, differentiating between IPOs and sales.

Our paper contributes to the existing literature in several ways: First, we are the first to extensively discuss and analyze the potential impact of fund level dynamics on the exit decision in PE transactions. Second, using a unique dataset which combines deal- and fund level information, we are able assess whether there is a moral hazard problem, i.e. if GPs maximize their income stream from all (including future) fund to the detriment of current LPs. Third, our dataset allows us to analyze the differences between trade sales (private exits) and secondary buyouts (financial exits). Given that

the latter has emerged as one of the most important exit channels over the last decade, this will contribute also to the wider deal level PE research.

In Section 1, we discuss the theoretical background and develop testable hypotheses for fund level effects and associated agency conflicts. First, we lay-out the principal agent conflict between the PE GP and its LPs and review recent research on the PE compensation system and its implications for this conflict. We then discuss why the three fund level determinants, namely (i) fundraising, (ii) fund maturity and (iii) the cash distribution profile of a PE fund matter for (a) the GPs exit decision and (b) why there might be a GP-LP conflict influencing equity returns of a transaction.

In Section 2, we discuss our dataset and present key descriptives of our sample. The analyses are based on a proprietary dataset compiled from three different fund-of-funds, who continuously collect transaction and fund level data as part of their due diligence effort. Overall our sample contains 1,112 realized transactions from 100 PE firms, not including any write-offs. On transaction-level, we have information on key operating and financial metrics at the entry and exit as well as the gross cash flows between portfolio company and PE fund, i.e. deal level equity returns. Overall, our sample contains 610 private sales, 340 secondary buyouts and 162 initial public offerings (IPOs). On fund level, we also have total gross cash flows and information on the fundraising history of the PE firm. This unique dataset allows us to link transaction level and fund level information and, therefore, we can analyze how different fund level factors affect the exit choice on transaction level.

Section 3 contains our empirical results. First we lay-out how we operationalized each of the three fund level variables using our dataset. Then we go on to test our hypotheses developed in Section 1 both in univariate and multivariate settings. We find that PE firms prefer a initial public offering (public exit) or secondary buyout (financial exit) to support their fundraising activities, which we attribute to the higher

reputational signal of these exit channels. Furthermore, secondary buyouts and private sales are the preferred exit channel if a PE fund approaches the end of its lifetime since these exit forms generally allow for a full sell-down of the shareholding. Similarly, we find that if a PE fund has distributed comparatively little funds back to its investors, the preferred exit again tends to be a secondary buyout respectively private sale due to the immediate realization of proceeds. In terms of the impact of the fund level determinants on transaction returns, we find that only if a PE fund approaches the end of its lifetime, this has a significant negative influence on equity returns. We take this as evidence that the GP, which is overseeing the investment and divestment process of most likely two new funds (Metrick and Yasuda 2010) by the end of a fund's lifetime, tries to rid itself of the remaining investments in the current fund.

Section 4 concludes with a discussion of our results. Our main conclusion is that fund level considerations have a strong impact on the choice of exit. However, this does not necessarily imply a moral hazard problem. A rational PE GP knows how potential LPs form their investment decision and will manage his track-record accordingly. Therefore a rational PE GP knows that historical performance is the key driver of fundraising success and, therefore, he is not willing to compromise on transaction returns while managing his track-record. However, we find that this relationship breaks down and an agency conflict between GP and current LPs arises as a fund approaches the end of its lifetime and the GP increasingly focuses on managing subsequent funds

2. Theoretical Background and Hypotheses

PE transactions are acquisitions of target companies through a PE firm. Such buyouts of previous shareholders are financed with equity from the PE firm's fund and substantial amounts of debt provided by other investors. The PE funds are organized as

limited partnerships in which the PE firm serves as GP who manages the fund. However, by far most of the capital in the fund is provided by investors, such as banks, insurance companies, asset managers etc. who are LPs in the PE fund. PE funds have a contractually fixed maturity date, which is typically 10 to 12 years after its set-up (Prowse 1998). However, GPs are obliged to restrict their investment activity to the first five years, while they can only do follow-on financing for already acquired target companies or generate fund returns through exiting these investments during the remaining years of the fund's existence (Metrick and Yasuda 2010).

A GP has several exit channels at its disposal in order to realize the value creation achieved over the holding period of an investment, i.e. the time since acquisition of the company. The literature generally distinguishes three main exit routes: The public exit channel usually involves an initial listing on a stock exchange, the IPO, and subsequent sell-down of the stake, once the lock-up period expires (Lin and Smith 1998). The private exit channel usually refers to the sale of a portfolio company to a strategic acquirer, while the financial exit refers to the sale of a portfolio company to another financial investor, in particular a PE fund. This is often referred to as a secondary buyout.[114]

The exit choice has been shown to be affected by (i) *company-level factors* such as the operating performance, financial situation and size and (ii) *market-level factors* such as public equity market performance or the liquidity of the leverage markets (Schmidt et al. 2010). However, a number of recent articles (Sousa 2010, Wang 2011) have argued that a third set of factors, namely *fund level factors* have a significant

[114] In contrast to other researchers, e.g. Schmidt et al. (2010), we chose not to include write-offs as a separate exit channel in our analysis since we believe that this is not a mutually exclusive exit channel but refers to the return realized by the PE fund. A written-off company can still be exited via private or financial sale. Differently, bankruptcy constitutes a mutually exclusive exit channel, but arguably this cannot be considered as an exit option, but rather a necessity.

influence on deal level decisions and performance, yet do not link this explicitly to the exit choice and transaction returns.

The fund level of the PE fund is characterized by the agency conflict between the GP who takes all investment and divestment decisions on behalf of the LPs. This agency conflict arises through the typical compensation structure of PE funds (Axelson et al. 2009). GPs earn a management fee of 1.5 to 2.5% of the total amount committed to the fund, which is independent from the fund's performance. In addition, the GP's compensation involves a performance incentive element called carried interest. If the returns to LPs exceed a hurdle rate (typically 8%), the GP receives a certain share of these excess returns (typically 20%) (Chung et al. 2012, Metrick and Yasuda 2010).

A growing body of research addresses the implications of such a fund level compensation structure for the GP's investment decisions and shows that this agency conflict results in high levels of leverage and excessive risk-taking by GPs (Axelson et al. 2009, 2010). We argue that this compensation structure and the resulting agency conflict also matter in terms of divestment decisions, i.e. the exit routes that GPs chose. If a GP's PE fund performs well, LPs read this as skill rather than luck. As the current fund structure is fixed, this results in a shift of the demand curve for the *next* fund set up by the PE firm. Metrick and Yasuda (2010) have shown that PE is a scalable business and PE firms perceived as skilled investors increase expected income from a new fund by increasing fund size, similar to Berk and Green's (2004) more general findings for the mutual funds industry.

In line with this finding, Chung et al. (2012) introduce a more comprehensive view on the GP's incentives from compensation which comprises income from current funds under management as well as expected income from future funds. Hence, from a GP's perspective it is rational to optimize income as a function of both income

streams. However, this is not necessarily in the interest of the LPs as their income depends on the performance of the current fund. This agency conflict should be particularly virulent in the context of the GP's divestment decisions.

As previous research has shown, the historic track record in terms of performance (Chung et al. 2011, Gompers and Lerner 1998) and cash distributions (Strömberg 2008, Povaly 2007) impacts the outlook for future fundraising efforts. Therefore, a rational GP, who maximizes his total pay from current fund income and expected income from future funds, will actively manage his divestment track-record in order to improve the outlook for future fundraising efforts. Given that IPOs are said to improve the fundraising outlook (Chung et al. 2011, Gompers 1996), an argument which has recently been extended to financial exits (Wang 2011), this should have a definitive impact on the exit choice.

However, as far as the impact of fund level considerations on transaction returns is concerned, the effect is not entirely clear. Since the exit decision is not exclusively driven by company and market fundamentals, one may argue that fund level considerations may have a negative impact on transaction returns as, for example, a company might be taken public prematurely in order to signal skills to potential investors although the company is underpriced and yields lower returns to current LPs. On the other hand, fundraising success is most determined by entire historic performance of the PE GP. Therefore, one may also argue that it is not rational for a PE GP to sacrifice returns on deal level in reaction to fund level dynamics.

This paper investigates whether this agency conflict between GP and LPs at the fund level has an impact on divestment decisions at the transaction level and to which extend LPs suffer from this situation. Therefore, we analyze the impact of fund level factors on the exit choice. We then go further and analyze if these fund level factors also influence the transaction-level equity return. We distinguish three separate fund

level factors, which may have an impact on the exit choice, namely (i) fundraising activity of the PE firm as well as (ii) maturity and (iii) cash flow profile of the selling PE fund.

Even before exiting existing investments, fundraising is one of the key elements of the PE business model (Gompers and Lerner 2004). One of the key factors for a successful fundraising is past performance. Patel et al. (1994) find this relationship to hold true for the mutual fund industry and Gompers and Lerner (1998) confirm this for the venture capital industry. Recently, Chung et al. (2011) have shown that the probability of raising a follow-on PE fund and the size of such a fund are both positively related to performance of the current fund. Such successful fundraising is of outstanding importance to PE firms as it ensures future income.

Thus, in order to create positive momentum, PE firms may actively manage their track record by exiting successful companies when they are in the process of fundraising, while postponing the exit of less successful ones. Analogous to this, Gompers (1996) proposed that fundraising success is driven by the number of IPOs that a fund has achieved. More recently, Wang (2011) find that financial exits serve as an alternative successful exit channel if public equity markets are 'cold'. As far as the impact on equity returns is concerned, one may argue that if an exit decision is not exclusively driven by company and market related fundamentals, it cannot maximize returns for this transaction. Then, this would represent an agency conflict at fund level, i.e. between GP and LPs, when the PE firm is in the process of raising a new fund.

Hypothesis H1a: *If a PE firm is in the process of fundraising, this increases the likelihood of undertaking an IPO and financial exit at the expense of a private exit.*

Hypothesis H1b: *If a PE firm is in the process of fundraising when exiting a portfolio company, this has a negative impact on the deal level equity return.*

Moving on, PE funds typically have a finite lifetime of 10 to 12 years (Prowse 1998). By the end of the lifetime, all investments have to be realized and the fund is liquidated (Gompers and Lerner 1999). Furthermore, by the end of a fund's lifetime the GP will have raised at least one, but most likely two successor funds, since successful GPs will raise a new fund every three to five years (Metrick and Yasuda 2010). Arguably, towards the end of a fund's lifetime, the remaining investments are not in the prime focus of the GP, who by now attempts to successfully invest the new funds. Accordingly, he may opt for a quick exit of the remaining investments.

In terms of choice of exit channel, clearly the private and financial exit channel should be favoured, since the public exit can carry quite a long realization tail after the IPO (Achleitner et al. 2012, Povaly 2007) and should, therefore, be less likely towards the end of a fund's lifetime. As far as the impact of fund maturity on transaction returns is concerned, Achleitner et al. (2011) already find that transactions towards the end of a fund's lifetime have a lower equity return. They attribute this to the PE GP's reduced negotiation power, which has a negative impact on the exit valuation. We argue that this is not only driven by the mere structural issue of a finite fund lifetime, but also reflects the presence of the GP-LP conflict. The GP, which is by the end of a fund's lifetime overseeing the investment and divestment process of at least two new funds, tries to rid itself of the remaining investments in the current fund.

Hypothesis H2a: *At the end of a PE fund's lifetime, the likelihood of a public exit decreases.*

Hypothesis H2b: *At the end of a PE fund's lifetime, the deal level equity return is lower.*

The third fund level factor that, in our view, has an impact on the exit choice is the cash flow profile of the PE fund. If investors decide to invest in a PE fund, they commit to a certain investment amount (Fraser-Sampson 2010). The GP then usually

calls parts of this commitment on an investment-by-investment basis over the course of the investment period, which is usually limited to five years (Grabenwarter and Weidig 2005). After each exit, the PE fund distributes the proceeds to its investors and does not reinvest the capital. While these distributions are less predictable than capital calls (Grabenwarter and Weidig 2005), it is commonly accepted that the first distribution to LPs is received before the last capital call (Kaserer and Diller 2004). Thus on a net perspective, the LP will never have to fund the full commitment, but can use the early distributions to fund part of late capital calls.

Therefore, Fraser-Sampson (2010) recommends an over-commitment strategy, i.e. to commit more funds to the asset class than the investor tends to invest. Accordingly, Meyer and Mathonet (2005) find that PE fund investors apply over-commitment ratios, i.e. committed capital to invested capital, of 1.25 to 1.5. With over-commitment strategies are widely used, it is very important for fund investors to actively manage the cash flow from their PE investment program (Fraser-Sampson 2010, Meyer and Mathonet 2005). A number of approaches exist to forecast the liquidity needs arising from a PE investment program, while accounting for the uncertain timing of both capital calls and distributions.[115] However, all these approaches rely on characteristics of the individual PE firm, specifically the cash flow profile of the prior funds of that very PE firm.

Thus, ensuring the highest degree of predictability of both capital calls and distributions is in the interest of every PE firm since this facilitates over-commitment, which in turn has a positive impact on the fundraising environment. This becomes apparent in empirical analyzes of the cash flow profile of PE funds: Kaserer and Diller

[115] Grabenwarter and Weidig (2005) present over 11 different non-probabilistic and probabilistic approaches to model the cash flows. Meyer and Mathonet (2005) propose the usage of pseudo-randomness methods, e.g. a Monte Carlo simulation.

(2004) find that the distributions of PE funds are approximately uniformly distributed over the lifetime. Accordingly, Povaly (2007) finds that PE firms try to actively manage the cash flow profile of their funds.

Given the different realization profile of public exits compared to private and financial exits, it becomes clear that the current cash flow profile on fund level should have an impact on the exit choice. GPs may realize these 'cashable' transactions to stabilize distributions to LPs. In terms of the impact of the distribution profile on equity returns, this pressure to realize an investment may result in an agency conflict, i.e. a compromise in terms of deal level equity returns.

> ***Hypothesis H3a:*** *The lower the comparative distributions of a PE fund, the higher is the likelihood of a cash exit, i.e. a private or financial exit.*
>
> ***Hypothesis H3b:*** *The lower the comparative distributions of a PE fund, the lower the equity return of a transaction due to the implicit pressure to realize an investment.*

Before we turn to the discussion of our dataset and presentation of our empirical results, we would like to address the impact that GP experience may have on the effect of the previously discussed fund level factors. Gompers (1996) was among the first to show that reputation matters for the divestment decision of venture capitalists. He showed that young venture capitalist pursue an IPO of their portfolio companies earlier than their more established peers with the aim to establish a reputation, which in turn should improve their outlook for future fundraising. Similarly Chung et al. (2012) find that the impact of current fund performance on income from future funds declines in the sequence of a GP's funds since the marginal new information on the ability of a GP gained by LPs from an additional exit declines. Therefore, the impact of fund level determinants should be greater the younger a GP and we control for this effect in our empirical analysis.

3. Data Set and Descriptives

Our sample forms a subset of databases compiled by three European funds of funds as part of their due diligence effort. It contains the transactions from all the funds that the three funds of funds conducted due diligence on, and not only those in which they chose to invest. According to Metrick and Yasuda (2010), who used a similar database from one LP for their analysis, this should alleviate potential sample selection concerns. The funds of funds collected data on a transaction level for every PE fund they examined. As the funds of funds use this data for their investment decisions, they have a high self-interest in data quality, integrity and completeness.

Besides general information about the transaction (industry of the portfolio company, location of its headquarters as well as entry and exit type), the dataset furthermore provides details on financial figures of the portfolio company at entry and at exit. In particular, enterprise value, equity value, net debt, sales, EBITDA and corresponding ratios are included. Furthermore, the dataset contains monthly deal level cash flows and allows us to calculate the gross equity IRR. The dataset also contains facts about the GP, for instance, the location of its headquarters, the year of foundation and also whether the GP is currently raising new funds. It also contains information on the specific fund, e.g. its generation, vintage year or size. With this information we can appraise the capital calls and distributions on a gross basis at any point in time of the fund's lifetime. In addition, we collected several market variables that might influence the exit behaviour of PE firms, for example, the development of MSCI World Index over the holding period and the spreads of leveraged buy-out (LBO) loans.

For this paper, we focused on PE deals that are realized and exited via the public, private or financial exit channel. We excluded write-offs and bankruptcies from our analysis since they do not constitute a voluntary choice of a PE fund, but rather an absence of other choices. As this paper focuses on the drivers and determinants of the

choice between different exit types, we consequently excluded this exit type from our analysis. Furthermore, we only selected companies headquartered in Europe or North America which were exited between 1995 and 2008. Table II-18 presents some summary statistics about our dataset. It contains 1,112 transactions, financed by 229 funds and conducted by 100 GPs.

We feel very comfortable with the representativeness of our sample, when comparing it to similar datasets across a variety of metrics. We compared the distribution of exits, the holding period of the investments and the gross equity IRR of this sample with the samples of other researchers such as Strömberg (2008), Gompers and Lerner (2000), Schmidt et al. (2010) or Chapman and Klein (2009).

First, the distribution of the different exit channels in this sample compares favourably with the data of Strömberg (2008), who compiled the most extensive deal level PE database. The share of the private exit channel (55% in this sample vs. 50% in Strömberg's sample) is quite similar. This also applies for the financial channel (31% vs. 32%) and for the public channel (14% vs. 18%).[116] Moreover, the sample of Chapman and Klein (2009) has nearly the same distribution of the private (55%,), financial (29%) and public exit channel (15%). Thus, the distribution of exits seems to be favourably comparable to other samples.

Secondly, the average holding period (4.25 years) of our sample is between the data of Gompers and Lerner (2000) or Schmidt et al. (2010), who measure the average holding period as 4.07 or 4.09 years, respectively, and Chapman and Klein (2009), who calculate the holding period as 4.8 years.[117]

[116] According to Strömberg (2008), 3,031 transactions were exited with a private, 1,913 with a financial and 1073 with a private.

[117] The differences might be caused by different definitions of the point of exit.

Table II-18: Descriptives

This table presents summary statistics of our dataset. Panel A describes some general information, panel B summarizes the frequency of the exit types and panel C gives an overview about the transaction characteristics of our database.

Panel A: General Dataset Information

Number of Transactions	1112	Total Transaction Value in Mio. USD	607,534
Number of GP	100	Number of Transactions of Top 5% GP	246
Number of Funds	229	Number of Transactions Top 5% Funds	217

Panel B: Frequency of exit types

	Private		Financial		Public		
	No.	%	No.	%	No.	%	Total
Total	610	55%	340	31%	162	15%	1112
Region							
Europe	457	55%	270	32%	110	13%	837
Northern Americas	146	56%	65	25%	51	19%	262
Exit Year							
1995-1999	115	59%	22	11%	59	30%	196
2000-2004	213	57%	95	25%	65	17%	373
2005-2008	282	52%	223	41%	38	7%	543

Panel C: Information about Deal Characteristics

	Obs.	Mean	SD	Median	Min	Max
Equity IRR (%)	1109	50%	31%	69%	-84%	438%
Money Multiple	1112	3.67	2.89	3.08	0.00	18.43
Holding Period (in Years)	1093	4.25	2.29	3.83	0.33	11.84

Lastly, the equity IRR compares also favourably. At first glance, the equity IRR of 49.5% (median 31%) and the money multiple of 3.7 (3.1) in this sample appear to be quite high. The high values result from two factors: first, write-downs and bankruptcies are not included. Secondly, the figures are gross returns and, thus, without the subtraction of any management fees or carried interests. Compared to the figures of other researchers, the gross equity IRR does not seem to be too high. Chapman and Klein (2009) come up with an average equity IRR in their sample of 40%, which is lower, but write-downs and recaps are included.[118] Thus, their average equity IRR would be higher if it had been calculated without write-downs and recaps. Furthermore, the median equity IRR of their sample is with 31% very close to this sample (30%). The average equity IRR in the paper of Schmidt et al. (2010) is 38% (29%) and would also be higher if write-downs had been excluded.[119] Hence, the equity IRR compares also favourably with other sources.

4. Empirical Analysis

4.1 Explanatory Variables

In order to test the discussed hypotheses, we introduce one explanatory variable for each set of hypotheses. Furthermore, we control in our regressions for company and other market related factors. Table II-19 presents an overview of the variables that we use in our regression models. A correlation matrix is presented in Table II-20.

Hypotheses H1a and H1b propose that fundraising has a significant influence on both the exit decision and equity returns of a transaction. In order to investigate the

[118] According to their definition, the equity IRR of a write-down is -100% as all invested capital is lost. The basis for their calculation of the average gross equity IRR were 228 transactions of which 37 were exited with a public, 123 with a private, 65 with a financial, 28 with a recap and 35 with a write-down.

[119] According to their definition, the equity IRR of a write-down is, on average, -68.20%. Basis for their calculation of the average gross equity IRR were 116 public exits, 451 private exits and 99 write-downs.

Table II-19: Variables Used in Our Regressions

This table describes all variables that we use in our regressions. The frist five variables are the explanatory variables used to test our hypotheses, the other ones are control variables. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile.

Variable	Description
$\Delta Distributions_{Exit}$	The difference between the actual distributions of the PE fund and the expected amount that the fund should have distributed.
$Duration_{Vintage,Exit}$ (h)	The duration between the vintage year and the exit of the portfolio company in years.
$Fundraising_{Exit}$	A dummy variable that takes the value of 1 if the PE firm raises new funds in the year after the exit and 0 otherwise.
Exit type	A categorical variable that takes the value *Public*, *Financial* or *Private* depending on the exit type.
Equity IRR	The gross equity IRR of the transaction that was calculated from the monthly cash flows between the fund and the portfolio company.
$Sales_{[Exit\|Entry]}$ (h)	The amount of sales of the portfolio company in million USD at exit or entry, respectively.
$Margin_{[Exit\|Entry]}$ (w)	The margin, defined as sales divided by EBITDA, at exit or entry, respectively.
$Leverage_{[Exit\|Entry]}$ (w)	The leverage of the portfolio company, defined as defined as net debt divided by EBITDA, at exit or entry, respectively.
$Debt/Equity_{[Exit\|Entry]}$ (w)	The debt-to-equity ratio of the portfolio company, defined as net debt divided by the equity value, at exit or entry, respectively.
Enterprise $Value_{[Exit\|Entry]}$ (h)	The amount that the PE firm received for the sale at exit or paid for the company at entry in million USD.
$Multiple_{[Exit\|Entry]}$ (w)	The ratio between the enterprise value of the portfolio company and the EBITDA at entry or exit.
$EBITDA_{CAGR}$ (w)	The compound annual growth rate of the EBITDA between the entry and the exit of the PE firm.
Dummy First time fund	A dummy variable that takes the value of 1 if the fund is the first one of the PE firm and 0 otherwise.
Fund Size	The amount of committed capital that the fund manages.
LBO $spread_{Entry}$	The spread between Moody's yield on BAA-rated seasoned corporate bonds and the market yield of US government securities at 10-year constant maturity.
$MSCI_{CQGR}$	The compound quarterlized growth rate of the MSCI World Standard Price Index between entry and exit.

Table II-20: Correlation Matrix

The table presents correlations between the variables used in this paper. Please note that only a subset of these variables is concurrently used in the regressions. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile.

	Correlations														
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) $\Delta Distributions_{Exit}$	1.00														
(2) $Duration_{Vintage,Exit}$ (h)	-0.14	1.00													
(3) $Fundraising_{Exit}$	0.01	-0.05	1.00												
(4) $Sales_{Exit}$ (h)	-0.06	0.03	0.02	1.00											
(5) $Margin_{Exit}$ (w)	-0.01	-0.11	0.04	-0.11	1.00										
(6) $EBITDA_{CAGR}$ (w)	0.02	-0.21	-0.02	0.01	0.16	1.00									
(7) $Leverage_{Exit}$ (w)	-0.05	0.01	-0.02	0.07	-0.03	-0.18	1.00								
(8) Enterprise $Value_{Entry}$ (h)	-0.04	-0.04	-0.01	0.44	0.23	-0.06	0.11	1.00							
(9) $Margin_{Entry}$ (w)	-0.01	-0.09	0.02	-0.10	0.84	-0.01	0.12	0.19	1.00						
(10) $Debt/Equity_{Entry}$ (w)	-0.02	0.03	0.10	0.04	0.08	-0.04	0.18	0.05	0.01	1.00					
(11) $Multiple_{Entry}$ (w)	-0.07	0.02	-0.06	-0.03	0.00	0.20	0.25	0.12	-0.04	-0.01	1.00				
(12) Dummy First time fund	-0.05	0.22	-0.06	-0.04	-0.06	-0.02	0.01	-0.06	-0.04	-0.04	0.11	1.00			
(13) Fund Size	0.09	-0.16	0.03	0.20	0.08	0.06	0.08	0.28	0.08	-0.02	0.01	0.01	1.00		
(14) LBO $spread_{Entry}$	0.14	-0.26	0.01	-0.01	0.10	0.15	-0.05	0.02	0.08	-0.11	-0.04	-0.12	0.07	1.00	
(15) $MSCI_{CQGR}$	-0.09	-0.06	-0.03	-0.08	0.07	0.13	0.06	-0.05	0.03	0.06	-0.06	0.00	0.03	0.08	1.00

impact of the fundraising activities, we calculated the variable $Fundraising_{Exit}$. This dummy variable takes the value of 1 if the vintage year of the subsequent fund of a PE GP is in the year after the exit and 0 otherwise. We use this definition since the vintage year of a fund is determined by the first capital draw-down and the fundraising efforts are thought to last between six months and two years (Caselli 2010). Typically, a GP can only draw down capital after it held its first closing. Therefore, an exit in the year prior to the first investment of the new fund will most likely have a positive impact on fundraising. Our results are robust to alterations of the one-year window.

In order to determine the fundraising history of a PE firm we only consider its main funds and include only major PE funds of this firm. Excluded are for example side or seed funds, secondary funds, real estate funds or fund-of-funds. We have run robustness checks with different definitions of the fundraising variable, e.g. the vintage year of the subsequent fund is in the year of the exit or either the year of the exit or the year thereafter, and our results are robust.

Hypotheses H2a and H2b discuss the changing exit behaviour during the lifetime of the fund. Analogue to Achleitner et al. (2011), we introduce the variable $Duration_{Vintage,Exit}$ that represents the time elapsed between the vintage year of the fund and the exit of the portfolio company, measured in years.

Finally, hypothesis H3a and H3b propose that a PE fund that underperforms in the distribution of capital is more likely to perform a financial respectively private exit, and that associated deal level equity returns are lower. In order to test this, we constructed the explanatory variable $\Delta Distributions_{Exit}$. As already described, each PE fund has an implicit pressure to ensure stable cash flows as underperformance in terms of distributed capital might hamper the subsequent fundraising efforts of the PE GP. From an ex-post perspective, it seems to be obvious that the performance in distributions must always be related to the fund's peer group. If a fund has a less

predictable and stable distribution profile than its peer group, it is likely that this will have a negative impact on fundraising. According to this perception, a difference between the distributions of a specific fund and the distributions of its peer group define under- or overperformance in the distribution of capital. We believe that fund investors will benchmark funds according to fund size and vintage year.

In order to measure the distributions of a specific fund, we use the same approach as Ljungqvist and Richardson (2003). They consider the distributions up a certain year in relationship to the total capital invested. As our raw data does not include the distributions to fund investors, we use the gross positive cash flows from portfolio companies, which should be a very close proxy to the distributions made to LPs.[120] Hence, we divide the sum of positive cash flows of all investments exited until year i of the fund lifetime by the total outgoing cash flows (the sum of all investments made during the fund's lifetime). Since this is essentially equivalent to the realised gross money multiple on fund level, we refer to this as the 'actual fund money multiple'. The following formula illustrates again in mathematical terms how we calculate the actual fund money multiple for each year of the fund lifetime:

$$Actual\ Fund\ MM_i = \frac{\sum_{b=1}^{i} Cash\ Inflows_b}{\sum_{a=1}^{N} Cash\ Outflows_a}$$

where N refers to total lifetime of the fund, i = the i^{th} year of the fund lifetime.

Based on the actual fund money multiple for each fund over the holding period, we created a prediction model for the fund money multiple including the variables

[120] This proxy seems to be fine, as the ability to make distributions and their amount depends on the incoming cash flows from portfolio companies.

time since vintage, *fund size* and *vintage year*.[121] We logarithmized the fund money multiple since the relationship to these independent variables is rather logarithmical.[122]

The results of this model are reported in the appendix in Table II-24. The model includes 842 observations and has an R-squared of 0.809. As expected, the time since the vintage year of the fund has a positive influence on the fund's money multiple, significant at the 1% level. Furthermore, fund size has a negative impact on the actual fund money multiple, indicating that bigger funds achieve returns compared to smaller funds analogue to Cumming and Dai (2011) and Humphrey-Jenner (2011). Since model fit with an R^2 of 0.81 is high and the coefficients are intuitive, we used this model to predict the fund money multiple for each fund at each point of its lifetime, which essentially represents the peer group against which each fund benchmarks its distribution profile.

In the last step, we subtracted the actual fund money multiple from the predicted fund money multiple and denoted this new variable as $\Delta Distributions_{Exit}$. Thus, a positive value of this variable indicates comparative underperformance in distributions. The higher the variable is, the higher the underperformance of the fund is and vice versa. The mean of the variable is nearly zero with a value of -.093, the standard deviation of the variable is 0.697.[123] In the appendix we develop an alternative proxy, namely the share of exited portfolio companies relative to the fund's elapsed lifetime, to test the robustness of our results.

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[121] See Kaserer and Diller (2004).

[122] In fact, the pace of the distributions accelerates during the lifetime of the fund as more portfolio companies are exited, see Ljungqvist and Richardson (2003). The assumption of a logarithmical relationship is also supported by a far better R-squared. As the money multiple starts at zero, we added plus 1 in order to achieve positive values only.

[123] A possible drawback of this proceeding could be that the underlying funds are not yet liquidated and accordingly the raw data might not comprise all exits or entries of a PE fund. In fact, the fund's money multiple seems to be a bit too low compared with the data of Ibid..

4.2 The Impact of Fund Level Dynamics on the Exit Choice

Before we turn towards regressions models to test our hypotheses, we first examine the explanatory variables in a univariate comparison of means and median across the three different exit types. The results of this analysis are presented in Table II-21.

Panel A reports the means and medians for the equity IRR, the money multiple and the holding period by exit type. According to the results, the average equity IRR of the public exit channel seems to be significantly higher than the equity IRR of the private exit channel. However, the results of the comparisons of the public and the financial exit channel as well as the one of the financial and the private exit route provide mixed evidence for a pecking order of the exit types (Bienz and Leite 2008, Cumming and MacIntosh 2003, Cumming and Johan 2008). While the equity IRR seems not to support a pecking order, the money multiple does. According to the results, the public exit channel generates the highest cash gains for the PE firm whereas the private exit channel generates the lowest ones.

Panel B presents the comparisons of the three variables that we introduced to test the Lhypotheses. The results seem to support hypothesis H1a and H3a, but provide no support for hypothesis H2a. Right before their fundraising, PE firms seem to favour the public and the financial exit route. A difference between the public and the financial exit channel is not evident. In line with our hypothesis H3b, when GPs conduct a public exit the PE funds have, on average, a statistically significant better distribution profile than when choosing the private or a financial exit route. This indicates that a PE fund prefers cash exits such as a sale to a strategic or financial buyer, if the fund is lagging behind its intended distribution profile.

Table II-21: Univariate Analysis of the Drivers and Determinants of Exits

The table presents the univariate comparison of different characteristics of the company for different exit types at exit. The first test statistic column presents the t-values of the unequal one-sided T-Test with Welch correction, the second one represents the chi2-value of the non-parametric Fisher's exact test. The variables used are described in Table II-19. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile.

		Group I			Group II			Test Statistic	
VARIABLES	COMPARISON	Obs.	Mean	Median	Obs.	Mean	Median	T-Test t-value	Fisher's exact chi2-value
Panel A: Deal related factors									
Equity IRR	Financial vs Private	339	0.484	0.351	608	0.471	0.289	0.328	7.645***
	Public vs Private	162	0.610	0.360	608	0.471	0.289	2.009**	7.235***
	Public vs Financial	162	0.610	0.360	339	0.484	0.351	1.825**	0.049
Money Multiple	Financial vs Private	340	3.761	3.085	610	3.283	2.520	2.493***	22.906***
	Public vs Private	162	4.954	3.450	610	3.283	2.520	4.890***	38.740***
	Public vs Financial	162	4.954	3.450	340	3.761	3.085	3.328***	4.674**
Holding Period	Financial vs Private	334	4.258	3.760	597	4.305	3.920	-0.303	0.434
	Public vs Private	162	4.033	3.750	597	4.305	3.920	-1.384*	1.652
	Public vs Financial	162	4.033	3.750	334	4.258	3.760	-1.073	0.038
Panel B: Fund related factors									
$Fundraising_{Exit}$	Financial vs Private	258	0.419	0.000	451	0.271	0.000	3.979***	16.423***
	Public vs Private	127	0.425	0.000	451	0.271	0.000	3.172***	11.196***
	Public vs Financial	127	0.425	0.000	258	0.419	0.000	0.123	0.015
$\Delta Distributions_{Exit}$	Financial vs Private	268	-0.051	0.077	475	-0.051	0.076	0.011	0.196
	Public vs Private	135	-0.325	-0.124	475	-0.051	0.076	-4.018***	13.022***
	Public vs Financial	135	-0.325	-0.124	268	-0.051	0.077	-3.632***	7.920***
$Duration_{Vintage,Exit}$ (h)	Financial vs Private	340	6.368	6.000	608	6.339	6.000	0.149	1.144
	Public vs Private	161	6.068	6.000	608	6.339	6.000	-1.144	2.828*
	Public vs Financial	161	6.068	6.000	340	6.368	6.000	-1.162	0.653

*** p<0.01, ** p<0.05, * p<0.1

To determine whether the findings of the above univariate analysis are robust, we now turn to the multinomial logistic regression model to analyse the impact of the fund level factors on the exit choice. Here, our dependent variable is the exit type, a categorical variable that has three different outcomes (*Financial*, *Private*, *Public*). To test our hypotheses, we first specify one model for each explanatory variable and create afterwards a joint model for the three fund-related explanatory variables. Model 1,2 and 3 comprise the variables $Fundraising_{Exit,}$ $Duration_{Vintage,Exit}$ *and* $\Delta Distributions_{Exit}$ respectively, and model 4 tests these three variables jointly.

In all models, we control for the quality of the portfolio company at the exit by including its sales, its EBITDA margin and the leverage at the exit as well as EBITDA growth between entry and exit. Furthermore, we control for general PE fund characteristics, namely fund size and PE firm reputation. According to Cumming and Dai (2011) and Humphrey-Jenner (2011), with growing fund size the attention devoted to each individual portfolio company is reduced, which in turn may affect the exit decision. To control for reputation of the PE fund, which may affect both availability and choice of exit channel, we include a first time fund dummy. By including the growth rate of the MSCI World Index between entry and exit, we also account for the general market development. We further control for fixed effects by including region, time and industry dummies. Model 2 and 4 additionally include dummy variables for GPs to account for GP-specific (e.g., different investment styles) fixed effects. We double cluster standard-errors by time and GP, an approach developed by (Petersen 2009).[124]

[124] This less parametric approach for the estimation of standard errors leads to accurate results even in the presence of a fixed firm and time effect or an industry and time effect. Basically, the method calculates a variance-covariance matrix that identifies the unspecified correlation between two different cluster dimensions. For more details, see Petersen (2009). The two-way clustering approach seems not be commonly used with a multinomial logistic regression. Cameron et al. Cameron (2006) present an evaluation for the

Table II-22: Multinomial Logistic Regression Analysis of the Fund-Internal Drivers of Exits

The table reports the multinomial logistic regression results with heteroscedasticity and autocorrelation consistent (HAC) error estimation using multi-way clustering. The dependent variable is the exit type with the categorical values Public (Pu), Private (Pr) and Financial (Fi). The independent variables are described in Table II-19. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. Dummies for time and ICB industries are also included to account for time-specific (e.g., market cycles), industry-specific (e.g., higher leverage) or GP-specific fixed effects (e.g., investment style). Furthermore, errors are clustered at the dimensions GP and time using multi-way clustering proposed by Cameron et al. (2006). Each model comprises three columns, each representing the logits of an exit type compared to a base group (e.g., Pu/Fi means Public over Private). Z-statistics are presented in the lower rows in parenthesis below the coefficients. ***, ** and * indicate p-values of 1 percent, 5 percent and 10 percent, respectively.

	Model 1			Model 2		
VARIABLES	Pu/Fi	Pu/Pr	Pr/Fi	Pu/Fi	Pu/Pr	Pr/Fi
$Fundraising_{Exit}$	0,401	1.072***	-0.671***			
	1,058	2,713	-2,977			
$Duration_{Vintage,Exit}$ (h)				-0.248***	-0.153*	-0,095
				-2,620	-1,898	-1,278
$\Delta Distributions_{Exit}$						
$Log(Sales_{Exit})$ (h)	0.617***	0.805***	-0.188*	0.500***	0.872***	-0.372**
	4,361	5,181	-1,876	3,504	4,604	-2,345
$Log(1+Margin_{Exit})$ (w)	-0,885	2,466	-3.351***	-1,242	4.445***	-5.687***
	-0,508	1,384	-3,415	-0,827	3,295	-4,344
$EBITDA_{CAGR}$ (w)	0,164	0,347	-0,183	0,334	-0,052	0,385
	0,295	0,714	-0,592	0,628	-0,111	1,108
$Log(1+Leverage_{Exit})$ (w)	-0.719***	-0.385**	-0.335**	-0.961***	-0.737***	-0,225
	-3,682	-2,063	-2,033	-3,299	-2,962	-1,072
Dummy First time fund	-0,189	-0,326	0,137	0,725	0,552	0,174
	-0,463	-0,718	0,829	1,318	1,077	0,583
Log(Fund Size)	0,153	0,017	0,136	-0,014	-0,126	0,112
	1,039	0,157	1,369	-0,046	-0,478	0,602
$MSCI_{CQGR}$	7,814	16.449**	-8.636**	10,716	18.577**	-7.862*
	1,406	2,389	-2,276	1,238	2,063	-1,828
Included Fixed Effects	Time, Industry, Region			Time, Industry, Region, General Partner		
Observations	752			963		
R-squared	0.218			0.335		
Log pseudolikelihood	-579.521			-627.293		

*** p<0.01, ** p<0.05, * p<0.1

binary logistic regression (logit and probit), but they do not evaluate the two-way clustering method for the multinomial logistic regression. The paper of Petersen (2009) also does not refer to the multinomial logistic regression and other practical examples were not traceable. Even though other practical examples are not available, we are convinced that the two-way clustering is applicable: First, the linear regression relies on the same linear relationship as the multinomial logistic regression and, therefore, both methods are based on the same mathematics. Secondly, the multinomial logistic regression is a generalization of the logistic regression with which the two-way clustering has been verified. We thank Professor Petersen for confirming our opinion.

	Model 3			Model 4		
VARIABLES	Pu/Fi	Pu/Pr	Pr/Fi	Pu/Fi	Pu/Pr	Pr/Fi
$Fundraising_{Exit}$				1.217*	2.053***	-0.836***
				1,784	3,917	-2,716
$Duration_{Vintage,Exit}$ (h)				-0.333*	-0.295*	-0,038
				-1,887	-1,835	-0,413
$\Delta Distributions_{Exit}$	-0.444***	-0.530***	0,086	-0.767*	-0.954***	0,187
	-2,875	-3,027	0,570	-1,884	-3,382	0,807
$Log(Sales_{Exit})$ (h)	0.616***	0.924***	-0.308***	0.980***	1.432***	-0.451***
	4,305	7,406	-3,807	3,840	4,373	-2,788
$Log(1+Margin_{Exit})$ (w)	-1,920	1,812	-3.732***	-2,983	3.656*	-6.639***
	-1,208	1,240	-4,426	-1,331	1,662	-3,762
$EBITDA_{CAGR}$ (w)	0,218	-0,007	0,224	1.279*	0,941	0,338
	0,452	-0,014	0,783	1,653	1,468	0,748
$Log(1+Leverage_{Exit})$ (w)	-0.719***	-0.551***	-0,168	-1.605***	-1.240***	-0,366
	-3,236	-2,771	-0,990	-6,969	-3,006	-1,217
Dummy First time fund	-0,449	-0.630*	0,181	0,416	0,415	0,001
	-1,238	-1,767	0,934	0,419	0,437	0,002
Log(Fund Size)	0,078	-0,068	0,146	-0,129	-0,216	0,087
	0,691	-0,758	1,455	-0,224	-0,434	0,274
$MSCI_{CQGR}$	13.228***	20.762***	-7.534**	33.021***	37.401***	-4,380
	2,670	3,606	-2,119	3,223	3,206	-0,723
Included Fixed Effects	Time, Industry, Region			Time, Industry, Region, General Partner		
Observations	806			587		
R-squared	0.216			0.452		
Log pseudolikelihood	-623.483			-320.958		

*** p<0.01, ** p<0.05, * p<0.1

The results of the multinomial logistic regression analysis are presented in Table II-22. The first column of the table contains the explanatory and control variables, the remaining columns report the models. Each model consists of three columns that report the beta coefficients (logits) in the upper and the Z-statistics in the lower rows. The first column of a model describes the public exit channel compared to the financial, the second one represents the public exit channel compared to the private, and the third column of a model reports the odds for private over financial.

At first, we consider the impact of fundraising on the choice of exit channel, which is depicted in Model 1. It becomes clear that the odds of a private exit (compared to both private and public) decrease, if fundraising is in progress. In the joint model, the odds of a private compared to a public (financial) decrease, being multiplied by the factor of (1 - 1/($e^{1.072}$)) = 66% (49%) times if a PE firm is currently fundraising, all other hold equal. We take this as a strong indication that both public and financial exits are seen as successful exit types, which can support a fundraising, thereby confirming hypothesis H1a. A financial exit may either be chosen if equity markets are cold, as Wang (2011) suggested, or if the portfolio company is not yet ready for an IPO (Achleitner et al. 2012). This result is significant at the 1%-level.

In model 2, we analyse the impact of the fund's lifetime on the exit decision. As expected, the odds of a public decrease, the closer a fund is towards the end of its lifetime. This result is significant at the 1%-level for the odds of a public over a financial, which are reduced by (1 - $e^{-0.248}$) = 12% for each year of fund lifetime. As far as the choice of a public over a private is concerned, the result is only weakly significant at the 10%-level, and the odds of a public are reduced by (1 - $e^{-0.153}$) = 14%. Therefore, the results provide support for hypothesis 2a, i.e. a public exit seems less likely towards the end of a fund's lifetime.

In model 3, we evaluate hypothesis H3a, which purports that GPs prefer cash exits, namely private and financial exits, if they have distributed comparatively little so far. The results, which are significant at the 1%-level, provide strong support for hypothesis H3a: an increase in the variable $\Delta Distributions_{Exit}$ decreases the odds of a public exit compared to both a financial exit and a private exit, which both have a more certain and immediate distribution profile.

To interpret the economic significance, it is important to recall that the variable $\Delta Distributions_{Exit}$ measures the delta between the predicted and actual fund money multiple. Therefore, a reduction in the actual fund money multiple by one time results in a reduction in the odds of a public compared to a financial (private) by (1-$e^{-0.444}$) = 36% (41%). Given that the standard deviation of $\Delta Distributions_{Exit}$ is 0.697, this has a strong impact on the exit choice. Therefore, these results confirm our findings from the univariate analysis and suggest that, if a PE fund has to distribute capital, it is rather unlikely to undertake a public exit.

In order to test the robustness of these results, we followed three approaches. First, in model 4 in Table II-22, we present the results when including all three fund internal factors in the analysis and while the size of the coefficients somewhat changes, they remain significant. Second, we have run a series of robustness tests for different fundraising and distribution proxies. Since the distribution proxy is new to the literature we present in section 6.2 the results for a different definition, namely the share of exited portfolio companies relative to the fund's elapsed lifetime, which confirm our finding that PE funds prefer cash exits if they had relatively low distributions respectively less exits.

Finally, we also intended to test whether the impact of the fund level factors varies depending on the GP experience. In Table II-26 in the Appendix, we present the results including an interaction term for each of the fund level factors with the first-

time fund dummy. While this does neither affect our results regarding fund maturity and distributions, we find that younger GPs prefer a public exit over a financial exit in order to support a new fund-raising. This result is similar to Gomper's (1996), who found that young venture capital firms prefer IPOs to build reputational capital for subsequent fundraising.

4.3 Influence of the GP-LP Conflict on the Return on Equity

Having evaluated the influence of the fund level factors on the exit choice, we now move on to evaluate how these influence the return on equity. We use a simple ordinary-least square regression and use the gross equity IRR for each transaction as our dependent variable, which is the most common equity return measure in pE (Nikoskelainen and Wright 2007, Kaplan and Schoar 2005).

Our analysis is presented in Table II-23. Models 5 to 7 present the results if each of the variables $Fundraising_{Exit}$, $Duration_{Vintage,Exit}$ and $\Delta Distributions_{Exit}$ is included individually and model 8 presents the results when including all variables in the same regression. In all models, we control for key return drivers on company and fund level as well as a number of fixed effects. Specifically on company level, we include analogue to Achleitner et al. (2011) the enterprise value, the EBITDA margin, the debt-to-equity ratio and the multiple at entry as proxy for size, growth and operational excellence, leverage and price, respectively. We also include the EBITDA growth achieved over the holding period as a measure of operational performance improvement during PE ownership. Furthermore, we control for size[125] and

[125] See Cumming and Dai (2011) or Humphrey-Jenner (2011) for a discussion of the fund size effects on private equity returns.

reputational[126] effects on fund level by including fund size and a first time fund dummy in all specifications.

To capture further potential financial sponsor-specific effects such as style drift, focus (Cumming *et al.,* 2009) or structure (Cumming and Johan, 2006), in addition we include financial sponsor dummies in all our specifications. We also control for the LBO spreads at entry as a proxy for the liquidity of the debt markets at the time of the transaction and the annualized return of the MSCI World Index between entry and exit as a measure of the development of the general market environment over the course of the holding period. Finally, we include industry, time and regional dummies to account for fixed effects along these dimensions. We double cluster standard errors (Petersen 2009) by time and the GP.

When evaluating the results in Table II-23, it appears that $Fundraising_{Exit}$ does not have a significant influence on the equity IRR. Accordingly, we can reject hypothesis H1b and conclude that firms do not compromise on the equity return on deal level in order to support their fundraising. Similarly, while $\Delta Distributions_{Exit}$ appears to have a slight positive impact on the equity return, this is only significant at the 10%-level. We therefore reject our hypothesis H3b that divestment pressure to achieve a stable distribution profile leads to a compromise in equity returns. However, we find that $Duration_{Vintage,Exit}$ has a significant negative influence on deal level equity returns, thereby confirming our hypothesis H2b. In economic terms, for every year that elapses between the fund's vintage and the exit of a portfolio company, the equity IRR is reduced by 5 to 7 percent, ceteris paribus. There are three effects at work:

[126] There is a vast body of literature on the reputational effects on equity returns and other aspects of private equity (Achleitner et al., 2011; Gompers, 1996; Kaplan. and Schoar, 2005; Achleitner et al., 2010; Meulemann et al., 2009).

Table II-23: OLS Regression Analysis on the Impact of Fund Level Factors on the Equity IRR

The table reports the ordinary least squares regression results with heteroscedasticity and autocorrelation consistent (HAC) error estimation using multi-way clustering. The dependent variable is the equity IRR winsorized at the 99th percentile. The independent variables are described in Table II-19. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. In all models, dummy variables for time, industries, region and GPs are included to account for fixed effects. Furthermore, errors are clustered at the dimensions GP and time using multi-way clustering proposed by Cameron et al. (2006). T-statistics are presented in the lower rows in parenthesis below the coefficients. ***, ** and * indicate p-values of 1 percent, 5 percent and, 10 percent, respectively.

VARIABLES	Model 5	Model 6	Model 7	Model 8
$Fundraising_{Exit}$	-0.010			-0.012
	(-0.236)			(-0.193)
$Duration_{Vintage,Exit}$ (h)		-0.068***		-0.053**
		(-3.275)		(-2.280)
$\Delta Distributions_{Exit}$			0.080*	0.070*
			(1.885)	(1.732)
Log(Enterprise $Value_{Entry}$) (h)	0.069**	0.075***	0.090***	0.051*
	(2.414)	(2.862)	(2.840)	(1.726)
Log(1+$Margin_{Entry}$) (w)	0.710***	0.490**	0.471**	0.634**
	(2.929)	(2.266)	(2.013)	(2.420)
$Debt/Equity_{Entry}$ (w)	0.031	0.028	0.026	0.029
	(1.535)	(1.642)	(1.420)	(1.294)
Log(1+$Multiple_{Entry}$) (w)	-0.347***	-0.360***	-0.315***	-0.242***
	(-3.917)	(-5.231)	(-4.881)	(-3.113)
$EBITDA_{CAGR}$ (w)	0.645***	0.702***	0.792***	0.590***
	(3.942)	(4.759)	(4.937)	(3.298)
$LBO\ spread_{Entry}$	-0.019	-0.035	-0.007	-0.033
	(-0.370)	(-0.674)	(-0.111)	(-0.611)
$MSCI_{CQGR}$	2.553	3.328*	4.011*	2.287
	(1.532)	(1.899)	(1.959)	(1.229)
Dummy First time fund	-0.064	0.134	-0.046	0.117
	(-1.049)	(1.306)	(-0.598)	(1.024)
Log(Fund Size)	0.125***	0.006	0.135***	0.055
	(2.815)	(0.088)	(2.823)	(0.612)
Time, Industry, Region Fixed Effects	Yes	Yes	Yes	Yes
General Partner Fixed Effects	Yes	Yes	Yes	Yes
Constant	-0.353	0.862**	-0.685*	0.310
	(-1.131)	(1.985)	(-1.743)	(0.432)
Observations	748	955	795	597
R-squared	0.425	0.451	0.444	0.455

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

First, the holding period tends to be long for deals exited later in a fund's lifetime. In order to control for this effect, we have included the holding period in our robustness checks. While obtaining similar results in terms of significance and economic impact, we have chosen not to present this result due to the high correlation between the $Duration_{Vintage,Exit}$ and the holding period, which leads to very high variance inflation factors.

Second, deals exited towards the end of a fund's lifetime may include a higher proportion of so-called 'living-deads'. Given that we exclude write-offs from our analysis, we believe that this effect is of lower importance. However, in order to further control for this effect, we have included exit channel dummies as a proxy for the success of a deal in our robustness checks and obtained similar results (Please refer to specification 1 in Table II-27 in the Appendix). Therefore, we take this as evidence that the PE firm is making worse exit decisions towards the end of its lifetime. This can either be due to their increasingly impaired negotiation power as they run-up against the structural end of a fund's lifetime. However, given the fact most PE funds have an extension option of one to two years beyond their normal lifetime, we believe that this result can be attributed to the GP-LP conflict.

We also ran further robustness checks by including dummies for different periods of fund maturity and have presented the results in specification 2 in Table II-27 in the Appendix. Since even deals exited in the period 2.5 to 7.5 years from the vintage year, arguably a period where the negotiation power of the GP should not be significantly impaired by approaching end of a fund's lifetime, exhibit a significant negative return, we take this as further evidence that the GP, which is by the end of a fund's lifetime overseeing the investment and divestment process of at least two new funds, tries to rid itself of the remaining investments in the current fund.

Again, we also intended to test whether the impact of the fund level factors on equity returns varies depending on the GP experience. Specifications 3 to 5 in Table II-27 in the Appendix, where we present the results including an interaction term for each of the fund level factors with the first-time fund dummy, shows that this does not affect any of our results in a meaningful way.

5. Conclusion

In this paper we argue that the GP-LP conflict has an influence on the divestment decision in PE transactions. Specifically we identify three situations where a GP, who maximizes the income stream arising from both the current and subsequent funds, will allow fund level considerations to affect his deal level decision making. The first two situations are related to improving the GP's immediate and long term fundraising outlook. Both the historic track record of a GP and its profile of cash distributions have proven to be key inputs for the LPs investment decision.

We find that if a PE firm is preparing for fundraising or, as a GP in an existing PE fund, has distributed relatively little capital to its LPs, this has a strong impact on his exit choice, i.e. the choice of how to exit a specific portfolio company or the choice of which portfolio company to exit. Specifically we find that in preparation of fundraising PE firms prefer to exit via public or financial exit. While public exits have long been regarded as the most successful exit and a positive signal to fund investors (Gompers 1996), at first sight it does appear surprising that financial exits are also more likely when a PE firm is in the midst of fundraising. As opposed to the option of selling to a fellow financial sponsor being an 'exit of last resort' (Sousa 2010), our result rather suggests that in line with Wang (2011), financial exits rather have to be seen as an alternative to public exits at times of 'cold' public equity markets.

Only for first time funds, we find that the IPO appears to have superior reputational capital in line with Gompers' (1996) finding for the venture capital industry. Furthermore we find that financial and private exits, which both usually constitute cash or full exits, are more likely if the PE fund has distributed relatively little capital to its LPs. This finding is in line with the large body of research which suggests that PE firms have a strong interest to achieve a stable cash flow profile in order to facilitate the over-commitment strategies of their LPs. We then went on to evaluate whether these factors have any influence on the deal level equity return, and, we were somewhat startled by our results. Neither fundraising nor underperformance in distributions has a significant negative impact on equity returns, despite the strong impact of these two factors on the exit choice. It appears that PE firms optimize their track record in order to improve the immediate fundraising outlook or to achieve a stable cash flow profile at the margin, but without making a significant compromise on equity returns.

The third situation is somewhat different. As a fund approaches the end of its lifetime, a GP will by then have raised at least two new successor funds (Metrick and Yasuda 2010). Since the actual and expected income stream from these new funds and subsequent funds will most likely dwarf the income from the current fund, GPs may have an incentive to achieve a fast exit to fully focus on managing the investment and divestment process of these subsequent funds. In line with this argument we find that financial and private exits, which both usually constitute cash or full exits, are more likely if the PE fund is approaching the end of its lifetime. Furthermore, deals exited towards the end of the fund lifetime generate significantly lower equity returns. This may point at a striking loophole in the typical incentivisation framework for PE funds. With expiration of the investment period of the current fund, focus will most likely shift on successfully investing the new funds. In our view, this finding worthies further

research both on the impact on equity returns as well as on how to treat this effect as part of the PE fund compensation scheme.

6. Appendix

6.1 Auxiliary Regression for Distribution Measure

Table II-24 represents the results of the auxiliary regression used to calculate the variable $\Delta Distributions_{Exit}$. The independent variable is the logarithm of the actual fund money multiple and the explanatory variables are *time since vintage*, *fund size* and *vintage year*.

6.2 Robustness Check for Distribution Measure

Since the impact of the distribution profile of a PE fund on deal level decision making has not been studied so far, we paid great attention to correct specification of this variable and conducted several robustness checks in order to validate the results and the outcome of our analyses. In the following, we present one of the closest proxies, which relies on the number of exits of a PE fund instead on the actual cash flows. The ability to distribute capital is undoubtedly related to the exits of a PE fund. Only if a PE fund conducts an exit, it is able to distribute capital to its limited partners. Furthermore, an underperformance in the distribution of capital should be given, if the PE fund exited the minority of its portfolio companies within the majority of its lifetime. Thus, the time since vintage is also very important. The more time has elapsed since vintage, the higher should be the number of transactions exited.

Based on this logic, we calculated a variable that relates the number of portfolio companies exited to the time elapsed between the vintage year of the fund and the exit of a portfolio company. We further normalized the number of exits until a certain point of time with the total number of transactions of the fund (in other words, the total

Table II-24: Results of Fund Money Multiple Regression

This table reports the regression results of the auxiliary regression in order to predict a reference value of the fund's distributions. The dependent variable is the natural logarithm of 1 plus the fund money multiple. The independent variables are the time since vintage, the fund size and also dummy variables for the vintage year of the fund. The observations are weighted using the sampling weights method and the errors are clustered by the vintage year dimension. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. The table presents the coefficents, the robust standard error and the T-statistics as well as the P-Statistics for the regression.

	Log(Fund Money Multiple)			
VARIABLES	Coef.	Std. Err.	t	P>|t|
Time since vintage (in years) (h)	0.102	0.010	10.35	0.000
Log(Fund Size) (in USD bil.) (h)	-0.040	0.009	-4.35	0.000
Vintage 1984	-0.394	0.076	-5.20	0.000
Vintage 1985	-0.176	0.074	-2.38	0.027
Vintage 1986	0.051	0.068	0.75	0.460
Vintage 1987	0.225	0.052	4.30	0.000
Vintage 1988	0.294	0.047	6.30	0.000
Vintage 1989	0.242	0.045	5.36	0.000
Vintage 1990	-0.192	0.047	-4.12	0.000
Vintage 1991	0.016	0.042	0.37	0.714
Vintage 1992	0.157	0.034	4.63	0.000
Vintage 1993	0.135	0.028	4.83	0.000
Vintage 1994	0.463	0.020	23.54	0.000
Vintage 1995	-0.013	0.024	-0.52	0.606
Vintage 1996	-0.018	0.025	-0.72	0.481
Vintage 1997	0.068	0.020	3.39	0.003
Vintage 1999	0.192	0.018	10.80	0.000
Vintage 2000	0.216	0.019	11.51	0.000
Vintage 2001	0.391	0.026	14.82	0.000
Vintage 2002	0.078	0.020	4.00	0.001
Vintage 2003	0.260	0.034	7.62	0.000
Vintage 2004	0.222	0.042	5.32	0.000
Vintage 2005	0.196	0.059	3.31	0.003
Error Clustering based on	Vintage Year			
Observations weighted with	Obs. per Fund			
Observations	842			
R-squared	0.809			
Robust t-statistics in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

number of exits of the fund), to account for the fact that PE funds have different portfolio strategies.

Technically, the variable is defined as

$$\frac{\frac{Exits_{Exit}}{Exits_{Total}}}{Duration_{Vintage,Exit}} = \frac{\%\ Exited_{Exit}}{Duration_{Vintage,Exit}}$$

where $Exits_{Exit}$ is the number of transactions that the fund exited until this exit, $Exits_{Total}$ is the number of transactions that the fund exited in total and $Duration_{Vintage,Exit}$ has the same definition as described in Table II-19. Thus, the more portfolio companies the fund has exited within the elapsed lifetime, the higher the value of the variable and vice versa.

The results of our robustness checks are presented in Table II-25. Model A includes the variable $\Delta Distributions_{Exit}$ and represents the same model we used in our analysis presented in Table II-22. Model B includes the variable *% Exited / $Duration_{Vintage,Exit}$* that proxies the same drivers with a different technique. The first observation is that the explanatory variables are both significant for the comparisons public vs. financial and public vs. private, but the algebraic sign is different. Although this seems counterintuitive, both variables direct in the same direction: First, the higher the underperformance in distributions is, the higher the variable $\Delta Distributions_{Exit}$ is and, accordingly, the lower the odds of a public are. Secondly, the less portfolio companies the fund exited and the older the fund is, the lower the value of the variable *% Exited / $Duration_{Vintage,Exit}$* becomes and, accordingly, the lower the odds of a public are. Hence, the results of the variable $\Delta Distributions_{Exit}$ can be confirmed with a different approach that is not based on the actual cash flows. However, we prefer to use the variable $\Delta Distributions_{Exit}$ in our regressions, as the variable *% Exited /*

$Duration_{Vintage,Exit}$ does not differentiate between smaller and bigger exits and is therefore less accurate.

Table II-25: Robustness Checks of Distribution Variable

The table reports the multinomial logistic regression results with heteroscedasticity and autocorrelation consistent (HAC) error estimation using multi-way clustering. The dependent variable is the exit type with the categorical values Public (Pu), Private (Pr) and Financial (Fi). The independent variable $\Delta Distributions_{Exit}$ is described in Table II-19, the variable *% Exited / Duration*$_{Vintage,Exit}$ is described in the appendix. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. Dummies for time and ICB industries are also included to account for time-specific (e.g., market cycles), industry-specific (e.g., higher leverage) or GP-specific fixed effects (e.g., investment style). Furthermore, errors are clustered at the dimensions GP and time using multi-way clustering proposed by Cameron et al (2006). Each model comprises three columns, each representing the logits of an exit type compared to a base group (e.g., Pu/Fi means Public over Private). Z-statistics are presented in the lower rows in parenthesis below the coefficients. ***, ** and * indicate p-values of 1 percent, 5 percent and 10 percent, respectively.

	Model A			Model B		
VARIABLES	Pu/Fi	Pu/Pr	Pr/Fi	Pu/Fi	Pu/Pr	Pr/Fi
$\Delta Distributions_{Exit}$	-0.444***	-0.530***	0,086			
	-2.875	-3,027	0,570			
% Exited / $Duration_{Vintage,Exit}$ (h)				7.068***	11.104**	-4,036
				2,628	2,411	-1,079
$Log(Sales_{Exit})$ (h)	0.616***	0.924***	-0.308***	0.626***	0.941***	-0.315***
	4,305	7,406	-3,807	4,335	7,103	-4,013
$Log(1+Margin_{Exit})$ (w)	-1,920	1,812	-3.732***	-1,698	2,056	-3.754***
	-1,208	1,240	-4,426	-1,069	1,386	-4,470
$EBITDA_{CAGR}$ (w)	0,218	-0,007	0,224	0,223	-0,029	0,253
	0,452	-0,014	0,783	0,460	-0,060	0,869
$Log(1+Leverage_{Exit})$ (w)	-0.719***	-0.551***	-0,168	-0.675***	-0.493**	-0,182
	-3,236	-2,771	-0.990	-3,124	-2,511	-1,069
Dummy First time fund	-0,449	-0.630*	0,181	-0,346	-0,516	0,169
	-1,238	-1,767	0,934	-1,007	-1,498	0,947
Log(Fund Size)	0,078	-0,068	0,146	0,137	0.000	0,137
	0,691	-0,758	1,455	1,104	-0,001	1,376
$MSCI_{CQGR}$	13.228**	20.762***	-7.534**	13.803***	21.620***	-7.817**
	2,670	3,606	-2,119	2,810	3,731	-2,283
Included Fixed Effects	Time, Industry, Region			Time, Industry, Region		
Observations	806			805		
R-squared	0.219			0.217		
Log pseudolikelihood	-621.131			-621.993		

*** p<0.01, ** p<0.05, * p<0.1

6.3 Further Robustness Checks

Table II-26: Multinomial Logistic Regression Analysis of the Fund-Internal Drivers of Exits – the Impact of Fund Experience

The table reports the results with heteroscedasticity and autocorrelation consistent (HAC) error estimation using multi-way clustering. The dependent variable is the exit type with the categorical values Public (Pu), Private (Pr) and Financial (Fi). The independent variables are described in Table II-19. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. Dummies for time and ICB industries are also included to account for time-specific (e.g., market cycles), industry-specific (e.g., higher leverage) or GP-specific fixed effects (e.g., investment style). Furthermore, errors are clustered at the dimensions GP and time using multi-way clustering proposed by Cameron et al. (2006). Each model comprises three columns, each representing the logits of an exit type compared to a base group (e.g., Pu/Fi means Public over Private). Z-statistics are presented in the lower rows in parenthesis below the coefficients. ***, ** and * indicate p-values of 1 percent, 5 percent and 10 percent, respectively.

	Model 1			Model 2		
VARIABLES	Pu/Fi	Pu/Pr	Pr/Fi	Pu/Fi	Pu/Pr	Pr/Fi
$Fundraising_{Exit}$	0.052	0.804*	-0.752***			
	0.114	1.764	-2.663			
$Fundraising_{Exit}$*Dummy first time fund	1.197**	0.872	0.325			
	2.040	1.436	0.748			
$Duration_{Vintage,Exit}$ (h)				-0.240**	-0.135	-0.105
				-2.330	-1.511	-1.269
$Duration_{Vintage,Exit}$ (h)*Dummy first time fund				0.053	0.257	-0.204
				0.160	0.923	-0.778
$\Delta Distributions_{Exit}$						
$\Delta Distributions_{Exit}$*Dummy first time fund						
$Log(Sales_{Exit})$ (h)	0.601***	0.795***	-0.194*	0.502***	0.874***	-0.372**
	4.252	5.104	-1.905	3.511	4.627	-2.354
$Log(1+Margin_{Exit})$ (w)	-0.943	2.440	-3.384***	-1.254	4.435***	-5.689***
	-0.530	1.362	-3.397	-0.834	3.287	-4.351
$EBITDA_{CAGR}$ (w)	0.178	0.356	-0.178	0.341	-0.039	0.379
	0.301	0.698	-0.570	0.635	-0.083	1.061
$Log(1+Leverage_{Exit})$ (w)	-0.713***	-0.384**	-0.329**	-0.964***	-0.737***	-0.228
	-3.582	-1.962	-2.052	-3.331	-2.959	-1.095
Dummy First time fund	-0.698	-0.708	0.010	0.957	0.999	-0.042
	-1.510	-1.491	0.054	0.780	1.159	-0.047
Log(Fund Size)	0.176	0.037	0.139	-0.010	-0.120	0.109
	1.163	0.334	1.394	-0.034	-0.442	0.589
$MSCI_{CQGR}$	8.916	17.239**	-8.323**	10.522	18.369**	-7.847*
	1.600	2.463	-2.212	1.210	2.048	-1.841
Included Fixed Effects	Time, Industry, Region			Time, Industry, Region, General Partner		
Observations	752			963		
R-squared	0.218			0.335		
Log pseudolikelihood	-579.521			-627.293		

*** p<0.01, ** p<0.05, * p<0.1

	Model 3			Model 4		
VARIABLES	Pu/Fi	Pu/Pr	Pr/Fi	Pu/Fi	Pu/Pr	Pr/Fi
$Fundraising_{Exit}$				0.782	1.659**	-0.877**
				0.909	2.436	-2.210
$Fundraising_{Exit}$*Dummy first time fund				1.554	1.320	0.234
				1.424	1.485	0.358
$Duration_{Vintage,Exit}$ (h)				-0.295	-0.285	-0.010
				-1.590	-1.604	-0.102
$Duration_{Vintage,Exit}$ (h)*Dummy first time fund				-0.141	-0.066	-0.074
				-0.697	-0.336	-0.630
$\Delta Distributions_{Exit}$	-0.463***	-0.643***	0.180	-0.841*	-1.028***	0.187
	-2.713	-3.610	0.926	-1.691	-2.997	0.519
$\Delta Distributions_{Exit}$*Dummy first time fund	-0.032	-0.060	0.028	0.497	0.450	0.047
	-0.235	-0.600	0.268	0.642	0.697	0.100
$Log(Sales_{Exit})$ (h)	0.615***	0.918***	-0.303***	0.931***	1.388***	-0.457***
	4.292	7.345	-3.800	3.309	3.910	-2.789
$Log(1+Margin_{Exit})$ (w)	-1.908	1.827	-3.735***	-2.909	3.854*	-6.763***
	-1.195	1.242	-4.450	-1.307	1.877	-3.721
$EBITDA_{CAGR}$ (w)	0.220	-0.002	0.222	1.162	0.798	0.364
	0.459	-0.004	0.778	1.432	1.215	0.786
$Log(1+Leverage_{Exit})$ (w)	-0.716***	-0.551***	-0.165	-1.538***	-1.189***	-0.349
	-3.201	-2.757	-0.970	-6.193	-3.037	-1.170
Dummy First time fund	-0.407	-0.580*	0.173	1.307	0.783	0.524
	-1.198	-1.724	0.887	0.692	0.422	0.487
Log(Fund Size)	0.079	-0.068	0.147	-0.165	-0.264	0.099
	0.690	-0.761	1.453	-0.287	-0.503	0.310
$MSCI_{CQGR}$	13.323***	20.598***	-7.275**	33.199***	37.503***	-4.304
	2.727	3.598	-2.029	3.017	3.042	-0.722
Included Fixed Effects	Time, Industry, Region			Time, Industry, Region, General Partner		
Observations	806			587		
R-squared	0.216			0.452		
Log pseudolikelihood	-623.483			-320.958		

*** p<0.01, ** p<0.05, * p<0.1

Table II-27: OLS Regression Analysis on the Impact of Fund Level Factors on the Equity IRR – Impact of Fund Maturity and Fund Experience

The table reports the ordinary least squares regression results with heteroscedasticity and autocorrelation consistent (HAC) error estimation using multi-way clustering. The dependent variable is the equity IRR winsorized at the 99th percentile. The independent variables are described in Table II-19. (w) indicates a winsorized variable at 0.01 and 0.99 percentiles, (h) indicates a winsorized variable at the 0.99 percentile. In all models, dummy variables for time, industries, region and GPs are included to account for fixed effects. Furthermore, errors are clustered at the dimensions GP and time using multi-way clustering proposed by Cameron et al. (2006). T-statistics are presented in the lower rows in parenthesis below the coefficients. ***, ** and * indicate p-values of 1 percent, 5 percent and, 10 percent, respectively.

VARIABLES (continued)	(1)	(2)	(3)	(4)
$Fundraising_{Exit}$	-0.006			0.008
	(-0.168)			(0.113)
$Fundraising_{Exit}$*Dummy first time fund	-0.014			-0.022
	(-0.160)			(-0.190)
$Duration_{Vintage,Exit}$ (h)		-0.064***		-0.045**
		(-3.203)		(-2.383)
$Duration_{Vintage,Exit}$ (h)*Dummy first time fund		-0.012		-0.028
		(-0.400)		(-0.870)
$\Delta Distributions_{Exit}$			0.051	-0.001
			(0.996)	(-0.031)
$\Delta Distributions_{Exit}$*Dummy first time fund			0.067	0.180**
			(0.850)	(2.570)
Log(Enterprise $Value_{Entry}$) (h)	0.069**	0.075***	0.088***	0.042
	(2.445)	(2.902)	(2.663)	(1.402)
Log(1+$Margin_{Entry}$) (w)	0.711***	0.496**	0.478**	0.668***
	(2.987)	(2.314)	(2.061)	(2.617)
$Debt/Equity_{Entry}$ (w)	0.031	0.027	0.025	0.028
	(1.533)	(1.633)	(1.417)	(1.239)
Log(1+$Multiple_{Entry}$) (w)	-0.348***	-0.359***	-0.314***	-0.235***
	(-4.099)	(-5.231)	(-4.858)	(-3.147)
$EBITDA_{CAGR}$ (w)	0.645***	0.707***	0.790***	0.590***
	(3.959)	(4.862)	(4.940)	(3.498)
LBO $spread_{Entry}$	-0.019	-0.034	-0.004	-0.021
	(-0.369)	(-0.634)	(-0.062)	(-0.339)
$MSCI_{CQGR}$	2.547	3.316*	3.977*	2.256
	(1.548)	(1.888)	(1.922)	(1.263)
Dummy First time fund	-0.059	0.225	-0.038	0.375
	(-1.006)	(0.783)	(-0.493)	(1.144)
Log(Fund Size)	0.125***	0.006	0.135***	0.046
	(2.875)	(0.088)	(2.741)	(0.513)
Time, Industry, Region Fixed Effects	Yes	Yes	Yes	Yes
General Partner Fixed Effects	Yes	Yes	Yes	Yes
Constant	-0.352	0.842**	-0.687*	0.308
	(-1.142)	(2.000)	(-1.705)	(0.439)
Observations	748	955	795	597
R-squared	0.425	0.451	0.445	0.468

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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III. Conclusion

1. Summary of Results

Why do private equity firms sell to each other? Why do they buy from each other? For researchers and practitioners there appeared to be no favourable rationale for SBOs. The SBO exit channel was quickly classified as an exit of last resort or back-up exit,[127] whereas value creation opportunities in SBOs were quickly reduced to financial engineering, according to conventional wisdom.[128] Or in the words of The Economist: "[…]Secondary buyouts are a neat solution to two of the industry's big headaches. Sellers need to demonstrate decent returns to investors, especially if they are planning new fundraising rounds. Buyers are under pressure to invest their capital […]."[129] Yet, SBOs today account for a large part of private equity investment and divestment activity and private equity firms are known for being rational, highly incentivized investment firms. Therefore, it is difficult to believe that SBOs are merely the aspirin for an ailing industry, which, after the last boom phase, the leverage-driven frenzy of 2005 to 2007,[130] has been suffering from a serious hangover. Therefore, this dissertation aims to shed light on the two overarching research topics. Can private equity investors still generate value in 'round two', and if yes, how do they create this value? Do SBOs represent just a back-up exit option and what drives the decision to pursue an SBO exit?

[127] Cf. Sousa (2010), p. 8, or Jelic and Wright (2012), p. 591.

[128] Cf. Manchot (2010), pp. 274-75, or refer to section II.II2.

[129] Cf. Economist (2010).

[130] Cf. Talmor and Vasvari (2011), p. 6.

As far as value creation in SBOs is concerned, the results presented in this dissertation show that private equity firms average gross equity IRRs of 35% in primary buyouts and 37% in SBOs. Since the result that private equity firms generate similar equity returns in SBOs and primary buyouts is robust for various equity return measures, the second question is whether this value creation is merely driven by financial engineering as several practitioners and researchers have argued. The findings clearly indicate that this is not the case. SBOs offer operational performance improvements similar to those achieved in primary buyouts. In addition, the analyses show that SBOs are 6-9% more expensive than primary buyouts and private equity firms obtain 28-30% more leverage for an SBO transaction.

Especially the fact that SBOs exhibit the same operational performance improvements as their primary counterparts is startling at first sight, which raises the question regarding the underlying drivers of the value creation profile of SBO transactions. As far as the drivers of continued operational performance improvements are concerned, this dissertation identifies three potential drivers. First, the selling private equity firm may be inclined to exit the portfolio company before having realized all operational value creation potential. This decision is driven by structural and opportunistic reasons. As far as the structural issues are concerned, the fund of the selling private equity firm may approach the end of its lifetime or the value creation potential exceeds the typical holding period of private equity firms. The opportunistic reasons for an early sale include both the desire to generate a tangible track record in support of an upcoming fundraising as well as a the attempt to return cash to investors. If a private equity firm is considering an early sale of a portfolio company, often only another private equity firm will reflect the future operational value creation potential in the valuation. Second, differences in the skill sets of the selling and the buying private equity firm may drive the continued operational value creation potential. Finally,

contrary to conventional wisdom, the findings of the Brenntag case study suggested that governance engineering through management incentivisation does not necessarily simply have a one-off impact at the time of the primary buyout, but may still positively influence the operational performance of the underlying company in the SBO.

Coming to the higher entry valuation paid in SBO transactions, the findings of this dissertation suggest that this is neither driven by higher growth prospects nor the market timing and negotiation skills of the smart seller. The higher price paid in an SBO transaction can be attributed to the fact that the purchasing private equity firm obtains more leverage to finance the transaction. The greater amount of leverage is driven by the reduced informational asymmetries between the lenders and the portfolio company in the SBO context as the banks can base their lending decision on the detailed information collected since the primary buyout.

With regard to SBOs as an exit option, the findings of this dissertation clearly suggest that the SBO exit channel is by no means only a back-up exit option when compared to the trade sale and public exit channel: SBO exits generate a median equity IRR of 35.1% compared to 36.0% in a public exit and 28.9% in a trade sale exit. Furthermore, the results show that private equity firms tend to use the SBO exit channel in response to specific deal, market and fund related aspects. As far as deal specific aspects are concerned, an SBO exit is more likely if the portfolio company has a high lending capacity and exhibited a strong operational performance in the primary buyout. In terms of market related drivers, private equity firms tend to prefer the SBO exit channel if the liquidity of the LBO loan markets or the ‘dry powder’ of the private equity industry is high. Finally, this dissertation shows that the same fund related aspects, which can drive the continued operational value creation potential for the buyer in an SBO transaction, affect the likelihood of an SBO exit. If a private equity firm is preparing for the next fundraising or feels the need to distribute cash to its

investors, the SBO exit channel represents an attractive option. Similarly, if the fund through which the investment in the portfolio company was led is approaching the end of its lifetime, this also increases the likelihood of an SBO exit for that very portfolio company.

Next to providing important insights into the fund related drivers of the SBO exit channel, the analyses presented in the last essay of this dissertation shed light on the link between fund level dynamics and deal level decision making. While it is commonly accepted that the relationship between private equity firms and their investors epitomizes the principal agent framework,[131] this dissertation is the first to analyse the potential impact this may have on the deal level divestment decision. The findings clearly show that fund level dynamics do matter for the divestment decision, i.e. when and how to exit a portfolio company.

2. Implications for Research

The results of this dissertation should go a long way in settling the current debate on SBOs among private equity researchers. On the one hand, private equity firms can still generate attractive equity returns when buying from another private equity firm. Furthermore, these equity returns are not simply generated by an excessive use of leverage, but operational value creation remains one of the key value drivers. On the other hand, private equity firms can also generate attractive equity returns when selling to another private equity firm. Here, the SBO exit channel does not represent a back-up exit option compared to the public and trade sale exit channel, but private equity firms choose this exit channel in reaction to certain deal, market and fund related aspects.

[131] Cf. Sahlmann (1990), p. 493.

However, this dissertation also suggests further interesting research topics. First and foremost, it is important to acknowledge that the findings on this thesis are based on a dataset, which includes private equity transactions completed between 1990 and 2010, with only limited coverage of the period after 2005. According to industry data, SBOs continue to command a large share of the private equity industry after the recent financial crisis. However, the environment for the private equity industry has also markedly changed with this crisis, with one of the most important effects being the moderation in the debt markets.[132] It would therefore be interesting to analyse whether the results presented in this thesis do also hold for recent years once data becomes available.

A further fruitful field of analysis relates to the drivers underlying the value creation profile of SBOs. While this dissertation identifies several potential drivers for the continued operational value potential in SBOs, a more granular analysis is required to verify the importance of each of these. Moreover, a more detailed evaluation of the operational performance of companies subject to an SBO transaction analyzing the development of both capital expenditures and working capital, may provide further insights into sources of operational value creation drivers. In addition, this thesis has shown that private equity firms obtain more leverage for an SBO transaction due to the reduced informational asymmetries in this context. However, it is generally accepted that the degree of informational asymmetries does not only affect the leverage quantum, but also its terms.[133] Again, further analysis would be required to confirm whether this also applies in the context of SBOs.

[132] Cf. Talmor and Vasvari (2011), p. 7.

[133] Cf. Ivashina and Kovner (2011), p. 2467.

In addition, the role of management in an SBO has not been addressed in this thesis. Initial evidence suggests that the vast majority of managers remains onboard in the SBO.[134] Furthermore, the analysis of the Brenntag SBO suggests that the effectiveness of management incentive programs can be increased in an SBO. Finally, the impact of SBOs on investors into private equity firms has been sidelined in research to date. While evidence to date suggests that SBOs are not an attempt of private equity firms to collude to the detriment of investors,[135] but also offer attractive gross equity returns, it is not clear whether this holds on a net return basis across both buyouts. On both issues, further analysis is required to fully understand the dynamics at work.

Finally, this dissertation provided initial evidence that fund level consideration impact the divestment decision of private equity firms. Further research is required to confirm these effects in the context of the divestment decision as well as the other phases of the private equity investment cycle.

3. Implications for Practice

The findings of this thesis also bear important implications for the key stakeholders, namely portfolio companies, private equity firms and their limited partners. For portfolio companies, the continued operational performance improvements achieved in the SBO context suggest that private equity is not merely a shock therapy,[136] but actually a distinct corporate governance model, thereby

[134] According to data presented by Wright et al. (2000), p. 29, the management of the primary buyout stays onboard in 79% of SBOs.

[135] Cf. Wang (2012), p. 19-20.

[136] Cf. Rappaport (1990).

vindicating Jensen's (1989) vision. The increasing number of tertiary and even higher order buyouts[137] provides further support for this thesis.

For private equity firms, the implications are manifold. First, they should actively consider the SBO exit channel as an attractive exit option. Second, SBOs do by no means represent unattractive investment opportunities. Nonetheless, it is important to analyze whether the prerequisites for continued operational performance improvements exist. Here private equity firms always need to ask themselves whether the seller is pursuing an early exit. Furthermore, they need to analyze whether their skill set is distinctly different from that of the selling private equity firm, allowing for different value creation approaches. Finally, they need to understand the management incentivisation scheme of the primary buyout to determine whether its effectiveness can be increased. Obviously a prerequisite for the increased effectiveness and an important signal for the future value creation potential is the willingness of management to reinvest a substantial share of the proceeds from the primary buyout.

Finally, limited partners should determine whether they have to adjust the compensation scheme given that SBOs continue to represent a high share of overall private equity activity. The finding that operational performance improvements are also an important value driver in an SBO suggests that these transactions are not necessarily 'easier' deals that would justify an adjustment of compensation. Nonetheless a thorough analysis of the underlying drivers is needed to confirm this view.

[137] Wang (2012), p. 2, highlights the case of Simmons Bedding, a company that underwent five buyouts in less than two decades. Industry statistics record an increasing number of tertiary and even quartenary buyouts, cf. Cumming et al. (2007), p. 456.

IV. **References**

Only Introduction and Conclusion

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