Do PE-Backed firms underperform in the long-run?

Evidence on the post-exit operating performance of PE-Backed French firms

Carlos Miguel Magalhães Moreira

ESCP-Europe Paris (e113388); CLSBE (152111050)

Research Advisor: Professor Pramuan Bunkanwanicha

Abstract

We study the post-exit performance of formerly PE-Backed firms using a novel hand collected sample of 90 French firms with exits either through trade sale or IPO in the period between 2001 and 2010. This study represents an attempt to improve the understanding of the long-term impact of Private Equity investments in portfolio companies. Our main finding is of a comparable to slightly worse operating performance measured by EBITDA Margin, ROIC and ROA relative to an industry and size matched control group of firms never PE-Backed in the three years post-exit. We find evidence suggesting that the decline in performance is higher for trade sales, for secondary buy-outs and for smaller firms. The relative poor performance seems to be driven by a deteriorating working capital management and rising material costs in percentage of sales. In addition, we find little support for previous criticism that Private Equity firms increase their returns at the expenses of the long-term value of portfolio companies as illustrated by the lack of significant change in sales growth adjusted by our control group. Our findings are more consistent with an erosion of Private-Equity mechanisms of improved governance, monitoring and operational efficiency.

Keywords: Private Equity; Long-term value creation; Operational Performance

Résumé

Cette étude concerne la performance à long terme des entreprises acquises par des fonds de *Private Equity*. Avec un nouvel échantillon de 90 entreprises Françaises qui ont sortie le portefeuille des fonds de *Private Equity* entre 2001 et 2010, nous essayons d'améliorer la compréhension de cette problématique. Nous constatons qu'après la sortie des fonds de *Private Equity*, les entreprises de notre échantillon ont une évolution comparable ou légèrement plus faible en termes d'*EBITDA Margin, ROIC et ROA* par rapport à un groupe de control d'entreprises dans la même industrie et avec taille comparable qui n'avaient jamais été acquises par un fond *Private Equity*. La réduction de performance est la plus grande pour les investissements sortis par *trade sale*, les entreprises qui ont été rachetées par des fonds de *Private Equity* plus qu'une fois et aussi les plus petites entreprises. De plus, nous avons trouvé évidence que la baisse de performance est causée par une plus faible gestion des fonds de roulement et par l'augmentation des coûts de matériaux. Pour conclure, nous fournissons évidence que la réduction de performance est mieux expliquée par l'érosion des mécanismes supérieures introduits par des entreprises de *Private Equity* pendant la période de « buy-out » que par une exploitation opportuniste des entreprises de son portefeuille.

Mots-clés : Private Equity, Création de Valeur à long terme ; performance opérationnelle

Resumo

Este estudo explora a performance de longo prazo de empresas intervencionadas por fundos de *Private Equity* utilizando uma amostra manualmente compilada de 90 empresas francesas que saíram do portefólio do fundo de *Private Equity* via *trade sale* ou *IPO*. Deste modo, procuramos contribuir para a compreensão dos efeitos de longo prazo dos investimentos de *Private Equity* nas empresas. Nos três anos posteriores à saída do fundo de *Private Equity* da estrutura acionista da empresa, a performance operacional da nossa amostra, em termos de *EBITDA Margin, ROIC e ROA,* é comparável ou ligeiramente inferior a um grupo de controlo, constituído por empresas da mesma indústria e com dimensão semelhantes. Adicionalmente, foi encontrada evidência de um maior declínio na performance no caso de saídas via *trade sale*, de *Secondary Buy-outs* e para empresas mais pequenas. Este desempenho negativo face ao grupo de controlo parece resultar de uma deterioração na gestão do fundo de maneio e na subida do peso dos custos com materiais nas vendas. Além disso, os resultados não parecem estar correlacionados com a crítica comum de que as empresas de *Private Equity* aumentam os seus retornos em detrimentos da rentabilidade de longo prazo das empresas que adquirem, facto evidenciado por uma evolução comparável nas vendas entre os dois grupos. Pelo contrário, os resultados são consistentes com uma erosão progressiva dos mecanismos de gestão e *corporate governance* introduzidos pelas empresas de *Private Equity* durante o período de buy-out.

Palavras-Chaves: Private Equity; Criação de valor no longo prazo; performance operacional

Acknowledgements

I would like to dedicate this study to my parents, Carlos and Gabriela, to my brothers, Nuno and Filipe, and to Inês, all of whom have unconditionally supported me throughout this endeavor in Paris and made it possible to complete this final stage of my education. In particular, I would like to thank my parents for raising me with the highest standards, with care and with love while embedding in my education a great sense of responsibility. To my brother Nuno, with whom I have shared most of my successes and failures, a deep sense of gratitude. To Filipe, I feel very grateful for his friendship and unique fellowship. To Inês, thank you for your patience, love and support in all the projects I have embraced.

However, this year would have not been the same without all the close friends I made in Paris, in particular Alexandre, Ana, Antonio, Bernardo, Mariana, Mia, Sofia Almeida, Sofia Campos and Sofia Falcão. To all of them, thank you for making this year an unforgettable experience.

Finally, I would like to thank Professor Bunkanwanicha for accepting to be my research advisor but mostly for all the support, guidance and helpful comments throughout the entire project.

Paris, 13th of May 2013

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. Introduction

In a CMBOR survey of 300 management buy-outs across Europe, 84% of respondents claimed that without Private Equity (PE) support the firm would no longer have existed, illustrating the perceived importance by managers of portfolio companies of the role of Private-Equity firms. However, this perceived benefit by managers has not deterred trade unions in the UK from describing PE firms as "asset strippers who destroy jobs and load companies with debt" (Jelic & Wright, 2011).

Alike trade unions, other critics of Private Equity business model look to the historically high performance reported by Private Equity firm with suspicious that it is achieved at the expenses of long-term value of portfolio firms (Harford & Kolasinski, 2012). The historical performance of Private Equity funds itself is not free of controversy, mostly due to the "uneven disclosure of private equity returns" and the "quality of the data that have been available for research" (Harris, Jenkinson, & Kaplan, 2012)[1]. Nonetheless, the literature seems to corroborate the Private-Equity Industry[2] claim of a superior performance gross of fees and a comparable or superior performance net of fees (Harris, Jenkinson & Kaplan, 2012; Kaplan & Schoar, 2005; Cumming & Walz, 2004; Ljungqvist & Richardson, 2003)[3]. Even when incorporating the higher risk of this investment class, Robinson & Sensoy (2011) find that buy-out funds outperform the S&P 500 by 18% over the life of the fund, and moving to a beta of 1.5 only reduces this to 12%.

The recent financial crisis has further raised concerns regarding the real effects of private equity transactions, with a specific attention to buy-outs (Scellato & Ughetto, 2012). In its aftermath, new regulation has been implemented most notably the Alternative Investment Fund Managers' Directive (AIFM Directive), where Private Equity Firms and Managers are pooled together with other investment managers such

[1] For a detailed discussion on the data, methods and results of the Private Equity risk and returns see also Philappou (2009)

[2] An important exception is Philappou & Gottschalg (2006) who present evidence of net-of-fees fund unperformance of 3% per year compared to the S&P 500

3 The literature on Private-Equity Funds performance is summarized in Table 12

as hedge funds. This one size fits all approach has resulted in several provisions that are considered too restrictive for Private Equity by practitioners (Ernst&Young, 2012).

As a result, it is of the upmost importance to complement the existing literature on the impact of Private Equity investments in the overall economy, most notably in its impact in the long-run on the performance of portfolio. Likewise, we need to improve our understanding on the longevity of the claimed benefits of private equity deals and if they are sustained once the private buy-out structure ends (Wright, Burrows, Ball, Scholes, Meuleman, & Amess, 2007). This need is more pressing considering the absence of generalized evidence on the longer term post-exit operating performance (Jelic & Wright, 2011).

In fact, most studies on the long-run operating performance of formerly PE-Backed firms have focused on Reverse Leverage Buy-outs (RLBO), with the consequence that "the outcome of buy-out investments more generally, and the types of firms selected for each form of exit, remain surprisingly poorly understood" (Cao & Lerner, 2006). Leslie & Oyer (2009) do not find evidence that PE firms "put in place incentive systems or operational efficiency that outlives their ownership" in a sample of RLBO, raising the question if their finding is extendable to the remaining exits.

We contribute to the current literature by examining the post-exit operating performance of formerly French PE-Backed firms that exited either through IPOs or trade sales, using a novel hand-collected dataset that involved merging data from three distinct data sources. Although it has limitations in its final size, it represents to the best of our knowledge the first attempt to examine the operating performance post-exit of French Buy-outs.

Our main finding is of a comparable to slightly worse operating performance as measured by EBITDA Margin, ROIC and ROA, relative to an industry and sized matched control group of Never PE-Backed firms. We find no evidence of a post-exit decline in growth although Private Equity firms seem to time their exit to when they are not able to further grow the portfolio companies as depicted by a statistically significant negative difference in terms of sales growth in the year before the exit.

We are able to track down the apparent decline in performance to a deteriorating management of working capital and lower gross margins, measured by the rising weight of material costs in percentage of sales. Consistent with previous finding on the French Buy-out market, leverage seems to play a less significant role in explaining the differences in performance post-exit.

Equally important, we find little support for the common criticism of opportunistic behavior from Private Firms since long-term sales growth is indistinguishable from their control group. We argue that in case of actions associated with borrowing performance from the future, such as reduced advertising or innovation, the likely effects should be present in a comparable worse performance in sales which does not materialize in our sample.

In addition, firms exited through trade sale seem to exhibit a comparatively worse post-exit performance than formerly PE-Backed exited in IPOs. Secondary buyouts also perform worse in the long-term. At the firm level, smaller firms are the most negatively impacted by the exit of the Private Equity funds, which we interpret as a reflection of the less professionalized management SME often have.

The remaining of this study is organized as follows. In Section 2 we provide an overview of the current literature in the real effects of Private Equity in portfolio companies, paying particular attention to the long-term effects. In Section 3, drawing on the literature revision, we develop our testable hypothesis that will guide the remaining of the analysis. Section 4 details the process of construction of this novel dataset. Section 5 presents the methodology employed to study abnormal operating performance. In Section 6 we present and discuss the main results, including further robustness checks, and the discussion as well as the managerial implications. Section 7 discusses the main limitations of this studies and point outs to interest future paths in research on the long-run performance of Private-Equity Backed firms. Finally, in Section 8 we conclude the present study.

2. Literature Review

Before setting up our analysis, it is worth clarifying some of the previous evidence provided in the literature on Private-Equity firm to guide us throughout our study. Henceforth, in 2.1 we first explore the different concepts of Private-Equity investments and clear define the scope of this study. In 2.2 we explore in detail how Private-Equity firms are able to generate the documented high returns and in 2.3 we look for evidence if this is translated into a positive operational impact at the portfolio firms. Then, in 2.4 we analyze the last step in the life-cycle of the Private-Equity firms in portfolio firms: the exit. This draws the issue of the long-term impact of buy-out investments that we explore in 2.5. In 2.6 we revisit the literature on the French buy-out Private-Equity investment, following previous evidence that there are important country specificities to acknowledge. Finally, we summarize the main gaps existing in the literature in 2.7.

2.1. Private-Equity Industry

The notion of Private Equity investments itself is subject to controversy in the academic literature, with considerable variability in the definitions of Private Equity employed (Sousa, 2010). As a result, an important first step in any study in the Private Equity industry is a clear understanding of what is Private Equity to be able to accurately define which Private Equity investments are relevant for research purposes.

The European Private Equity & Venture Capital Association (EVCA) defines Private Equity as "a form of equity investment into private companies that are not quoted on a stock exchange. Private equity is distinguished by its active investment model, in which it seeks to deliver operational improvements in its companies, over several years". This definition highlights two of the shared characteristics of Private Equity investments: the target are private firm (or public firm that are taken private) and have a clear strategic rational of improving the portfolio companies. Moreover, the definition also points out that Private Equity investments a priori should not be a short term endeavor, but have a clear focus in the long-term. The question of whether this long-term ambition materializes in practice is precisely the focus of this study.

Nonetheless, Private Equity is not a homogenous investment category with EVCA further dividing it into three main classes:

1) Venture Capital- typically investments in young or emerging companies, usually with minority stakes (Kaplan and Strömberg, 2008). It includes three main categories: (1) Seed capital, which is provided to "start-up" enterprises that need backing to fund the development of new business ideas; (2) Early stage capital, aimed at businesses with a product or service at the prototype stage but without sufficient capital to move into broader production; (3) Later stage capital, which funds businesses that already have revenues but need more capital in order to expand production or create new products.
2) Enterprise Capital: invest in more high growth businesses that want to internationalize, professionalize or develop their products and services, and thus have high funding needs.
3) Buy-out Capital- acquire (or 'buy out') all or the majority of an established business. Within the buy-out capital, one of the most common forms is the leveraged buy-out, where the private equity firm acquires the company using a relatively high portion of debt financing[4]. It also includes Management Buy-out (MBO), where the existing management takes a substantial proportion of the equity; Management Buy In (MBI), which is an MBO in which the leading members of the management team are outsiders; Buy-in management buy-outs (BIMBOs) where both inside and outside manager are part of the transaction; Leveraged build-ups (LBUs), which involve the development of a corporate group based on an initial buy-out or buy-in which serves as a platform investment to which are added a series of acquisitions; Finally, Secondary Buy-outs, which are buy-outs of firms already owned by a Private Equity firm.[5]

The different nature of the Private Equity investments is illustrated by the different standard deviations of each class presented in Table 11 which depicts heterogeneous risks. This highlights that both PE- firms and portfolio companies held by buy-out-focused private equity sponsors are fundamentally different from those held by venture funds (Harford and Kolasinski, 2012). In this paper we focus our analysis in the buy-out capital, since it is the one most commonly faced with the criticism of earning high returns at the expenses of the long-term success of portfolio firms.

[4] Definition provided by Kaplan & Strömberg (2008)
[5] Definitions are adapted from Wright, Burrows, Ball, Scholes, Meuleman, & Amess (2007) and EVCA

Private Equity firms make their investment by constituting private equity funds. The private equity fund is usually a limited partnership structure[6] (figure 1), in which there is one general partner (GP) (often the private equity firm), who has unlimited liability for the liabilities of the partnership. In addition to the GP, the partnerships includes also limited partners (usually large institutional investors such as pensions funds, investment funds, endowment funds, insurance companies, banks, or high net worth individuals) who provide the majority of funds needed, but, nonetheless, have their liability limited to the amount of their investment in the partnership. Most commonly the private equity funds have a finite life, usually around 10 years with a possible 2 year of extension, although the time to invest the committed capital is usually only 5 years. When the agreed life of the funds arrives to its end the GP must return the invested capital to the limited partners. Each fund or limited partnership, therefore, is essentially a closed end fund with a finite life (Kaplan & Schoar, 2003).

Nevertheless, since each private equity fund has a specific and limited amount of committed capital by its investors, GP have to pursue "subsequent (and separate) funds" once it has invested all the capital of the initial fund. This has important implications in terms of reputation for private equity firms since a successful initial fund increases the probability of success in future operations of raising capital. As a result this extends PE firms' reputational concerns beyond the limited life of each fund. These reputational concerns might mitigate the incentives of buy-out sponsors to extract maximum profits from their investments within a short horizon (Cao, 2008).

2.2. Sources of Value

Having analyzed the structure and the historical high returns of Private-Equity funds is it of the upmost important to understand how these high returns are generated. The capacity of Private-Equity firm to generate returns to investors is intrinsically connected with the notion of value generation. The sources of value for the private equity funds can be decoupled into those that simply generate added value to the Private Equity fund (such as benefiting from rising multiples, also known as multiple arbitrage, wealth transference practices such as borrowing performance from future performance or tax benefits) or strategies that add value to the acquired firm by improving their

[6] The description of the private equity fund structure is adapted from Kaplan and Schoar (2003)

performance (Guo, Hotchkiss, & Song, 2009). In the same study Guo, Hotchkiss & Song (2009) estimate that changes in operating performance are responsible for 22.9% of the total buy-out return, only surpassed by the tax benefit which account for 33.8% of total return[7]. This illustrates the importance of operational improvements at the portfolio company for the Private Equity fund returns. Considering the nature of this study, we now focus our discussion on the latter.

In fact, Leveraged buy-outs have long been described as investments associated with improved management, as illustrated by Jensen (1989) prediction that leveraged buy-out organizations would eventually become the dominant corporate organizational form. Jensen (1989) argued that LBOs were superior to the traditional structure of public firms due to its concentrated ownership, better aligned incentives, highly leverage structures and better operational engineering. However, some of these claims are better fitted to the first buy-out boom and thus it is important to discuss more recent studies.

In one of them, Kaplan and Strömberg (2008) study the returns to Private Equity funds and group the improvements Private Equity funds bring to the acquired firms into three categories: (1) financial engineering, (2) governance engineering and lastly (3) operational engineering. It is important to notice that the gains in operating performance might be the result of any of the three mentioned factors, and not exclusively due to operational engineering. Both (1) and (2) are related to the agency theory and are in line with Jensen's (1989) claims. According to the agency perspective, corporate managers act as agents of shareholders and in this agency relationship conflicting interests often arise (Jensen, 1986)[8]. Worth noting is that these sources of value are likely more important in Public to Private transaction (which were the dominant note in the first buy-out wave) where agency problems are higher due increased dispersion of ownership. Nonetheless, they also apply to private companies

[7] Acharya, Gottschalg, Hahn, & Kehoe (2011) find a higher share of improved operating performance relative to peers on the average deal IRR (about 34%), with half resulting from higher financial leverage

[8] Namely, managers have incentive to grow firms beyond what is optimal, as it increases their power by increasing the resources under their control. One of the most common cited agency problems, the free cash flow problem, refers to the conflict of interest between the shareholders (principal) and manager (agent) regarding the usage of the "cash flow in excess to that required to fund projects that have positive net present values when discounted at the relevant cost of capital" (Jensen, 1986). Whereas shareholders prefer to have them paid out, namely as dividends, managers often have the incentive to invest it even if at below the cost of capital or conserve it as a cushion for inefficiencies.

and have proved to be an important source of improved operation in recent buy-outs (Guo, Hotchkiss, & Song, 2009).

Regarding the first source of value, (1) financial engineering refers to the better use of leverage, which is defined by Kaplan and Strömberg (2008) as the borrowing that is done in direct connection with the buy-out transaction. Due to the fixed nature of its payment (of both interest and principal), additional leverage creates pressure on managers to spend money more wisely and efficiently, which reduces the "free cash flow problem" and the agency costs described. Guo, Hotchkiss & Song (2009) find that operational improvement in cash flows (not including tax shields) are higher for firms with larger increases in debt, supporting the argument that debt helps to discipline management and thus reduces agency costs.

(2) Governance engineering refers to the more active role played by private equity firms in the governance of the company, exercising a closer monitoring and putting in place better designed management incentives. The central idea is that thanks to the latter, managers "will use their insider knowledge of the firm to deliver better results" (Kaplan and Strömberg, 2008). One example of the improved incentives is the common practice of giving to the management team a significant stake in the firm's equity through either stock or options. As a result, the manager's own wealth becomes contingent on the firm's wealth. In a sample of 43 leveraged buy-outs in the US from 1996 to 2004, Kaplan and Strömberg (2008) find that the CEO owns in average 5,4% of the equity, a value that rises to 16% when the management team as a whole is considered. In a study of the UK buy-outs, Wright, Burrows, Ball, Scholes, Meuleman, & Amess (2007) document a higher share of total equity hold by management, around 33%. Leslie and Oyer (2008) also find that "top executive incentives are much stronger at PE-Backed companies than at comparable publicly traded companies" since compared to a control group of industry matched publicly traded company, managers have higher shares of the firm, earn less base pay and have higher variable pay. In addition, relative to other private companies, PE-Backed companies are more likely to replace underperforming management (Strömberg, 2009). Strömberg (2009) also provides evidence that PE-Backed companies have smaller boards that meet more frequently and have a smaller fraction of insider (management) members than boards of comparable companies.

Lastly, (3) operational engineering refers to industry and operating expertise that Private-Equity firms use to add value to their investments. Examples include elimination of unproductive assets; use of remaining assets (including working capital) more efficiently; undertaking of value increasing acquisitions (Guo, Hotchkiss & Song, 2009); expansion of the product line; strategic reorientation; geographical expansion; cost cutting; outsourcing (Wright, Burrows, Ball, Scholes, Meuleman, & Amess, 2007); introduction of innovative operational management practices (Strömberg, 2009). A survey conducted by CMBOR in association with EVCA documented that following the buy-out high commitment practices[9] increased in portfolio companies (CMBOR, 2008). More recently, studies have also provided evidence that Private-Equity investments generate additional value by reducing the credit constraints faced by portfolio companies. Private-Equity firms seem to improve access to funding sources in addition to the financing sometimes provided by the PE funds, namely bank credit, since they act as "quality" signs (Tavares & Minardi, 2010; Boucly, Sraer, & Thesmar, 2011)

Worth noting is that achieving the high financial returns of the first private-equity boom in the 1980s solely through (1) financial engineering is becoming increasingly more difficult (Cumming, Wright, & Siegel, 2007). The direct result is an increased importance of both governance and operational engineering in generating returns for the PE investors. Acknowledging this reality, increasingly more private equity firms hire professionals with operating backgrounds and an industry focus (Kaplan and Strömberg, 2008) and greater product market and strategic expertise (Cumming, Siegel, and Wright, 2007). Consistently, Wright, Burrows, Ball, Scholes, Meuleman, & Amess (2007) document that 69.6% of PE-Backed buy-outs increased their product range, while 62.5% expanded into new markets and 53.7% invested in new sites or locations.

Some studies have attempted to determine the share of total buy-out returns that are due to improved operating performance compared to its peers. Namely Acharya, Gottschalg, Hahn & Kehoe (2011) study 395 deals closed during the period 1991 to 2007 in Western Europe and find that about 34% (19.8 % out of 56.1%) of the average deal IRR results from improved operational performance when compared to their peers. These findings combined reinforce the conviction that operational performance of the

[9] Which include regular team meetings, internal promotion as norm and work mostly in teams

portfolio firms is also of the upmost importance to the Private-Equity firm. The question that we next explore is if literature has in fact found significant operational improvements at the portfolio companies.

2.3. Operating performance of PE-Backed companies

It is important to notice that the conclusions regarding operating performance of portfolio companies have been contingent on the chosen measure, the time period, the geographic location of the sample and also on the methodology used to construct the sample (Leslie and Oyer, 2008). These differences between studies partly explain the different and to a certain extent contradictory conclusions that can be found in the literature.

Strömberg (2009), Wright, Burrows, Ball, Scholes, Meuleman, & Amess (2007) and Cumming, Siegel, and Wright (2007) summarize the existing literature as resulting in the consensual conclusion that private equity investments enhance company performance with "private equity transactions result[ing] in the reallocation of a firm's resources to more efficient uses and to better managers". However, more recent studies on the new wave of LBO have produced some mixed findings, namely the more recent public-to-private buy-outs (Kaplan & Strömberg, 2008).

In fact, the first wave of buy-out in US and UK in the 1980s is characterized by strong evidence of improvements in operating performance of portfolio companies (Kaplan, 1989; Smith, 1990; Lichtenberg & Siegel, 1990). More recent studies (Harris, Siegel, & Wright, 2005; Cressy, Malipiero, & Munari, 2007; Acharya, Gottschalg, Hahn & Kehoe, 2011; Jääskeläinen, 2011; Guo, Hotchkiss, & Song, 2009) employing more comprehensive samples not only in terms of number of transactions but also in terms of geographical coverage arrived to similar conclusions of a positive impact of buy-outs in portfolio companies.

However, other recent studies were unable to find evidence of improved operating performance. Most notably, Leslie & Oyer (2008) and Guo, Hotchkiss and Song (2009) find little evidence that PE-owned firms outperform comparable firms in profitability or operational efficiency. A possible explanation can be related with the evidence that "U.S. corporations have increasingly pursued shareholder value friendly policies on their own

in the 1990s" thus reducing the scope through which PE firms might add value (Holmström & Kaplan, 2001).

In addition, the gains in portfolio companies seems to be heterogeneous across Private-Equity funds, namely with firms with general partners who are ex-consultants or ex-industry-managers generating significantly higher outperformance in deals focused on internal value creation programs (Acharya, Gottschalg, Hahn, & Kehoe, 2011). Industry specialization of Private-Equity firms also adds 8.5% to the normal improvement in performance (Cressy, Munarib, & Malipiero, 2007).

Overall, my conclusion based on the literature is that Private-Equity firms have a neutral to positive effect in portfolio firms. The final outcome at the firm level is intrinsically connected with the Private-Equity firm's individual capacity to introduce new and improved business plans.

2.4. The need for an exit strategy

"The reason is simple: Private equity needs an exit. Private equity managers do not acquire companies to operate; they acquire companies to sell"

report by The Dilenschneider Group

The above quote highlights the importance for private equity investors to sell (exit) their stake in the investments in order to return the money to the investors, preferably with a considerable return. In fact, the choice of a successful method to exit (and its timing) is one of the most critical choices faced by a private equity investor. Not only because a well designed exit strategy is essential to obtain higher returns in the short-run but also due to the fact a successful track record of exited investments helps raising new funds (Sousa, 2010).

The most traditional exit strategies for private equity firms have been historically to go public through an initial public offering (IPO) or sell the stake to a corporate acquirer (trade sale). More recently the sale to another private equity firm in a private-to-private deal known as "secondary exit" or "secondary buy-out" has emerged as a common exit route (Sousa, 2010; Harford and Kolasinski, 2012)[10]. Harford and Kolasinski (2012) find

[10] For a more detailed description of the different exit strategies available, see Sousa (2010)

that the fastest exits are through IPO, followed by trade sale, whereas portfolio companies exited via sale to another Private-Equity fund are held longer than other successful exists, "supporting the conjecture that private equity sponsors only sell to each other when they have not been successful with arranging another exit."

In a sample of 1,627 private equity exits from 2000 to June 2007, Sousa (2010) depicts that only 243 were exited through an IPO (representing less than 15% of total sample), compared to 638 secondary buy-outs and 746 trade sales. In a more comprehensive study, Strömberg (2007) also provides details of the exit outcomes for 21,397 leveraged buy-out transactions in the period between 1970 and 2007 arriving to similar conclusions.[11] The author provides evidence that IPO as an exit strategy has been losing importance over time, only accounting for 13% of exits in recent years. Regarding the timing of exits, Strömberg (2007) finds higher than document holding periods, with a median holding period of about 9 years and only 42% of the investments exited in the first 5 years. Harford and Kolasinski (2012) present similar evidence in another sample while also concluding that secondary buy-outs are not indicative of a portfolio company-type characteristic. The authors also note that Secondary Buy-outs are not more likely to undergo a distress restructuring than other portfolio companies, rejecting the claim that Private-Equity funds use secondary buy-outs to pass around bad portfolio firms. In spite of this, other studies have documented contradicting evidence (Jelic & Wright, 2011)[12].

Overall, the main finding of interest to the current study is that trade sale (which is the main focus of this post-exit performance study) is the most common exit outcome, with IPOs experiencing a reduced importance over time. Moreover, recent studies seem to point out to a higher than documented holding period of LBO investments. Nonetheless, this does not deter criticism that due to PE's relative short-term investment horizon[13] and the need to exit deals in a profitable way, their interests are often misaligned with other shareholders (Cao, 2008). It is for these reasons why Lerner,

[11] The most common exit route is trade sale, representing 38% of all exits, followed by secondary buy-outs (24%).

[12] Jelic & Wright (2011) find contradicting evidence suggesting that SMBOs are likely to be relatively poor performers, with declining performance after three years.

[13] Although Strömberg (2009) points out to evidence that PE funds have longer investment horizons than other institutional investors in public equity, with a median holding period of leveraged buy-outs and more mature companies of six years

Sørensen and Strömberg (2008) query if "private equity funds (...) promote policies that boost short-run performance at the expense of more sustained long-term growth".

Likewise, in the next section of the Literature Review we focus on evidence regarding the long-run performance of PE-Backed firms, the topic to which this study aims to add further evidence.

2.5. Long-term performance

As highlighted by the EVCA the business model of Private Equity investments, regardless of their shape, is the same: "to invest in a company and make it more valuable, over a number of years, before finally selling it to a buyer who appreciates that lasting value has been created". In this definition it is implicit the concept of "lasting value", which means that to succeed in their endeavors and achieve their target returns Private Equity firms should be able to had value to firms that will endure in time. Interestingly, even among practitioners the opinions regarding the longer term effects of Private Equity investments are divided (Jelic & Wright, 2011).

Surprisingly, few academic studies have focused in the long-run performance of PE-Backed companies, especially after Private-Equity firms have exited their investments. Most studies on the impact of buy-outs in the portfolio companies are short term in nature, typically examining up to three years after the transaction (Amess, 2003; Jelic & Wright, 2011). This has mostly left unanswered one of the most preeminent questions in the PE-related literature: if Private-Equity firms sacrifice long-term value creation at the portfolio companies since they are mostly driven by short-term profit (Lerner, Sorensen, & Strömberg, 2008). Moreover, higher leverage, which is often associated with better corporate governance and reduced agency problems and overinvestment, might lead to underinvestment during the buy-out period to quickly pay down debt (Harford & Kolasinski, 2012).

Although Stromberg (2009) summarizes the current research as denoting that the positive impact of private equity investment in the portfolio companies continues after the private equity firms have exited their investment, his conclusion is mostly supported by evidence of positive performance of PE-Backed IPOs compared to other IPOs in the stock market. As discussed, IPOs exits represent a low share of total exit outcomes, making it pressing to revisit the current literature in more detail.

The academic approach to the problematic on the long-run performance of PE-Backed companies has mostly focused in four different groups. First, scholars study and measure changes in behaviors usually associated with long-term performance following buy-outs. These behaviors are activities that whereas they produce immediate costs, their benefits are unlikely to be observed for several years (Lerner, Sorensen, & Strömberg, 2008), such as R&D expenditures (Lichtenberg & Siegel, 1990; Holthausen & Larcker,1996), patents fillings (Lerner, Sorensen, & Strömberg, 2008; Popov & Roosenboom, 2009), capital expenditures (Boucly, Sraer, & Thesmar, 2011), advertising expenditures (Holthausen & Larcker, 1996), special dividends (Harford & Kolasinski, 2012). This is done because Private-Equity firms can have incentives "to borrow performance from other periods" (DeGeorge & Zeckhauser, 1993), thus sacrificing long-term investments. This approach has the main advantage that is free of the problems associated with measuring financial performance with accounting measures which have been shown to be plagued by earnings manipulation (Wright, Burrows, Ball, Scholes, Meuleman, & Amess, 2007).

Overall, the main findings are of absence of behavior associated with opportunistic behavior to boost short-term returns at the expenses of the long-term value generation. One important exception is Holthausen & Larcker (1996) who find that "prior to the IPO, reverse-LBO firms spend less on capital expenditures than the median firms in their industries, and that subsequent to the IPO, their capital expenditures return to the median level of their industry counterparts".

In one of the most comprehensive studies devoted to this topic, Harford & Kolasinskil (2012) analyze a sample covering "all large buy-outs" and "tracking them to their outcome", regardless of whether it is an IPO, trade sale or secondary buy-out. They find no evidence of reduction in capital expenditure (not even in the face of negative cash flows) compared to public firms and that special dividends are not correlated with future portfolio company financial distress. In fact, they document that special dividends are positively correlated with future operating margins, interpreting it as evidence of optimal payout policy where special dividends are only paid in case the portfolio company can afford them.

Secondly, the duration of the operational improvements introduced after the buy-out is equally analyzed. Amess (2003) presents results indicating a superior performance of MBO firms before the buy-out which is further enhanced in the buy-out period up to four years after the PE entry but not beyond. The author interprets it as evidence that the positive impact of buy-outs at firm-level technical efficiency is "merely transitory".

Thirdly, Harford & Kolasinskil (2012) explore a third approach to provide evidence on the issue of long-run performance and possible short-term myopia from Private-Equity firms. They do so by analyzing the performance of the acquirers of formerly PE Backed firms, concluding that the acquirer's stock performance following the acquisition is positive with no statistical significant difference in the long run.

Lastly, another set of paper studies directly the performance of the portfolio companies post-exit. They do so either by analyzing the stock performance in case of exit through IPO (van Frederikslust & van der Geest, 2001; Cao & Lerner, 2006; Von Drathen, 2007; Von Drathen & Faleiro, 2008; Tavares & Minardi, 2010) or the operating performance of formerly PE-Backed companies in particular those that went public (Degeorge & Zeckhauser, 1993; Holthausen & Larcker, 1996; Cao, 2008). In one of the first studies to explore the post-exit performance, Holthausen & Larcker (1996) find that although the accounting performance of reverse leveraged buy-outs is significantly better than their industry peers at the time of the IPO there is evidence of decline in performance post buy-out. They explain the decline in operating performance post-IPO as being the result of a reduction of leverage and concentration of equity ownership (which is mostly related to an agency perspective).

To the best of our knowledge, the only paper to study a larger sample of companies post-exit operating performance is conducted by Jelic & Wright (2011). Nonetheless, their post-exit operating performance analysis does not cover buy-outs that exited via trade sales, which correspond to 19% of their sample of 1 225 buy-outs and according to Strömberg (2007) is the most common exit outcome.

Another important topic is whether the benefits associated with private ownership, such as better governance and increased monitoring, last in time. Levis (2010) denotes that "although it is often assumed that such benefits normally accrue during the period that a company is under private equity control it is also reasonable to expect that

management and financial practices put in place at the time under private equity ownership will be maintained at least for some time after the exit". The author argues that reputational implications make it more likely for these effects to last, as they will continue to have to exit their investments. In fact, Levis (2010) provides evidence that formerly PE-Backed firms still carry more debt than the industry average following the IPO, in spite of a reduction compared to pre-IPO levels. However, in another study, Leslie and Oyer (2008) find that the differences in "top executive incentives" between "PE-owned firms and public firms quickly disappear after PE-owned firms execute an IPO", casting additional doubts on the capacity of firms acquired by PE firms to sustain the improved performance once they exist investments.

2.6. French Buy-Out Market

Understanding the French Buy-out market and its specificities is of the upmost important to be able to fully apprehend any finding related to studies of the French case (Gaspar, 2012). The French Buy-out market is comparatively more recent, having mostly developed in the 1990s. According to the AFIC (the French Private Equity Association), between 2002 and 2011 an average yearly amount of € 5.7 Billions were invested by Buy-out funds.

Buy-outs in France differ from the most commonly studied in US and the UK's market in three main factors. First, the majority of target firms in France are family-owned firms (44.2 % of total deals[14]) and to a less extent divested divisions or subsidiaries from large groups which are a common sourcing for deals in US and UK (Desbrières & Schatt, 2002; Wright, Burrows, Ball, Scholes, Meuleman, & Amess, 2007). Consistently, according to AFIC close to 80% of the firms supported by Private Equity investments are SMEs. Secondly, buy-outs in France tend to carry significantly less debt than similar transactions in the US (Desbrières & Schatt, 2002) playing a minor role as performance incentive. Lastly, prior to the buy-out they have a considerable concentration of the ownership of the acquired firms (especially in family businesses) (Desbrières & Schatt, 2002). The combination of these factors required a different Private-Equity business model which accommodates the differences between family owned business and

[14] Source: CMBOR/Barclays Private Equity/Deloitte

divisional buy-outs. While family firms benefit more from efficiency gains resulting from improved management practices, in divested former divisions leverage can still play an important role in improving managers incentives scheme (Gaspar, 2012).

The lower importance of leverage does not mean that improved governance and alignment of incentives are not a source of value in French buy-outs. In fact, evidence points out that the reduction of agency costs and therefore the associated improvement in performance are explained by the ownership transfer to new managers who often invest a substantial part of their personal wealth and the monitoring role of the Private-Equity investors (Desbrières & Schatt, 2002)

In addition, evidence across all studies in the French buy-out markets (Boucly, Sraer, & Thesmar, 2011; Desbrières & Schatt, 2002; Gaspar, 2012) depicts the fact that portfolio companies in French outperform their industries peers in terms of returns, have better margin and carry less debt.

Interestingly, the results concerning the impact of the buy-out in the portfolio company are not consensual. Whereas Desbrières & Schatt (2002) provide evidence for a sample of 161 MBOs of a decrease in the performance relative to a control group following the buy-out (altough target firms outperform the firms in the same sector of activity both before and after the buy-out), both Boucly, Sraer, & Thesmar (2011) and Gaspar (2012) find that the operating performance is significantly improved. Desbrières & Schatt (2002) interpret their findings as a loss in value due to the exit of the family founder. Gaspar (2012) points out that the contradictory conclusions could be the result of (1) difficulty associated with the use of unconsolidated accouting data or (2) the fact that studies cover different time periods. In particular, Desbrières & Schatt (2002) study MBOs taking place in the period between 1988 to 1994, a period when the buy-out market in French was considerably less developed and professionalized (Gaspar, 2012).

Gaspar (2012) is able to relate the improvements in performance with more favorable gross margins, a relative decrease in labor costs at LBO firms and an improved capital efficiency, namely in working capital management.

Worth mentioning, is the fact that the French buy-out market seems to play a different role in the process of value creation. In addition to the improved financial and

governance mechanisms and enhanced business plans, private equity funds help to alleviate the constrains in credit that target firms with growth opportunities face thanks to their privileged relationships with local banks (Boucly, Sraer, & Thesmar, 2011). Consistently, in his review of literature Strömberg (2009) notes that France is one important exception to the generalized finding that employment and wages in portfolio companies of Private-equity funds grow at a slower rate than comparable companies.

2.7. Caveats to existing literature on long-run performance

To finalize the literature review, we summarize the gaps currently persisting in the literature in order to better frame the contribution that this study aims to bring.

1) The literature is still poorly developed for the period after the Private-Equity firm exits the investment and mostly concentrated in exits through IPO

The concept of abnormal operating performance in the case of private-equity investments can be analyzed in two different perspectives covering the full Private-Equity life cycle in the portfolio firm (Acharya, Gottschalg, Hahn & Kehoe, 2011). First, it is important to look at the changes in operating performance improvement during buy-out ownership compared to pre-acquisition. Secondly, the evolution of operating performance improvement compared to the sector after the PE exits the investment is of equal importance (Acharya, Gottschalg, Hahn & Kehoe, 2011).

Interestingly, little attention has been given to the latter, which can be partly explained by the lack of data for portfolio firms (Kaplan & Strömberg, 2008). Most of the studies analyzing post-exit performance are thus restricted to investments exited through IPO or companies that have to publicly available accounting information (for instance if they have public debt outstanding). This is particular striking if we consider that close to 90% of the exits are not through IPO, especially in Europe, which means that "literature is basing most of its inferences about buy-outs on approximately 10% of the population" (Harford and Kolasinski, 2012). Cao and Lerner (2006) also note that "the outcome of buy-out investments more generally, and the types of firms selected for each form of exit, remain surprisingly poorly understood". As a result, studying the long-term performance of PE-Backed investments using mostly IPOs will result in a non representative sample, not only in terms of size but also in terms of nature of the deals exited.

Jelic & Wright (2011) are to the best of our knowledge the only study to analyze the post-exit performance of portfolio firms exited through other means than IPO (in their case Secondary Buy-outs). However, they do not include trade sales in their sample as well.

Inclusively Acharya, Gottschalg, Hahn & Kehoe (2011) who point out the importance of analyzing post-exit performance, do so by analyzing the EBITDA multiple (Enterprise Value/EBITDA) at time of exit from the deal since they do not have operational figures after exit for most of the deals. Nevertheless, these results are largely dependent on the assumption that market expectations are rational.

Even Harford and Kolasinski (2012) who provide one of the studies closest to ours in terms of spirit by analyzing also trade sales, do so without explicitly considering the operational performance of the portfolio company.

2) Most studies only include UK and US

Cumming, Wright, & Siegel (2007) in their review of evidence on the Private Equity industries point out that global evidence suggests differences in the nature and determinants of the performance of private equity funds and of different types of buy-outs in different countries. They note that there is ample scope for additional research on the international buy-out market. In fact, prevailing literature still lacks studies on other major economies in addition to UK and US, such as France. For French buy-out market, the most important studies are Desbrières & Schatt (2002), Boucly, Sraer, & Thesmar (2011) and Gaspar (2012) as noted in the previous sections, but none of them tracks performance following exit.

3) Few studies analyze both Public and Private companies

As noted by Cumming, Siegel, and Wright (2007) literature has tried to assess the performance of changes to private equity ownership "by examining effects on short-run stock prices ("event studies"), long-run stock prices, returns to investors, or accounting profits of publicly-traded firms", which can lead to a non-representative sample as private companies are not included in this sample. Using a country like France has the main advantage of allowing us to analyze both private and public companies, since

companies are forced to disclose accounting data for tax purpose which is then made available in different databases.

4) The recent controversy over the impact of PE firms in companies' performance reinforces the need to revisit and further deepen this topic

Some of the most recent studies (Leslie & Oyer, 2008; Guo, Hotchkiss & Song, 2009) find little support for increased efficiency due to the action of private equity firms. This raises further questions on the real effect of PE investments at the portfolio level.

3. Research Question and Hypothesis

To the best of our knowledge, this paper represents the first attempt to analyze the operating performance of formerly French PE-Backed firms post-exit using a more comprehensive and representative sample that includes both Trade Sales and IPO exits by drawing on a manually collected sample of Private-Equity exits in France. The purpose of this study is not to present a complete picture of what happens during and after the buy-out period as done in Harford and Kolasinski (2012). We focus mostly in the period following the exit. In particular, we query if the operational and governance changes often introduced in the portfolio companies during the buy-out period (previously described in more detail in the Literature Review Section) are long-lasting in effect. In addition, we try to look for evidence that Private-Equity firms may opportunistically borrow performance from the future to boost their returns, by determining if portfolio companies underperform their peers post-exit. Therefore, based on the prevailing literature the main hypotheses of this study are as follows:

H1: PE-Backed firms in France outperform their peers

Both Desbrières & Schatt (2002), Boucly, Sraer, & Thesmar (2011) and Gaspar (2012) provide evidence that LBO targets in France are among the top performers in their industries. Although we focus in the period immediately before and after the exit rather than around the buy-out investment, it is reasonable to expect that if the superior performance is sustainable in the long-term and is not also dependent in the time period covered by the study we should find similar evidence of superior performance of PE-Backed companies in our data set at least immediately before the exit takes place.

H2: PE firms exit their investment when the portfolio company performance starts to deteriorate

Badunenko, Barasinska, & Schäfer (2009) document that PE investors are likely to leave the company if it deteriorates in terms of returns and cash, so we should expect a decline in relative performance in the years preceding the exit.

H3: After the exit, the operating performance of formerly PE-Backed companies deteriorates relative to a control group of similar companies

In comparable studies on the RLBO operating performance, the findings are of a comparable to slightly worse operating performance after IPO[15]. In these exits, evidence highlights that private equity funds usually keep significant stakes after the IPO often with lock-up agreements. Hence, the long-run stock performance of the IPOs has a significant impact on the funds' performance, while Private Equity firms also face serious reputational concerns for future attempts to exit through IPO (von Drathen & Faleiro, 2007). This gives rise to the possibility that the buy-out sponsors continue to add value through their monitoring role (Cao, 2008). Note that the incentives at play related with the long-run performance of RLBO, do not necessarily apply for other exit strategies, such as trade sales, where usually no stake is kept afterwards and thus returns are no longer at risk. Therefore one would expect the post-exit performance of our sample covering both trade sales and IPO to be worse than what is documented.

H4: Exits of secondary buy-outs perform differently from other buy-out investments

Regarding this hypothesis, due to lack of significant literature, evidence is mixed. Wherease Wright, Burrows, Ball, Scholes, Meuleman, & Amess, (2007) note that secondary buy-outs prolong the "the life-cycle of the buy-out structure of incentives and control mechanisms", Jelic & Wright, 2011 find that Secondary Buyout perform poorly. As a result, it is either plausible that they become more lasting in time after the PE fund has exited the investment or that secondary buy-outs as poorer performs underperform other PE-Backed firms post-exit.

H5: The decline in performance is associated with erosion in PE mechanisms

The overall literature concludes on the absence of opportunistic behaviors such as reduced advertising, capital expenditures and R&D investments, with Harford & Kolasinski (2012) concluding on the absence of evidence that the high returns of PE funds occurs at the expense of future performance. Accordingly, we expect the decline in performance to be associated with a short life of the mechanisms introduced at the time of the buy-out such as increased monitoring and higher variable payment, as documented in RLBO (Cao & Lerner, 2008)

[15] As noted before, Cao & Lerner (2006) find that RLBOs appear to consistently outperform other IPOs and the stock market as a whole, whereas Holthausen & Larcker (1996) provide some evidence of a declining operating performance following IPO

4. Data

4.1. Construction of the Sample

Constructing a sample of Private-equity deals is not a straightforward task, since most of the information is either privately held or that publicly available (or through paid subscription) is often subject to self-reporting biases[16] and occasional errors in the reporting, making the process of building a reliable dataset extremely time-consuming.

Furthermore, since the focus of this study is on all portfolio companies and not only in the already covered RLBOs, the availability of accounting data is a further and important restriction. In an initial phase we had only access to ESCP-Europe's license to Amadeus database, from Bureau van Dijk, covering the financial accounting information from 2002 to 2011 for large and very large companies in Europe[17]. Therefore, the search was initially restricted to exits taking place after 2004. Later access to Católica Lisbon's Amadeus CD-Room covering the period from 1996 to 2004 enabled to extend the search to exits after 2000. Nonetheless, the buy-out market in France is comparably more recent than other mature markets such as UK and US, being almost non-existent before 1985 (Desbrières & Schatt, 2002). This fact might partly explain why we were unable to retrive a significant number of exits prior to 2005 regardless of the source employed.

To overcome the limitations in the reporting of Private-Equity investments and exits, we follow Wright, Burrows, Ball, Scholes, Meuleman, & Amess (2007) recommendation to employ different sources to make our sample simultaneously more comprehensive and accurate (nonetheless, the sources we had available were themselves limited).

The first and most comprehensive data source employed in this study is Thomson One Banker PE-Backed Exit database, where it is possible to retrieve exit information for PE investments in France. Thomson One Banker contains information on the portfolio company name, exit type, the dates when the exit was filled and completed, the acquirer, previous PE investment dates, PE firms involved, the current portfolio status of the firm

[16] Phalippou (2009) in a analysis of the data available in PE studies notes that it is possible that investors do not report the results of a given fund in case of poor performance

[17] This made it unnecessary to restrict the deals to be above a certain value or to only include companies with sales higher than a given benchmark. These filters are often applied in buy-out studies(e.g Jääskeläinen, 2011; Gaspar, 2012) to further prevent the inclusion of deals that are misclassified as buy-outs, but are rather venture capital or growth capital

and the percentage acquired, among others. Other datasets commonly used in the Buy-out literature such as SDC and Capital IQ due to their reliable track of buy-outs unfortunately do not track exit outcomes (Harford & Kolasinski, 2012).

Secondly, the exits obtained from Thomson One Banker were further complemented by manually searching online in press releases and/or PE firms websites for information on the exit outcome for companies with reported Private Equity investments in Thomson One Banker PE Investments Screener and that are classified as formerly PE-Backed but for which no information is provided on the exit outcome.

Finally, we manually searched in the website of Private Equity firms whose main fund allocation is to buy-out capital (these information was obtained from the online guide "Le guide des sociétés de capital-investissement"[18] where detailed information on the profile of PE firms acting in France is presented) for uncovered exits in Thomson One Banker. The conjugation of these three different sources should result in a more representative sample of exit outcomes.

Once all the deals arising from the three sources were identified, accounting information was manually searched in Amadeus from Bureau van Dijk. Since the Company Name did not always match between our exit outcome sources and Amadeus, other variables were used in the matching process including Also Known As (information provided by Thomson One), Sector of Activity, Address of Headquarters, Senior Management, Phone Number and the Website of the Company. When doubts persisted on the match between the companies in both databases, the exit was removed from our sample. This decision follows Gaspar (2012) recommendation that "the experience of creating the sample has revealed that a great degree of care should be exercised when linking [buy-out] samples to available accounting data".

Similar to Gaspar (2012), we conduct a case-by-case verification of the consistency between reported exit information of Thomson One Banker, Amadeus' accounting and shareholding information and the company's website, which is a crucial process to

[18] Part of the guide is available online at http://www.editionsdumanagement.com/capital-investissement.html

obtain reliable data in the context of Private Equity studies (Desbrières & Schatt, 2002; Gaspar, 2012). All PE investors were also checked one by one[19].

Whenever reasonable doubt persisted if the characteristics of the exit and investment meet the criteria defined below, namely in terms of exact date and type of exit and the type of investment, the firms were excluded from our sample (e.g: some investments were classified as buy-outs, although the investment was done by a Private Equity fund specialized in Venture Capital Investments; others although Thomson One reported as formerly PE-Backed, in the PE's website they were declared as still in portfolio)[20]. The several filters done to the list of exits should ensure that regardless of the source employed to obtain the exit outcome all the sample transactions meet the following criteria:

(1) The initial transaction must be present in either Thomson One Banker or in the PE website with enough information to proper classify the investment
(2) The transaction must be classified as LBO, MBI, MBO, Growth Buy-out[21] or Secondary Buy-out by Thomson One Banker or in the Private Equity Website[22]. Due to doubts on the nature of PIPE[23] and Turnaround investments and their fit to the buy-out definition, they are also included in the initial sample for further analysis.
(3) The exit must be either a Trade Sale or an IPO. Exits reported as Secondary Buy-outs are excluded from this study since they don't allow to conclude on the longevity of the mechanisms put in place by PE managers
(4) Have financial accounting information available in Bureau van Dijk's Amadeus database both before and after the exit year
(5) Absence of new PE investments post-exit. Considering that this paper studies the long-run performance of formerly PE-Backed companies, companies that had PE

[19] A precious help in the process was the guide on Private Equity firms in France available in http://www.editionsdumanagement.com

[20] In other situation we were faced with the opposite scenario, where buy-out investments were misclassified as venture capital. Namely, Duke Street's, an international buy-out firm, had several rounds reported as VC

[21] The very reduced number of Growth Buy-outs in our sample is due to the fact that most of the times is not easy to distinguish them from Venture Capital Investments

[22] In case of conflicting information between Thomson One classification and the PE firm's website on the type of the investment, the PE's website was assumed to be more reliable.

[23] Private Investment in Public Equity

investments after the exit are excluded, as it could create bias in some years of the sample, making it more blurred to isolate the effect of the exit. To ensure this, the firm must be described in Thomson One as "Formerly PE Backed" and/or have no information in the shareholders history provided by Amadeus of presence of PE firms.

Table 1. PE Exits Sources and Filters

This table shows the number of deals obtained from each data source and a detailed explanation of the successive steps taken to ensure the reliability of the final sample.

	Thomsone One Banker Exit Screener	Thomsone One Banker Invesments Screener	PE-Firms Website	Total Sample
Initial Sample	611	575	252	
First Screening Process (1)	183	-	84	
Data Available in Amadeus	99	101	37	
Manual Screening (2) (3) (4)	80	17	18	115
Data Before and After the Deal	73	13	15	101
Final Manual Screening	67	12	12	91
Peers Available (6)	66	12	12	90
Final Sample				90

(1) Exits classified as Secondary Buy-outs were removed as well as exits after 2010 and duplicated exits between sources

(2) This step included removing companies whose PE investments were misclassified by Thomson One Banker, namely firms that were not French or were not buy-outs or were still PE-Backed

(3) For the firms obtained from Thomsone One Banker Investment Screener this step required the search of exit information either in Amadeus M&A information or in the respective PE website firms. Whenever the exit could not be precisely determined and/or there were doubts if the investment was through a secondary buy-out, the deal was removed from sample

(4) For the firms obtained from PE's website, this step required a one by one comparison available information in Thomson One Banker, Amadeus and the PE website, namely if the company was reported as Formerly PE Backed and it was in fact a buy-out

(5) It was not possible to retrieve a comparable peer for Eutelsat within a comparable industry and size so it was removed

In Table 1 we report the results of the successive steps taken in constructing the sample. The result highlight that a great share of deals were lost due to the impossibility of finding a match in Amadeus.

The existence of companies that do not have accounting data for both the period before and after the PE exit is likely a reflection of the fact that in trade sale sometimes the portfolio companies are incorporated in the acquirer and do not have independent accounting information from then onwards. Unlike Desbrières and Schatt (2012), firms who have during the period of interest a financial year with more than or less than 12 months from the sample are not excluded, since this would entail an important loss of

data in an already size-constrained sample. In order to correct the data, the flow variables affected where proportionally adjusted to a 12 months year, assuming a proportional distribution throughout the year. In addition, contrary to previous studies (Scellato & Ughetto, 2012), we do not immediately eliminate firms that do not report complete accounting records for all of the fiscal years included in our event window. We rather opt to see if the conclusions are affected by using companies with incomplete reporting, by constructing a sub sample with the firms with complete reporting.

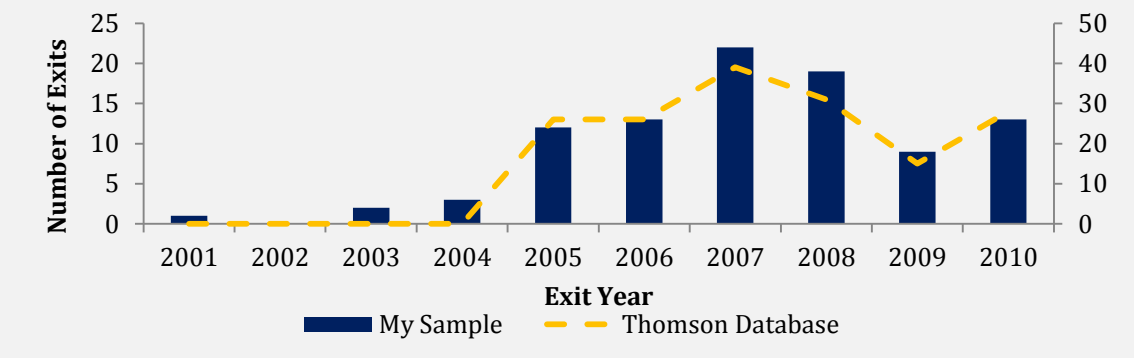
4.2.1. Descriptive Statistics of the Buy-out Exits

After completing the construction of the sample and the successive filters, the final sample includes 90 formerly PE-Backed firms with exit between 2001 and 2010 (for a full list of the exits included see Table 14). In Table 15 we further breakdown our sample of exits. The results denote that LBOs are the most common Private-Equity investment, with over 60% of total investments. Most exits happen in the second half of our time frame, after 2005, with 2007 being the year with the highest number of exits (24.4 % of total exits).

One important issue to address is if our sample of exits is representative of the French Buy-out market to ensure that conclusions of this paper can be more broadly applied. In particular, and given the restrains in obtaining accounting data to pursue with this study, we are interest in assessing (1) representativeness of our sample in term of exit characteristics and (2) in terms of the profile of sample firms.

In terms of the characteristics of the exits included in our sample, Figure 1 plots the yearly distribution of our sample with all the exits reported in Thomson One Banker Exit. As we can see, the match is strong with a similar distribution over the years.

Figure 1. Distribution of Exits in our Sample and in Thomson One Banker



In terms of sample firms, we compare our sample firms with the sample employed by Gaspar (2012). His study covers LBOs in the period 1995-2005, which reasonably overlaps with the entry period of the PE investments reported in our sample as depicted by Figure 2. The main different lies in the fact that we include investments after 2005, but apart from that the two sample resemble each other in terms of distribution of investment years.[24]

Figure 2. Distribution of PE entry dates in our sample and in Gaspar (2012)

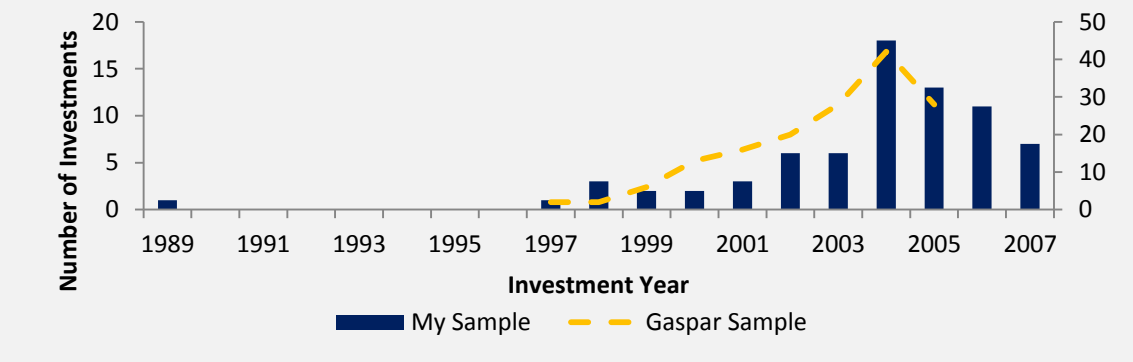


Table 2 reports the sales of the sample firms of both studies as a proxy for size. The results depict that the sample used in this study has a comparatively higher weight of large firms. This is likely due to the fact as noted before that the construction the sample was mostly limited to ESCP's license of Amadeus database which covers only Large and Very Large firms. In addition, Table 15 documents that the average holding period of our sample is below to that document in more recent studies (Strömberg, 2007; Harford and Kolasinski, 2012) with 80% of the exits in the first 4 years of the buy-out.

Table 2. Sales of our sample compared to the sample used in Gaspar (2012)

	Paper Sample		Gaspar (2012)
	Number	%	%
(0,20]	24	32.0%	52%
(20;75]	30	40.0%	35%
(75;150]	9	12.0%	6%
(150;500]	12	16.0%	6%
>500;Max]	0	0.0%	1%
Total	75	100.0%	100%

[24] The exact date of the PE firm entry into the ownership of the portfolio firm was manually confirmed, since often the last investment reported in Thomson One Banker was a reinforcement of the first buy-out and not a new investment.

5. Methodology

In one of the most comprehensive papers on how to measure abnormal operating performance, Barber & Lyon (1994) identify the three most relevant methodological choices that researchers have to do. First, a measure of operating performance has to be selected. Secondly, we need to determine a benchmark against which to measure actual performance, which Barber & Lyon (1994) refer to as developing a model of expected performance. Third a statistical model must be chosen.

5.1. Operating Performance Metrics

Barber and Lyon (1994) favor the use of operating income over earnings, pointing that operating income is a "cleaner measure than earnings" and that earnings are affected by the capital structure (interests payments are included), which do not necessarily result in increased operating productivity. Therefore, and since conclusions regarding operating performance vary accordingly with the chosen measure (Leslie & Oyer, 2008) we employ both EBITDA and Operating Income as our performance measures. However, since we have subsample of firms with understated sales, we also use Net Income as a performance measure when we include these firms in the statistical tests. Nevertheless, considering that ROA is more vulnerable to accounting manipulation the result using this measure must be interpreted with additional cautious.

To compare performance across firms, operating income must be scaled (Barber & Lyon, 1994). Most studies on public quoted company scale operating income by market value of assets, but since we study mostly private firms this is not an available option and thus we scale them either by sales or book value of assets[25] (following Martynova, Oosting, & Renneboog, 2006). The use of both scaling methods aims to consider both sources of enhanced operating performance, which might not only result from increased profitability in terms of sales but also increased productivity in the utilization of the assets in place. For instance, "a firm may sell non-productive assets, leaving EBITDA/sales unchanged but decreasing assets and so increasing the return on assets" (Guo, Hotchkiss & Song, 2009). The use of EBITDA margin has the additional advantage

[25] We consider the book value at the end of each fiscal period, which yields similar results to the use of the average between the beginning and end of period value (Barber and Lyon, 1994).

that it is not affected by changes in accounting policies such as depreciation since it compares two high level flow variables (Boucly, Sraer, & Thesmar, 2011).

Combining the performance measure with the respective scale, we present three different measures that have been previously employed in studies on the operating performance of PE-Backed firms: EBITDA margin (Gaspar, 2012; Guo, Hotchkiss, & Song, 2009), ROIC (Gaspar, 2012; Desbrières & Schatt, 2002) and ROA (Leslie & Oyer, 2008; Boucly, Sraer, & Thesmar, 2011). The previous use of this metric facilitates the comparison of the results of this study with literature. ROIC has the additional attractiveness that measures both margins and capital efficiency (Gaspar, 2012). For a detailed explanation on the formula used in the calculation of each ratio see Table 16.

Finally, given the findings of Boucly, Sraer, & Thesmar (2011) of relaxed credit constraints as a source of value to French buy-out, we wonder whether once the PE firm exits its investments the company's capacity to pursue external funding is not reduced and therefore is once again credit constrained. We try to proxy this by analyzing Sales Growth evolution relatively to our control group. Growth is also an important factor to consider when determining the long-term performance of PE-Backed firms.

5.2. Construction of the Control Group

In order to assess the economic and statistical significance of post-event changes in operating performance, operating changes must be adjusted by some benchmark (Guo, Hotchkiss, & Song, 2009). Following previous studies (Barber & Lyon, 1994; Cressy, Malipiero, & Munari, 2007), we construct a control group of Never PE Backed firms matched on industry (4 NACE or SIC code matched), size (the total assets at the year of the exit are used as a proxy for size[26]) and location (France). A fourth criteria employed in constructing the control group was data availability: when faced with two companies in the same industry close in size, we opted for the one with the highest number of year with available financial information. The criteria "Never PE-Backed" is of utter importance for this study, in order to fully isolate the effect PE investments have in portfolio companies and their duration.

[26] The firms used (and possibly the results) could have been very different depending on the size indicator selected, namely between turnover and book value (Desbrières & Schatt, 2002)

The search of peers was done either by using the Peer Group of Amadeus or, when it did not provide us with a close peer, by searching among all the companies in the same 4 NACE or SIC code the closest Never PE-Backed firm. The construction of a Never PE-Backed control group required individual manual checks using Thomson One Banker Private Equity Investment Screener and Amadeus' shareholder history and M&A information. For the peer to be included in the control group it was required that in both sources no investment of Private Equity Firm was reported. In cases where there was evidence that the peer retrieved from Amadeus was a fully owned subsidiary of a third company, this latter company was also checked for the presence of PE firms in its ownership structure. When doubts persisted if the firm had been PE-Backed in the past, the next closest peer on size was selected and the process repeated until we had one Never PE-Backed peer matched on size and industry for each sample firm.

Unlike recent studies on the buy-out operating performance (Gaspar, 2012; Scellato & Ughetto, 2012), we do not apply a propensity score matching to take into the account the fact that portfolio companies are not randomly selected by Private Equity firms nor do we match in past performance to account for performance mean reversion (Holthausen & Larcker, 1996). In principle, it should not affect the conclusions of this study since Gaspar (2012) finds results quantitatively and qualitatively similar to the propensity score matching using the more common size and industry matched firms as the performance benchmark.

In terms of size, we follow Barber & Lyon (1994) proposal of +/- 30% of total assets. Nonetheless, due to the fact that our sample only covers large and very large companies from Amadeus, for some companies it was not possible to find a peer in the same French Industry complying with this limit. In this scenario, we either (1) further relaxed the size restriction to -/+ 40% or (2) expanded the geographical limit to include all Western European countries. In line with in Barber & Lyon (1994), the year of the exit is used as the matching point and the peer group is kept constant throughout the period.

5.3. Summary Statistics

Table 3 presents summary statistics for the performance measures of PE-Backed firms and matched control firms. Following previous studies (Gaspar, 2012; Harford and Kolasinski, 2012) all variables and ratios are winsorized at the 1% and 99% level. We

separate from our main sample firms that have financial statements that resemble a holding company, by looking at the ratio of financial revenue over sales. If during the horizon period of two years before and three years after the exit a company has an abnormally high share of financial revenue (most probably dividends) it was classified as "holding company".

Our median sample firm (excluding companies classified as "holding") has sales of around 51.8 M compared to 51.4M of our median industry and sized matched control group. This is particular worth noting since it denotes that although the sampling in terms of size was done through total assets (with no significant difference as expected), differences in sales between the two groups are also statistically insignificant, thus increasing their comparability. In addition, our median formerly PE-Backed in the year before the exit has a median EBITDA margin of 9%, ROA of 7%, and carries working capital corresponding to 16% of total sales. The exposure to international markets is rather low (a median share of exports in total sales of 5%) denoting the importance of peer matching by country whenever possible.

As depicted by the results of the Wilcoxon sign test of the differences in medians, there are no statistically significant differences prior to the exit between our sample of formerly PE-Backed firms and control firms in most variables: both are equally internationalized, carry similar working capital, have similar level of debt and labor costs and profit margins are comparable as noted by EBITDA margin. The only exceptions are growth in sales, with our control firms exhibiting a far more pronounced growth in sales in the year before the exit, and ROIC. Concerning the first, when we compare the growth in sales here documented with that documented in Gaspar (2012)[27], we see that the highest difference comes from a drop in sales' growth of the PE-Backed companies. This finding can be related with our H2, based on previous evidence that PE investors are likely to exit their investment if the portfolio firm's performance deteriorates in terms of returns and cash (Badunenko, Barasinska, & Schäfer, 2009).

The higher ROIC of PE-Backed firms in the year before (a median 10% compared to 7% for comparable firms, a difference significant at 10% significance level) can be

[27] Gaspar (2012) finds a median sales growth of 10.6% for the LBO targets and 6.9% for industry peers

interpret at the light of previous studies on the PE buy-out market in French which document that PE-Backed companies outperform their peers in terms of profitability (Gaspar, 2012; Desbrières & Schatt, 2002). However, contrary to previous studies this outperformance is not extendable to other performance measures such as EBITDA margin.

In unreported tests, we checked if the inclusion of non-French peers was affecting the results, but the conclusion of a difference not statistically significant between sample and control firm holds.

In this initial analysis, we find little support for Gaspar (2012) findings of a positive impact of the buy-out namely in terms of a decrease in labor costs at LBO firms, improved capital efficiency (namely in working capital) and superior growth of sales at the time of the exit since both groups are comparable in also this features. This is not to say that our results contradict Gaspar (2012) findings. It is possible that the initial positive impact of the buy-out has vanished with time, resulting in the decision of the PE firm to exit the investment as predicted by Badunenko, Barasinska, & Schäfer (2009).

The analysis of Panel B, confirms that these set of companies with high Financial Revenue (probably from dividends) are less comparable to their peer groups (especially in the upper level of profit & loss accounts such as Sales and EBITDA), thus making any inference harder to sustain. The only exception seems to be the ROA since it already incorporates the financial revenue. As a result, we opt to not use this subsample in the majority of our tests as it would likely bias our results due to the high disparities found.

Table 3. Summary Statistics of Sample Firm and Control Group

This table shows the summary statistics for sample firms for the year before the Private Equity firms exits. Panel A presents the calculations for the main sample of companies. Panel B presents the calculations for those companies classified as holding companies. All accounting variables are obtained from Amadeus database. The columns marked as 'Control companies' refer to the statistics of firms never PE-Backed matched on total assets, same industry (4 digit NACE or SIC code) and location. ROIC is defined as EBITDA minus Operating Taxes divided by Total Invested Capital. Total Invested Capital equals fixed assets plus operating working capital plus other current assets excluding cash. Operating Working capital is defined as stock plus debtors minus creditors. The Labor costs ratio is employees costs over operating turnover. Variables were windosorized at 1% and 99%. Units are thousands of Euros for sales and total assets. All the ratios are in % expect Sales/Assets. The symbols ***,**,* denote statistical significance of the difference between means (medians) using Wilcoxon signed rank test at respectively the 1%, 5% and 10% levels. The table shows the "significance stars" of the t-tests.

Panel A- Main Sample Companies

	PE-Backed Firms				Control Companies				
Variable	N	Mean	Median	Std.Dev	N	Mean	Median	Std.Dev	Difference
Sales	71	165,410	51,894	282,851	74	158,867	51,146	284,916	6,543
Total Assets	71	156,716	38,686	297,503	74	139,777	31,192	264,510	16,938
Sales Growth (%)	68	3.34	5.00	16.34	74	10.05	7.00	21.64	-6.72 *
Ebitda Margin (%)	71	10.9	9.0	11.0	72	9.7	8.0	11.3	1.26
ROA (%)	71	6.2	7.0	8.8	71	4.3	4.0	7.7	1.86
ROIC (%)	67	12.0	10.0	15.4	70	7.8	7.0	14.3	4.24 *
Labor Costs Ratio (%)	71	24.3	21.0	15.6	69	21.3	20.0	15.0	3.02
Exports / Sales(%)	66	17.4	5.5	25.8	65	20.2	3.0	28.7	-2.84
Sales/Assets	71	1.47	1.35	0.73	74	1.55	1.37	1.01	(0.08)
WC/Sales (%)	71	16.4	16.0	14.2	74	16.7	11.5	18.2	-0.31
Leverage (%)	69	42.2	39.0	19.3	70	37.6	35.0	19.8	4.55

Panel B- Holding Companies

	PE-Backed Firms				Control Companies				
Variable	N	Mean	Median	Std.Dev	N	Mean	Median	Std.Dev	Difference
Sales	15	3,858	1,594	5,640	16	98,672	65,417	105,654	(94,813) ***
Total Assets	15	71,199	66,192	77,111	16	117,053	60,926	160,227	(45,854)
Sales Growth (%)	13	-3.69	0.00	45.72	16	7.56	3.50	35.82	-11.25
Ebitda Margin (%)	9	12.2	-1.0	24.6	16	7.8	6.5	7.3	4.47
ROA (%)	15	2.6	3.0	12.2	15	2.5	4.0	10.6	0.07
ROIC (%)	10	-4.5	0.0	20.9	16	8.7	6.0	19.2	-13.19 **
Labor Costs Ratio (%)	10	47.0	56.0	29.4	16	28.5	21.0	19.7	18.50
Exports/Sales (%)	10	10.4	0.0	24.1	15	14.1	0.0	28.8	-3.73
Sales/Assets	15	0.35	0.03	1.18	16	1.51	1.65	0.87	(1.17) ***
WC/Sales (%)	13	-13.2	0.0	46.0	16	3.8	6.5	21.3	-16.97
Leverage (%)	15	55.7	52.0	27.7	16	46.1	40.0	28.2	9.61

5.4. Model of abnormal operating performance

In our study, we use a time window extending from two years before the exit of the PE from the portfolio firm to three years after, consistent with previous studies on abnormal operating performance of PE-Backed companies (Scellato & Ughetto, 2012; Cressy, Malipiero, & Munari, 2007).

Similar with Boucly, Sraer, & Thesmar (2011), we start by graphically analyzing the impact on the profitability as measured by ROA (which allows us to incorporate the companies with high financial revenues) and EBITDA Margin. We first calculate the difference in ROA and EBITDA Margin between each of our formerly PE-Backed firms and its control firm for each year in our event window (designated by Boucly, Sraer, & Thesmar as "excess" return). We then calculate the change over our event window on the "excess return" for each firm and we average the changes experienced by all sample firms. In a first stage, we run this exercise for all the companies in our sample.[28] Then, we exclude from the analysis companies classified as holding companies and separate (1) companies with data for all the years in the window [-2;3] from all other investments and (2) PIPE and Turnaround investments from the remaining buy-out deals[29].

Our main objective at this stage is twofold. On the one hand, have a preliminar analysis of the evolution of the relative performance of our sample firms. On the other hand, we attempt to understand if PIPE and Turnaround deals have similar patterns as pure buy-out deals and if the years of missing accounting data for sample firms are biasing our results[30]. Regarding the former, it is worth noting that in PIPE investments the PE firm acquires a stake in a Publicly quoted company without bringing it to private and usually without taking a majority position. Hence, it is possible that no significant business plan is implemented resulting in little impact both before and after the buy-out. In the case of Turnaround investments, our concerns of borrowing performance from the future to increase present returns are not so fundamented since these companies

[28] For EBITDA margin the firms with understated revenues are not included

[29] Those classified as LBO, MBI, MBO and Secondary Buy-outs

[30] The missing accounting data results from data missing in Amadeus' files or exits in 2010 and 2009 which do not have data for the 3 year after the exit

prior to the PE investment are in a situation of financial distress thus requiring further capital and/or investments to recover.

The results plotted in Figure 4 and Figure 5 denote that PIPE and Turnaround deals confirm our suspicous of a different nature of these deals and accordingly we opt to drop them from the remaining analysis. In spite of this, the trend in EBITDA margin for all the 90 deals in our sample seems to be clearly downwards following the exit of the PE investment in accordance with our initial hypothesis (for ROA the result are more blurred). Futhermore, when we exclude firms with incomplete data between [-2;3][31] the downward trend starting on the year of the exit becomes more clear for both EBITDA Margin and ROA. However, contrary to previous studies, we opt to maintain firms with incomplete data and compare the results with the subsample of firms with complete financial statements, since removing them definitely would further reduce the size of our sample limiting its representativeness.

As a result, we are left with three main subsamples that will guide our analysis:

1) All "pure" buy-out deals. This subsample includes 84 exits
2) All "pure" buy-out deals excluding companies classified as holding companies. This subsample covers 68 exits
3) "Pure" buy-out deal that have accounting data for the all the years in the window of two years before the exits and three years after the exit year. The most restricted subsample, corresponds to 45 firms.

It is important to notice that for some regressions subsamples 1) and 2) might include a lower number of deals since we exclude exits in 2010 and 2009 since they never cover the three years after the exit (we only have accounting information up to 2011).

To formalize our statistical test, we conduct a Differences-in-Differences regression. In spite of its limitations, Differences-in-Differences (DD) estimation has become an increasingly popular way to estimate causal relationships (Bertrand, Duflo, & Mullainathan, 2004), having been used in earlier studies on the operating performance

[31] For EBITDA Margin companies classified as holding companies are excluded as well due to underreported values in sales and EBITDA

of PE-Backed companies, namely in Boucly, Sraer, & Thesmar (2011). Our regression is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 * PEBacked_i + \beta_2 * POST_{ij} + \beta_3 * PEBacked_i * POST_{ij} + \varepsilon_{it} \quad (1)$$

where i is a firm index and t a time (year) index measuring the distance from the year of the exit. Y_{it} is the performance variable. If firm i is PE-Backed, $POST_{it}$ equals 1 after the deal and zero before. If i is a control firm, $POST_{it}$ equals 1 when the corresponding PE-backed firm has left the PE portfolio and zero before. $PEBacked_i$ equals 1 one for PE-Backed firms and zero for control firms.

The coefficient β_3 of the interaction $PEBacked_i * POST_{ij}$ measures if there is a significant difference between the performance of PE-Backed firms before and after the exit relative to our control firms. Therefore, it the coefficient of main interest for this study and the corresponding testable hypothesis can be written as follows:

$$H_0: \beta_3 = 0$$

$$H_a: \beta_3 < 0$$

The coefficient β_1 is also of interest since it explicitly tests our initial H1 of whether PE-Backed firms outperform their peers or not. The testable hypothesis is then:

$$H_0: \beta_1 = 0$$

$$H_a: \beta_1 < 0$$

6. Results and discussion

Results using EBITDA Margin, ROIC, ROA and Sales growth as dependent variables are reported in Table 4. Similar to Harford and Kolasinski (2012) we cluster standard errors by portfolio company–control firm pair, thereby making our "inferences robust to arbitrary heteroskedasticity, serial correlation, and correlation between observations of each portfolio company and its control firm".

Table 4. Differences in Differences estimates

This table reports the difference-in-differences estimates on the average EBITDA margin, ROIC, ROA and Sales Growth before and after the exit (I) using all deals classified as buy-out with exit prior to 2009 and (II) using all deals classified as buy-out with exit prior to 2009 that have financial data available for all the years in the window [-2;3] around the exit of the PE firm. EBITDA margin is defined as EBITDA divided by operating turnover. ROIC is computed following Gaspar (2012) with EBITDA minus Depreciation minus Operating Taxes over Total Invested Capital. Total Invested Capital equals fixed assets plus other current assets excluding cash plus operating working capital. ROA is net income over total assets. Sales Growth is sales in year t divided by sales in year t-1. Before refers to the 2 year period before the PE firm exits its investment. After refers to the 3 year period post-exit. T-statistics are calculated using robust standard errors clustered by deal. * and ** denote statistical significance at the 10% and 5% levels, respectively.

	EBITDA Margin		ROIC		ROA		Sales Growth	
Before	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)
PE-Backed	11.58	10.89	11.97	13.80	8.75	9.37	7.10	7.39
Control Group	9.01	9.63	7.66	10.24	6.51	6.73	6.99	7.12
Difference	2.57	1.25	4.31	3.56	2.24	2.24	0.11	0.27
After								
PE-Backed	7.84	6.49	5.90	5.14	5.70	4.99	2.17	2.55
Control Group	7.62	8.33	7.19	10.31	5.05	5.96	3.36	3.65
Difference	0.22	-1.84	-1.29	-5.18	0.65	0.65	-1.19	-1.10
DiD	**-2.3***	**-3.0****	**-5.6***	**-8.74****	-1.5	**-3.6***	-1.2	-1.3
Nº of Deals	55	41	50	38	55	50	49	40
R^2 (%)	0.02	0.03	0.02	0.05	0.03	0.03	0.05	0.03

As depicted by the regression results, there seems to be evidence of a decline in performance following the exit of the PE firm regardless of the performance measure used. The results are clearly stronger when the firms with missing years are excluded from our sample, which can be interpreted as a bias introduced in the average performance measures both before and after the exit due to the missing years.

In the three years following the exit of the PE firm from portfolio companies, the difference of EBITDA Margin of portfolio companies relative to our control group is on average reduced by 2.3 % yearly, a value that rises to 3.1% if we only consider the firms

with full data. The results are even more pronounced for ROIC, the performance measure that incorporates both profitability and capital efficiency, with the DD estimates suggesting a sharp decline post-exit in ROIC between 5.6% and 8.7% relative to the Never Private Backed control group, significant at 10% and 5% respectively.

It is also noteworthy that we do not find for any of the studied variables evidence of superior performance of PE-Backed companies as documented by previous studies on the French buy-out market, since in all regressions the variable *PE-Backed* is insignificant.

In addition, it is possible that our results are impacted by averaging the two years before and the three years following the Private Equity exit. Accordingly, it also is plausible that the observed change in performance is not homogenous in time, a feature that is hidden when using averaged values. To overcome this limitation, we propose to introduce yearly dummies to the original regression (1) following Gaspar (2012):

$$Y_{it} = \beta_0 + \beta_1 * \text{PEBacked}_i + \sum_{\tau:\tau\neq -1} \boldsymbol{\gamma_{t+\tau}} * \text{POST}_{\boldsymbol{t+\tau}} + \sum_{\tau:\tau\neq -1} \boldsymbol{\delta_{t+\tau}} * \mathbf{POST_{t+\tau}} * \text{PEBacked}_i + \varepsilon_{it} \quad \textbf{(2)}$$

$\text{POST}_{t+\tau}$ is a dummy variable that takes the value 1 for an observation in period $t + \tau$, with τ ranging from -2 to +3 except 1 and 0. Therefore, the coefficient $\boldsymbol{\gamma_{t+\tau}}$ captures the change in performance affecting both sample firms and control group observed in period between $t + \tau$ and the year before the exit (t-1) which is used as a reference point. Consequently, $\delta_{t+\tau}$ (the interaction coefficient) measures the additional change in performance of our PE Backed firms relative to the existing difference to the control group in t-1. We depart from Gaspar (2012) since we exclude from the regression the observation from the year of the exit since it is a period of great change (Desbrières & Schatt, 2002) and we do not use firm fixed effect but introduce the dummy PEBacked as the main treatment of interest of this study[32]. Results are plotted in Table 5.

Table 5 confirms the initial intuition that the effect is not homogeneous across the period studied, with the most significant change in the period immediately following the exit of the PE fund as denoted by the higher absolute value of the PE-Backed x Post t+1

[32] However, in robustness tests we test whether the inclusion of fixed firm effects affects the results

coefficient and the higher t-stat. Interestingly, the negative effect of the exit in ROIC and ROA seems to disappear in the end of our time window, since for these variable the coefficient PE-Backed x Post t+1 is no longer significant although still negative. Contrary, the drop in performance measured by EBITDA Margin is statistically significant at 5% in year t+3, reflecting a significant deterioration in margins.

Table 5. Regression Analysis of performance with yearly dummies

This table reports the estimates on the impact of the exit on EBITDA margin, ROIC, ROA and Sales Growth. In (I) we include all deals in our sample classified as buy-out with exit prior to 2009 and (2) all deals classified as buy-out with exit prior to 2009 that have financial data available for all the years in the window [-2;3] around the exit of the PE firm. For EBITDA Margin and ROIC companies classified as holding are not included in both (I) and (II). EBITDA margin is defined as EBITDA divided by operating turnover. ROIC is computed following Gaspar (2012) as EBITDA minus Depreciation minus Operating Taxes over Total Invested Capital. Total Invested Capital equals fixed assets plus other current assets excluding cash plus operating working capital. ROA is net income over total assets. Sales Growth is sales in year t divided by sales in year t-1.The variable PE-Backed is an indicator variable that takes the value 1 for PE-Backed firms and zero otherwise. The variables Post t–2 to Post t+3 (the "Post dummies") take the value 1 if an observation respects to the period of 2 years before the exit date, etc. up to 4 years after the exit date, and zero otherwise. The year before the exit (Post t-1) is used as the reference point. The year of the exit is also excluded. The variables Post t – 2 x PE-Backed up to Post t+3 x PE-Backed represent interactions between the Post dummies and the PE-Backed variable. To save space, the coefficients of the Post dummies are not shown. T-statistics are calculated using robust standard errors clustered by deal. *,** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Dependent Variable:	EBITDA Margin		ROIC		ROA		Sales Growth	
	(I)	(II)	(I)	(II)	(I)	(II)	(I)	(II)
PE-Backed	0.009	0.012	0.046	0.039	0.017	0.018	0.039	-0.037
	(0.48)	(0.68)	(1.29)	(1.03)	(0.9)	(0.92)	(0.79)	(-1.1)
PE-Backed x Post t-2	0.010	-0.003	-0.054	-0.042	-0.004	0.001	-0.052	0.014
	(0.54)	(-0.3)	(-1.8)*	(-1.5)	(-0.2)	(0.08)	(-0.7)	(0.29)
PE-Backed x Post t+1	-0.016	**-0.047**	-0.053	**-0.080**	**-0.029**	**-0.051**	-0.097	0.012
	(-0.9)	**(-3.4)*** **	(-1.5)	**(-1.9)***	**(-1.6)***	**(-2.7)*** **	(-1.5)	(0.29)
PE-Backed x Post t+2	-0.001	**-0.034**	-0.057	**-0.097**	0.004	-0.017	-0.062	0.046
	(-0.0)	**(-2.5)** **	(-1.9)*	**(-2.7)*** **	(0.25)	(-0.9)	(-0.9)	(1.06)
PE-Backed x Post t+3	-0.023	**-0.040**	-0.041	-0.052	-0.008	-0.013	-0.025	**0.106**
	(-1.2)	**(-2.3)** **	(-1)	(-1.1)	(-0.3)	(-0.5)	(-0.4)	**(1.72)***
Constant	0.092	0.095	0.088	0.118	0.071	0.076	0.114	0.104
	(6.38)***	(6.65)***	(3.46)***	(5.04)***	(5.71)***	(5.89)***	(3.83)***	(3.95)***
POST dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	500	394	454	366	588	486	474	380
Adjusted R^2	0.0138	0.026	0.0302	0.0443	0.0217	0.0242	0.0456	0.053

6.1. Drivers of change in operating performance

Having evidence pointing out to a decline in performance post-exit, it is important to understand the factors that are driving this downward trend, so we further complement the previous analysis by decomposing performance in its main drivers. In particular, we look for evidence if this decline is a direct consequence of the erosion of PE governance and monitoring mechanisms introduced during the buy-out period (namely no longer presence in the board, reduction in management equity ownership or lost of the expertise of PE managers) or contrarily represents evidence of opportunistic behavior.

Regarding the former, it is very likely that the erosion in performance (both in terms of profitability and productivity of assets) is a result of an erosion of the improvements verified at the moment of the entry. Previously improvements in performance in French buy-outs have been associated with favorable evolutions of gross margins, increase in labor productivity and improvements in capital efficiency, most notably in working capital management (Gaspar, 2012). They are the reflection of the two of the sources of value at the firm level analyzed: governance engineering and operating engineering through new business models. Financial Engineering seems to play a minor role in French Market as noted before and we expect it to continue to play a minor role since we have detected no significant differences in leverage prior to exit suggesting comparable incentives with our control group.

Hence, we hypothesize that the documented evidence of drop in operating performance is more likely reflected in factors related with an efficient and productive allocation of resources such as Working Capital Management or Gross Margins.

Regarding our second hypothesis (that alternatively the decline in profitability and productivity might reflect past actions by PE firms to increase returns at the expenses of future performance) we look for evidence in the relative behavior in sales. Actions such as reduced capital expenditure, advertising or investment in innovation are examples of "short-term myopia". Unfortunately, Amadeus's financial data does not provide us with any of these values, so we cannot ascertain if our sample of formerly PE-Backed firms under invests prior to the exit relative to its control group. Nonetheless, since most of these actions are related with the capacity of a firm to sell more (either by a higher brand awareness through more advertising, better customer service or newer and

improved product range through more innovation), we hypothesize that evidence of such behaviors should translate into either (1) a drop in asset productivity (the company will not be able to sell as much as in the past with the same assets in place); (2) a decline in employee productivity as measured by the weight of labor costs in sales (if we assume no change in wages, an increase in this ratio corresponds to less sales per employee)[33]; (3) a reduced sales growth compared to the control group. In the previous section, the DD regression with sales growth as a dependant variable has provided evidence of a comparable evolution compared with the control group while the insignificance of the coefficient PE-Backed suggested no difference in pre and post exit period. However, we conduct additional analysis to improve our understanding of this phenomenon.

Table 7 presents the results of estimating the equation (2) using WC/Sales, Material Costs, Leverage, Asset Turnover and Labor Costs as dependent variables. A first conclusion that can be drawn is that we once again find little ground for reduction of leverage as explanatory variable of the decline in operating performance post-exit. This is line with the document specificity of the French buy-out market, where financial engineering plays a minor role compared to the governance and operational changes implemented by the PE firm. However, contrary to the results of the summary statistics, Panel shows some evidence that PE-Backed seem to carry higher debt than our non-PE Backed firms as measured by the significant PE-Backed coefficient at 10% significance. Nevertheless, when we include firms with missing years in Panel (1), the statistical significance of leverage seems to vanish, thus not allowing us to withdraw any definite conclusion on this matter since the results do not hold.

It is worth noting that the regression output depicts that the loss in operating performance seems to find its roots in declining capital efficiency and margins (measured by the rising weight of material costs in total sales) compared to our control group of Never PE-Backed firms. Interestingly, the rise in Working Capital is not immediate, but rather appears two years after the exit and seems to gain further momentum in year t+3.

[33] Alternatively we could have directly used Sales/Employees. However, the employees figure provided by Amadeus were missing for most of the deals

The results are once again stronger for the subsample of firms with complete accounting information (Panel 2). For this subsample, the ratio of Working Capital to Sales seems to increase in a control adjusted basis by 5% two years after the exit relative to the year before the exit. This value goes up to 6.3% in the three year after. These values are significant at 10% and 5% significance level respectively. Furthermore, the rise in material costs is significantly higher in all the years following the exit, with the difference raging from plus 4.1% to 5.1% of total sales. The fact that no difference is found prior to the exit when comparing two years before with the year before, allow us to be more confident that the exit of the PE firm from the ownership structure is the decisive factor in the downward performance. Moreover, Asset Turnover and the ratio of labor costs to sales do not experiment any significant change post-exit, showing therefore little support of previous opportunistic behavior from Private Equity funds.

So far the evidence is largely consistent with the conclusion that the deteriorating performance is mostly linked to short-life of PE mechanisms, as reflected by the reduced Working Capital Efficiency and Margins. To further ascertain if we can exclude the possibility of opportunistic behavior of PE firms, we conducted Wilcoxon rank tests to the difference in sales growth for all the years of our horizon period. The results, presented in Table 6, depict that apart from the year before there is no significant difference in the pace of sales growth, suggesting a comparable capacity to attract customers. Hence, the results do not seem to support that the returns of PE funds come from opportunistic behavior that damage future competitiveness of portfolio companies.

Table 6. Wilcoxon Rank Sum Test on the Differences in Sales Growth

	-2	-1	0	1	2	3
p-value	0.42	0.07*	0.93	0.95	0.60	0.75
Median Difference (%)	3.00	-2.00	-0.50	-1.00	0.00	1.00
Mean Difference (%)	3.65	-7.70	-0.17	0.42	1.66	4.00

It is also interesting to notice that the only year with a statistically significant difference is the year before the exit, with a sudden negative difference in growth sales relative to our control group. This evidence seems to corroborate the fact that PE firms time their exit to when they are not able to further grow their portfolio companies.

Table 7. Regression Analysis of performance drivers of formerly PE-Backed firms

This table reports the estimates on the impact of the exit on WC/Sales, Material Costs/Sales, Leverage, Asset Turnover and Labor Costs/Sales. In (1) we include all deals in our sample classified as buy-out with exit prior to 2009 and (2) all deals classified as buy-out with exit prior to 2009 that have financial data available for all the years in the window [-2;3] around the exit of the Private Equity firm. In both subsamples (1) and (2) companies classified as holding are not included. Working Capital to sales is defined as working capital divided by sales. Working Capital is equal to stock plus debtors minus creditors. Material Costs/ sales is computed as the ratio of material costs to sales. Leverage is equal to long-term debt plus short term debt divided by total assets. Asset turnover is defined as sales divided by total assets. The variable PE-Backed is an indicator variable that takes the value 1 for PE-Backed firms and zero otherwise. The variables Post t–2, etc. up to Post t+3 (the "Post dummies") represent dummy variables that take the value 1 if an observation respects to the period of 2 years before the exit date, etc. up to 3 years after the exit date, and zero otherwise. The year before the exit (Post t-1) is used as the reference point and does not appear in the regression. The year of the exit is also excluded. The variables Post t – 2 x PE-Backed up to Post t+3 x PE-Backed represent interactions between the Post dummies and the PE-Backed variable. To save space, the coefficients of the Post dummies are not shown. T-statistics are calculated using robust standard errors clustered by deal. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)					(2)				
Dependent Variable:	WC/Sales	Material Costs	Leverage	Asset Turnover	Labor Costs	WC/Sales	Material Costs	Leverage	Asset Turnover	Labor Costs
PE-Backed	-0.019	-0.017	0.056	-0.072	0.038	-0.043	-0.007	**0.072**	-0.049	0.031
	(-0.6)	(-0.4)	(1.47)	(-0.4)	(1.87)*	(-1.2)	(-0.1)	**(1.73)***	(-0.2)	(1.32)
PE-Backed x Post t-2	**0.052**	0.018	0.038	-0.037	-0.007	0.031	0.014	0.025	0.039	**-0.014**
	(1.87)*	(0.7)	(1.57)	(-0.4)	(-0.9)	(1.52)	(0.44)	(0.88)	(0.75)	**(-1.8)***
PE-Backed x Post t+1	-0.001	0.029	0.017	-0.101	-0.006	0.011	0.033	0.024	-0.077	0.002
	(-0.0)	(1.31)	(0.65)	(-1.2)	(-0.6)	(0.42)	(1.33)	(0.72)	(-1.0)	(0.22)
PE-Backed x Post t+2	0.031	**0.038**	0.009	-0.086	-0.012	**0.050**	**0.048**	0.033	-0.065	-0.001
	(1.32)	**(1.95)***	(0.3)	(-0.9)	(-1.2)	**(1.96)***	**(2.27)****	(0.89)	(-0.7)	(-0.1)
PE-Backed x Post t+3	**0.049**	**0.063**	0.004	-0.114	-0.020	**0.063**	**0.051**	0.018	-0.098	-0.002
	(1.92)*	**(2.79)*****	(0.09)	(-1.0)	(-1.2)	**(2.29)****	**(2.53)****	(0.36)	(-1.0)	(-0.1)
Constant	**0.186**	**0.405**	**0.355**	**1.604**	**0.193**	**0.202**	**0.413**	**0.341**	**1.705**	**0.199**
	(6.65)***	**(8.64)*****	**(12.5)*****	**(11.0)*****	**(10.7)*****	**(6.36)*****	**(7.23)*****	**(11.3)*****	**(10.0)*****	**(9.35)*****
POST dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	510	384	480	510	486	398	310	376	398	390
Number of Deals	55	45	52	55	54	41	35	39	41	41
Adjusted R^2	0.007	0.004	0.032	0.006	0.013	0.006	0.005	0.060	0.003	0.011

6.2. Cross Sectional Analysis

As noted in our initial hypothesis statement, previous studies on the operational impact of PE funds in portfolio firms have highlighted cross sectional discrepancies, either related with the PE firm characteristics or the portfolio company itself. In this section, we look for similar patterns in our heterogeneous sample of investments and PE Backed firms. This is particular important since differences in the long-term impact of PE investments at the firm level can affect the results already documented, with some firms and/or investments driving the results. One important consideration is that our analysis is constrained by the small sample (especially the low number of firms with complete accounting information) hurting our capacity to further divide it in subsamples. These limitations are not exclusive to this study (see Gaspar, 2012).

At the Investment Level

In our analysis, we consider three different characteristics of the PE investments which are commonly addressed in the literature: primary buy-out versus secondary buy-out; club versus no club deals; and lastly IPO exit versus trade sale exit. The results for the DD estimates are presented in Table 8. Regarding the choice of exit strategy, these result need to be analyzed with particular cautious since we have an extremely small number of exits through IPO in our sample. However, when we look only to the regression statistics of exits through Trade Sales, the results are stronger than those documented for the all sample in Table 4 and except for ROA they hold even when we consider firms with incomplete accounting data for the horizon period considered.

It seems to point out to our initial H3.2 that portfolio companies that were exited through sale to other industrial players perform relatively worse compared to those that underwent an IPO (who in this small sample even seem to slightly outperform their control group). It is probably the reflection of the better alignment of long-term incentives between PE firm and PE-Backed companies in IPOs since PE firms usually keep a sizable stake, sometimes with lock-up agreements. This is of particular importance, because it changes the way we look at previous studies on RLBO (where as noted the overall evidence is of a comparable to slightly worse performance) and makes us wonder if they do not understate the true change in performance of the PE investments post exit. In addition, the negative post-exit performance documented in

our sample seems to be driven mostly by Secondary Buy-out rather than Primary Buy-out. As a matter of fact, when we remove Secondary Buy-outs from our sample, DD estimator is no longer significant.

Table 8. Difference in Difference estimates for subsamples at the investment level

This table reports the difference-in-differences estimates of the interaction term PE-Backed*POST on the average EBITDA margin and ROA before and after the exit. Panel A includes all deals classified as buy-out with exit prior to 2009 that have financial data available for all the years in the window [-2;3] around the exit of the PE firm. Panel B includes all deals classified as buy-out with exit prior to 2009 regardless of data availability. EBITDA Margin is defined as EBITDA divided by operating turnover. ROA is net income over total assets. POST is a dummy variable that takes the value 0 for the 2 year period before the PE firms exits its investment in the PE-Backed firm and 1 for the 3 year period post-exit. The variable PE-Backed is an indicator variable that takes the value 1 for PE-Backed firms and zero otherwise. A deal is classified as secondary when there are documented previous buy-out rounds from other PE firms and Primary otherwise. Club deal refers to deals where more than one PE firm acquires a stake in the portfolio company. Trade sale refers to exit through sale to an industrial acquirer. T-statistics are calculated using robust standard errors clustered by deal. *,** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. The remaining output of the regression (constant term, the POST dummy and the PE-Backed dummy) are omitted to save space.

Panel A: Sample with Complete Accounting Data

	Buy-out		Club		Exit Strategy	
	Primary	Secondary	Club	No club	IPO	Trade Sale
EBITDA Margin						
PE-Backed*POST	-0.02	**-0.09**	-0.02	**-0.04**	**0.03**	**-0.04**
T-Stat	(-1.3)	**(-3.0)****	(-0.9)	**(-2.4)****	**(9.96)****	**(-2.8)*****
Deals	33	8	18	23	3	38
ROA						
PE-Backed*POST	-0.02	**-0.09**	-0.02	**-0.05**	0.05	**-0.04**
T-Stat	(-1.2)	**(-3.8)*****	(-0.5)	**(-2.1)****	(1.2)	**(-2.2)****
Deals	42	8	27	24	3	47

Panel B: Sample including firms with incomplete accounting data

	Buy-out		Club		Exit Strategy	
	Primary	Secondary	Club	No club	IPO	Trade Sale
EBITDA Margin						
PE-Backed*POST	-0.01	**-0.09**	-0.03	-0.02	**0.03**	**-0.03**
T-Stat	(-0.9)	**(-3.0)****	(-1.1)	(-1.4)	**(9.96)****	**(-2.0)****
Deals	46	8	24	30	3	51
ROA						
PE-Backed*POST	-0.01	**-0.07**	-0.01	-0.02	0.05	-0.02
T-Stat	(-0.3)	**(-2.3)***	(-0.2)	(-1.1)	(1.2)	(-1.1)
Deals	55	9	28	36	3	61

Regarding club deals, our expectation was mixed due to contradictory past evidence on the impact of club deals. The subsample with complete accounting data seems to indicate a negative effect of club deals in the long-term performance of portfolio firms, but the fact that both PE-Backed*Post interaction coefficient are insignificant when we include the firms with missing years makes it impossible to confirm this hypothesis.

At the Portfolio company level

The incorporation of firm-level characteristics seems to indicate a heterogeneous post-exit operating performance of our sample firms (which when taken as the average can be affecting our results in previous sections), regardless of whether we exclude firms with years missing in the event window or not.

The main conclusion is that smaller firms seem to experience a more significant drop in performance relative to their control group (whether measured by ROA or EBITDA Margin). Consistent with our previous findings pointing out to a short-life of PE mechanisms, it is possible that smaller firms have a less professionalized management as well as reduced monitoring and corporate governance processes and therefore were more dependent on the improvements introduced by the PE firm. One possible concern is that the significance in results of smaller firm is being cause by some other non-related characteristics such as including secondary buy-outs. We address this concern in unreported regressions where we removed secondary buy-outs, arriving to similar conclusions with a significant difference in the DD coefficient at 5 %.

Finally, when we distinguish between industrial and service companies, the results concerning the change in performance relative to our control are mixed, changing with the performance measure employed and the subsample. Probably, a more detailed division should be employed in terms of industry which is not possible due to the dimension of our sample.

Table 9. Difference in Difference estimates for subsamples at the firm level

This table reports the difference-in-differences estimates of the interaction term PE-Backed*POST on the average EBITDA margin and ROA before and after the exit. Panel A includes all deals classified as buy-out with exit prior to 2009 that have financial data available for all the years in the window [-2;3] around the exit of the PE firm. Panel B includes all deals classified as buy-out with exit prior to 2009 regardless of data availability. For a detailed description of the dependent variables see previous table. A firm is considered to have high leverage if its ratio of long term debt plus short term debt over total assets is higher than the median ratio for our sample in the year before the exit. Likewise, a firms is classified has high size if its book value of assets is higher than the median value of the book value of assets in our sample. The fact that the sample cuts are not even is due to the fact that this classification was done using all the firms in our sample. T-statistics are calculated using robust standard errors clustered by deal. *,** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. The remaining output of the regression (constant term, the POST dummy and the PE-Backed dummy) are omitted to save space.

Panel A: Sample with Complete Accounting Data

	Sector		Leverage		Size	
	Industry	Services	Low	High	Low	High
EBITDA Margin						
PE-Backed*POST	-0.03	**-0.03**	**-0.03**	-0.03	**-0.04**	-0.02
T-Stat	(-1.5)	**(-1.9)***	**(-2.5)****	(-1.2)	**(-3)*****	(-0.7)
Deals	17	23	22	19	26	16
ROA						
PE-Backed*POST	**-0.06**	-0.02	**-0.04**	-0.02	**-0.06**	-0.01
T-Stat	**(-2.0)***	(-0.8)	**(-2.0)***	(-0.7)	**(-2.4)****	(-0.2)
Deals	21	29	27	24	29	21

Panel B: Sample including firms with incomplete accounting data

	Sector		Leverage		Size	
	Industry	Services	Low	High	Low	High
EBITDA Margin						
PE-Backed*POST	-0.02	-0.03	-0.02	-0.03	**-0.04**	**0.01**
T-Stat	(-0.9)	(-1.7)*	(-1.2)	(-1.5)	**(-2.6)****	**(0.39)**
Deals	23	30	31	23	32	22
ROA						
PE-Backed*POST	-0.02	-0.01	**-0.04**	-0.01	**-0.05**	0.01
T-Stat	(-0.7)	(-0.6)	**(-2.0)***	(-0.3)	**(-2.1)****	(0.56)
Deals	27	36	27	32	34	34

6.3. Robustness Checks

For an initial robustness test, we redo DD regressions (1) and (2) using size, leverage and industry dummies as control variables. The results are quantitatively and qualitatively similar as to the initial DD regressions whose results are reported in Table

17 with some of them being stronger statistically speaking as measured by both the level of the coefficients and their p-value. This leads to the main conclusion of robust results of post-exit underperformance. For the 12 regressions we ran, 9 present some evidence of a statistical significant underperformance post-exit. The 3 exceptions are the regression (2) for EBITDA Margin with yearly dummies using the subsample with accounting information missing and both regressions of ROA using the subsample with years missing. A possible explanation can lie in the bias introduced from missing years.

The introduction of control variables, provides additional evidence that PE-Backed firms outperform their peers in terms of both EBITDA Margin and ROIC as illustrated by the positive and significant PE-Backed coefficient of column (1) and (3) of Panel A and column (3) of Panel B. However, the significance disappears when we use yearly data in column (2) and (4), making it difficult to conclude with confidence on this matter. We conduct a further robustness check by rerunning regression (2) using fixed firm effects instead of the dummy variable PE-Backed. The results plotted in Table 18 present very similar conclusions, adding further robustness to our results.

In addition, considering that previous literature has noted that results in abnormal performance studies vary accordingly to the methodology employed we redo our analysis employing an alternative method based on the adjusted changes in performance. This methodology is also widely found in other studies on the impact of buy-out in operating performance of PE-Backed companies (Gaspar, 2012; Guo, Hotchkiss, & Song, 2009). Consequently, we computed changes in formerly PE-Backed firms at differents points in time adjusted by the changed observed in the control group for the corresponding time window.

More formally, we compute changes in performance for the PE-Backed firm from year t0 to t1 (setting t0=-1 and t1=-2;+1,+2,+3) as follows:

$$\Delta y_{k,\tau o,\tau 1} = y_{k,t+\tau 1} - y_{k,t+\tau 0}$$

But since we are interested in analyzing the relative performance torwards a control group, we need to adjusted these changes by the control group:

$$y^{Net}_{k,\tau+\tau} = y_{k,t+\tau} - y_{Control,k,t+\tau 0}$$

The corresponding change in control adjusted performance is therefore:

$$\Delta y^{Net}_{k,\tau o,\tau 1} = y^{Net}_{k,t+\tau 1} - y^{Net}_{k,t+\tau 0}$$

As a result, the hypothesis that we are interested in studying is translated as follows:

$$H_0: median\left(\Delta y^{Net}_{k,\tau+\tau}\right) = 0$$

$$H_a: median\left(\Delta y^{Net}_{k,\tau+\tau}\right) \neq 0$$

Following Barber and Lyon (1996) we use the Wilcoxon signed-rank test to test our null hypothesis since it has proven to deal better with the extreme observations in the distribution of the operating performance measures.

The results reported in Table 10 highlight a similar picture in terms of EBITDA Margin to the DD regression, but not for ROA and ROIC. In spite of the negative control adjusted performance (present in both the negative value and the rising percentage of firms with a negative adjusted evolution) they are not significantly different from zero at 10%.

Looking at EBITDA Margin, they deteriorate significantly post-exit for both control group and our sample of PE-Backed firms (probably reflecting the impact of part of our sampling period including the financial crisis). However, the unadjusted negative change in EBITDA Margin for our sample of formerly PE-Backed firms goes from a drop in 2% in the first two years to minus 4% in the third year post exit. As a result, the net change in EBITDA Margin in year three is negative at 3% statistically significant at 5%.

Regarding the evolution of ROIC, Table 10 depicts the fact that we have a statistically negative unadjusted evolution for the PE-Backed firms for all the years after the exit with a particular sharp median decline of 6% three years after. However, control firms also experience a drop in ROIC during the analogous period of around to 2%. The combined result is that the unadjusted change, although negative for all the period covered, is not significantly different from zero. Thus we can only conclude on a comparable to slight worse performance of PE-Backed firms in terms of ROIC. Similar conclusions apply for ROA, with an unadjusted negative evolution for all the periods after the exit but not before. Another important conclusion is that we confirm previous evidence that growth in sales is not significantly different between the two groups.

Table 10. Evolution of Performance of PE-Backed firms post-exit

Each cell presents the median value of changes in ROIC, EBITDA/sales, ROA and sales growth for PE Backed firms (excluding PIPE and Turnaround Investments) and a control group relative to fiscal year ending prior to completion of the buy-out (year -1). Years –3,..., +4 represent full fiscal years defined relative to the year of the exit (date 0). Changes are measured using the arithmetic difference between two dates. Control-adjusted change is the median change in the difference between the value of the variable for a PE- Backed firm and the median change for its control group as explained in the text. Significance levels of medians are based on a two-tailed Wilcoxon rank test. The symbols ***,**,* denote statistical significance at respectively the 1%, 5% and 10% levels.

	Years relative to Exit date				
	From -3 to -1	From -2 to -1	From -1 to +1	From -1 to +2	From -1 to +3
ROIC					
Change	-1.48%	0.40%	-2.95% **	-3.61% **	-6.01% ***
Control Change	-1.02%	0.00%	-2.01% **	-2.38% *	-1.66% *
Control-Adjusted Change	0.50%	0.61%	-0.61%	-1.53%	-3.52%
% of Control Adj. Change <0	49%	46%	53%	58%	60%
N	41	54	58	48	35
EBITDA/Sales					
Change	-0.52%	0.10%	-1.94% ***	-1.97% **	-4.00% ***
Control Change	-0.24%	-0.15%	-0.58%	-1.28% ***	-1.45%
Control-Adjusted Change	1.00%	0.23%	-1.53%	-0.52%	-3.03% **
% of Control Adj. Change <0	51%	48%	64%	54%	65%
N	47	60	64	54	40
Sales Growth					
Change		1.98%	1.23%	-0.38%	-7.58% *
Control Change		-0.14%	-3.24% *	-4.51% **	-6.25% ***
Control-Adjusted Change		4.32%	3.90%	1.06%	0.34%
% of Control Adj. Change <0		39%	43%	48%	50%
N		49	63	52	40
ROA					
Change	-1.43%	-0.22%	-2.53% ***	-0.42%	-3.48% **
Control Change	-0.37%	-0.12%	-0.40% *	-1.68% ***	-0.69% *
Control-Adjusted Change	-0.75%	0.36%	-2.31%	0.36%	-2.14%
% of Control Adj. Change <0	51%	45%	57%	48%	60%
N	59	76	79	62	48

6.4. Discussion of main findings

Having completed the results, it is now important to refer back to our initial hypothesis that have guided our analysis and whether or not this studied has provided with compelling and consistent information that allows either to reject our accept the initial hypothesis.

H1: PE-Backed firms in France outperform their peers

We find mixed support for this hypothesis when we consider the entire period. Overall, the main results of the regressions conducted do not depict outperformance of our sample of formerly PE-Backed firms. However, when we add control variables in the sample with complete data there is some evidence of outperformance in terms of both EBITDA Margin and ROIC. This might suggest that previously the better performance was obscured by other factors and that controlling for size, industry and leverage reveals the documented outperformance of PE target in French. In addition, we also find evidence of a better ROIC in the year before the exit. However, the lack of consistency in these findings prevents any definite conclusion on this matter. At best, we can conclude that PE-Backed firms seem to outperform their peers before but not after the exit.

H2: PE firms exit their investment when the portfolio company performance starts to deteriorate

Although returns do not seem to deteriorate in the years before the exit, as denoted by the absence of statistical significance in the POST*PE-Backed dummy for t-2, we find some evidence of exit timing. In fact, Private Equity firms exit the investment following the only year in our horizon period around the exit when the growth in sales of PE-Backed firms is significantly below that of industry peers. This finding is consistent with the hypothesis that the exit happens when PE firms can no longer grow the portfolio company.

H3: After the exit, the operating performance of formerly PE-Backed companies deteriorates relative to a control group of similar companies

The overall evidence seems to confirm this hypothesis especially in terms of EBITDA Margins and ROIC. These findings holds for the subsample with the more complete data set whether we use averaged returns, yearly return, introduce control variables or

introduced firm fixed effects. In addition, our expectation that firms exited through trade sale underperform firms exited by IPO is also confirmed. This is of particular importance, because it changes the way we look at previous studies on RLBO (where as noted the overall evidence is of a comparable to slightly worse performance) and makes us wonder if they do not understate the true change in performance of the PE investments post exit.

However, the fact that (1) introducing firms with missing year of accounting information and (2) using an alternative methodology of adjusted changes (commonly employed in studies on the operating impact of PE firms in target) have produced less significant results cast some doubts on the consistency of the findings. Hence, we conclude that evidence is supportive of a comparable to likely underperformance of PE-Backed firms post-exit.

H4: Exits of secondary buy-outs perform differently from other buy-out investments

Our study shows that the majority of post-exit decline in performance is concentrated in secondary buyout, thus confirming our initial hypothesis and indicating that it is a negative difference. Nonetheless, the relative small sample of secondary buyouts advices for further study.

H5: The decline in performance is associated with erosion in PE mechanisms

The overall evidence presented in this study is consistent with this hypothesis and similarly to previous studies leads to the rejection of the criticism that PE-firms boost their returns at the expenses of long-term value generation. In unreported tests, we conducted a Wilcoxon sign test on EBITDA Margin, ROIC and ROA three years after the exit, which yielded insignificant differences between formerly PE-Backed and control group. This alongside with evidence already discussed indicating a possible outperformance prior to the exit, indicates converge in performance due to a decline in the DD but no absolute underperformance after the exit.

Furthermore, due to the impossibility of directly observing the pre-exit value of long-term investment, we hypothesize that a below industry average long-term investment during the buy-out period should translate into a below average sales growth in the future. The comparable sales growth evolution after exit associated combined with the

negative evolution of WC/Sales and material costs/sale provide evidence that the decline in relative performance is not the result of opportunistic behavior. Consistent with previous studies in RLBO that document a rapid dilution in the differences in behavior and variable pay, we interpret these findings as a loss in the value of the superior mechanisms implemented by Private Equity firms with their exit. As a result, we conclude that they are most short life in nature.

Additional discussion

One important question is if the decline in performance here documented is not related with the broader topic of performance of mergers and acquisitions. The performance following M&A in general is not clear. For example, Martynova, Oosting, & Renneboog (2006) find that the raw profitability of the combined firm decreases significantly following the takeover, but that this decrease becomes insignificant after controlling for the performance of the peer companies.

In a revision of 130 studies from 1971 to 2001 on M&A performance, Bruner (2001) concludes that the "mass of research suggests that target shareholders earn sizable positive market returns, that bidders (with interesting exceptions) earn zero adjusted returns, and that bidders and targets combined earn positive adjusted returns. On balance, one should conclude that M&A does pay". Nonetheless, it would be of interest to compare the effective changes in performance in post-exit performance of formerly Private Equity Backed firms to a controlled group of other mergers and acquisitions. Although this is not common practices in studies on operational performance of PE-Backed companies, it might be an important perspective to consider in the future.

6.5. Managerial Implications

The managerial implications of this study are of particular importance, in particular to regulators, to PE firms, to formerly PE-Backed firms and to the strategic acquirers. For the regulators, this study represents yet another piece of evidence on the impact Private Equity firms have on the portfolio companies. As noted, we find no evidence that PE opportunistically borrow from future performance to boost short term.

For PE firms who have serious reputational issues not only for raising capital for future funds but also for finding profitable exits, the apparent short-term live of the

mechanism they put in place might mean that they have to revisit their business plans, trying to make them more long-term living.

Managers of PE-Backed firms should themselves try to understand what is behind this drop in performance and try to reverse this trend since it seems to be associated with an improve in performance post-buyout but not post-exit. Last but not least, this should make strategic acquirers more cautious when bidding for PE-Backed firms to avoid overpaying for performance that might not be sustainable (Harford & Kolasinski, 2012). Also our findings point out the need to try to preserve the mechanisms PE firms had implemented and that previous studies have documented to improve performance when integrating formerly PE-Backed firms.

7. Limitations and Future Research

First of all, this study is affected by the long lasting debate in financial literature on the suitability of ex-post accounting data to measure both business and financial performance (Desbrières & Schatt, 2002). This makes the study of financial performance of buy-outs particular difficult, since it relies heavily in accounting measures which have been shown to be plagued by earnings manipulation (Cumming, Wright, & Siegel, 2007).

In spite of this controversy, we believe that it is a necessary perspective to take into account in the study of the long-run performance of PE-Backed firms and one that so far had been less explored in the current literature on the long-run Performance. Interestingly, it has been often used in studying the short run effect of PE investments. We thus consider this study to be an important contribution to the very limited existing literature in the long-run operating performance of PE-Backed companies.

However, the most important and obvious limitation of the present study was undeniably the limitation faced in obtaining a sample of Formerly PE-Backed firms. In addition, studying the long-run performance of PE-Backed companies exited through trade sale is faced with additional challenges.

First, covering all exits outcomes excluding secondary sales means that the large majority of information required is held by private firms for which financial information is not always available. This restriction happens at two different levels. On the one hand, the reporting of both exits and investments in Thomson One Banker is likely to not cover all the deals. We try to partly overcome this limitation by employing the different sources we had available in the construction of our sample of events, as recommended by Wright, Burrows, Ball, Scholes, Meuleman, & Amess (2007), but it was not feasible to fully eliminate this limitation.

On the other hand, the accounting information of portfolio companies is usually not readily available. Secondly, information even when available is also less detailed and comprehensive than that existing for public companies, who have to comply with stricter reporting and transparency rules. This also happens because the available

accounting information for private firms is related to tax files, which has different information requirements from academic studies.

In addition, occasionally the formerly PE-Backed company following acquisition by a strategic acquirer is fully integrated in the acquiring company with the initial legal entity dissolved. Hence, commonly no further independent reporting is available after the year of the exit. In the most comprehensive study of operating performance post-exit (and the one most similar in spirit to this study), Jelic & Wright (2011) exclude investments exits through trade sale for this reason. This is a limitation that is unlikely to be fully overcome in future research, since the best proxy would be to study the operating performance of the acquirer but depending on the relative size of both it would be difficult to disentangle effects. One of the few solutions as done in this study is to focus in the companies that continue to provide unconsolidated statements.

To make matters worse, the access to accounting data for the purpose of this study was further limited since ESCP's license of Amadeus only covers large and very companies for the period starting in 2002 up to 2011. Posterior access to Católica Lisbon' license to Amadeus- although it additionally covers medium companies it does so for a period (1995-2005) where we have little information on exit outcomes in France- did not remove this important limitation. This resulted in a sample of PE-Backed firms larger that often documented.

In addition, these data constraints presented us with clear trade-off between having more deals and thus a sample likely to be more representative of the buy-out universe or having more reliable data. As an example, Gaspar (2012)[34] excludes both the deals for which data is not consistently composed of either consolidated or nonconsolidated accounts throughout the horizon period and Desbrières & Schatt (2002) remove all firms with fiscal years different from 12 months[35]. As we have seen with our subsample analysis, data defects have an important impact in our results.

[34] Who provides the most detailed explanation of the sampling process employed

[35] This is due to the changes in the date of closing financial statements for enjoying of group tax integration, which under French law requires that holding and operating company have a common 12-month accounting reporting period.

Consequently, future research should first start by gathering a bigger and cleaner sample of formerly PE-Backed firms. The findings of this paper clearly stress the importance of this new approach to fully understand the PE investment cycle and the impact it has on the economic environment.

Moreover, we do not reflect in this analysis the well documented specificity of the French market of a high importance of family owned business. It would be an interesting perspective to explore in the future.

8. Conclusion

In this study we examine the operating performance of Formerly Private Equity Backed firms subsequent to the exit of the PE fund. We relate the changes in performance with changes in both the efficient allocation of resources and profitability. Our major finding is that the changes in operating performance post-exit were either comparable or slightly worse to those observed for comparable Never PE-backed firms. The results are consistent for EBITDA Margin and ROIC and are not affected by averaging value before and after the exit. ROA, a performance metric that is more easily manipulated, shows weaker conclusions regarding a post-exit decline.

An important consideration is that our results seem to be influenced by the quality of the data, with the subsample of firms with complete accounting information for the two years before and three years after the exit denoting a sharper decline in performance. Nonetheless, due to the constraints in sample size, we cannot exclude the possibility that this subsample has some bias and so future research is required with a bigger sample.

To further test the robustness of our results we introduced control variables commonly used in the literature. We concluded that results showing a decline in post-exit performance in adjusted terms are not affected and in fact are statistically stronger for some of the regressions. Nevertheless, applying a different methodology based on adjusted changes yielded weaker results statistically speaking, not allowing us to exclude the possibility of a comparable performance change following the PE fund exit.

We provide evidence that this apparent deterioration in performance is associated with (1) a less favorable evolution of gross margins as measured by the rising ratio of material costs to sales and (2) a reduced capital efficiency proxy by the working capital to sales.

The overall evidence seems to point out to that this slight decline in adjusted performance is better explained by the erosion in the monitoring effect of the PE firm and the improvements implemented during the buy-out period. This is consistent with previous studies that document conclude that wealth creation for PE funds does not occur at the expenses of other parties (Harford & Kolasinski, 2012) and that document a that the actions implemented by PE disappear once they exit (Cao & Lerner, 2006).

We arrive at this conclusion by noting that if opportunistic behaviors such as reduction of advertising or R&D had taken place during the buy-out period it was expected that sales growth would have a negative evolution compared with our control

group in the long-run. However, we cannot rule out that the rising material costs are not the result of previous cuts in investments[36], since Amadeus database does not include information on capital expenditures.

We also document that the long-run performance of PE-Backed is not homogeneous across both the different types of Private Equity investments and across firms. Regarding the former, Secondary buy-out and investments exited through trade sale in our sample perform worse compared to other PE investments. At the firm level, smaller firms experience a more significant decline in performance relative to their control group than bigger firms. Once again, consistent with previous studies on the French buy-out market, we find that leverage is not a significant factor in explaining differences in performance, neither compared with the control group or within Formerly PE-Backed companies.

These findings have important implications for all industries players. For portfolio companies it highlights the need to try to replicate the incentives put in place by PE firms to continue to enjoy of superior performance. For PE firms, they might need to revisit their business plans to ensure that their actions are not short in duration. This could hurt their reputation with possible implications in their capacity to find exits in a profitable way. Lastly, for regulators it come as another evidence indicating (although not in a definite way) that PE firms do not opportunistically try to increase their returns at the expenses future performance of portfolio companies.

However, further research extending these findings to a wider and more representative sample is important to confirm this trend. This paper launches the debate on the long-run performance of firms exited both through IPO and Trade Sales, contributing to the existing literature that to the best of our knowledge provided operating long-term performance evidence only for IPOs and Secondary Buy-outs.

[36] Some of the studies document a reduction in capital expenditures following the buy-out (Harford & Kolasinski, 2012)

References

Acharya, V. V., Gottschalg, O., Hahn, M., & Kehoe, C. (2011). Corporate Governance and Value Creation: Evidence from Private Equity.

Amess, K. (2003). The effect of management buyouts on firm-level technical inefficiency: evidence from a panel of UK machinery and equipment manufacturers. *THE JOURNAL OF INDUSTRIAL ECONOMICS* .

Badunenko, O., Barasinska, N., & Schäfer, D. (2009). Are private equity investors good or evil? . *DIW Berlin Discussion Paper No. 901* .

Barber, B. M., & Lyon, J. D. (1994). Detecting Abnormal Operating Performance: The Empirical Power and Specification of Test Statistics.

Bertrand, M., Duflo, E., & Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics* , 249-275.

Boucly, Q., Sraer, D., & Thesmar, D. (2011). Growth LBOs. *Journal of Financial Economics* .

Bruner, R. F. (2001). Does M&A Pay? A Survey of Evidence for the Decision-Maker. *Journal of Applied Finance, Vol. 12, No. 1* .

Cao, J. (2008). Do Buyout Sponsors Time Decision of RLBO and Exit?

Cao, J., & Lerner, J. (2006). The Performance of Reverse Leveraged Buyouts. *NBER Working Paper No. 12626* .

CMBOR. (2008). The impact of Private-Equity backed Buyouts on Employee Relations. *Research Paper* .

Cressy, R., Munarib, F., & Malipiero, A. (2007). Playing to their strengths? Evidence that specialization in the Private Equity industry confers competitive advantage.

Cumming, D. J., Wright, M., & Siegel, D. S. (2007). Private Equity, Leveraged Buyouts and Governance. *Journal of Corporate Finance* , Vol. 13, pp. 439-460 .

Degeorge, F., & Zeckhauser, R. J. (1991). Information Handling and Firm Performance: Evidence from Reverse Lbos. *NBER Working Paper No. w3798* .

Degeorge, F., & Zeckhauser, R. (1993). The Reverse LBO Decision and Firm. *Journal of Finance 48* , 1323-48.

Desbrières, P., & Schatt, A. (2002). The Impacts of LBOs on the Performance of Acquired Firms: the French Case.

Ernst&Young. (2012). Game-changing regulation? The perceived impact of the AIFM Directive on private equity in Europe.

Gaspar, J.-M. (2012). The performance of french LBO firms: new data and new results. *Presses univ. de Grenoble* , 2012/2 - Vol. 33; 7-60.

Gilligan, J., & Wright, M. *Private equity demystified: An explanatory guide.*

Guo, S., Hotchkiss, E. S., & Song, W. (2009). Do Buyouts (Still) Create Value? *Journal of Finance* .

Harford, J., & Kolasinski, A. (2012). Do private equity sponsors sacrifice long-term value for short-term profit? Evidence from a comprehensive sample of large buyouts and exit outcomes.

Harris, R. S., Jenkinson, T., & Kaplan, S. N. (2012). Private Equity Performance: What Do We Know? *Chicago Booth Research Paper No. 11-44* .

Holmström, B. R., & Kaplan, S. (2001). Corporate Governance and Merger Activity in the U.S.: Making Sense of the 1980s and 1990s. *MIT Dept. of Economics Working Paper No. 01-11* .

Holthausen, R. W., & Larcker, D. F. (1996). The financial performance of reverse leveraged buyouts. *Journal of Financial Economics 42* , 293 332.

Jelic, R., & Wright, M. (2011). Exits, Performance, and Late Stage Private Equity: the Case of UK Management Buy-outs. *European Financial Management, Vol. 17, No. 3* , 560–593.

Jensen, M. C. (1986). Agency Cost Of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review, Vol. 76, No. 2* .

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers.

Jensen, M. C. (1989). Eclipse of the public corporation. *Harvard Business Review* .

Kaplan, S. (1989). Management buyouts: Evidence on taxes as a source of value. *Journal of Finance, 44(3)* , 611-632.

Kaplan, S. N., & Strömberg, P. J. (2008). Leveraged Buyouts and Private Equity.

Kaplan, S. (1989). The effects of management buyouts on operating performance and value. *Journal of Financial Economics 24* , 217-254.

Kaplan, S., & Schoar, A. (2003). Private Equity Performance: Returns, Persistence and Capital Flows. *MIT Sloan School of Management Working Paper 4446-03* .

Lerner, J., Sorensen, M., & Strömberg, P. J. (2008). Private Equity and Long-Run Investment: The Case of Innovation. *EFA 2009 Bergen Meetings Paper* .

Leslie, P., & Oyer, P. (2008). Managerial incentives and value creation: Evidence from private equity. *NBER Working Paper 14331* .

Levis, M. (2010). The Performance Private Equity Backed IPOs.

Lichtenberg, F. R., & Siegel, D. (1990). The effects of leveraged buyouts on productivity and related aspects of firm behavior. *NBER Working Paper Series no. 3022* .

Ljungqvist, A., & Richardson, M. P. (2003). The Cash Flow, Return and Risk Characteristics of Private Equity. *NYU, Finance Working Paper No. 03-001* .

Martynova, M., Oosting, S., & Renneboog, L. (2006). The long-term operating performance of European mergers and acquisitions. *ECGI Working Paper Series in Finance* .

Phalippou, L. (2009). Risk and Return of Private Equity: An overview of data, methods and results.

Popov, A., & Roosenboom, P. (2009). Does Private Equity investments spur innovation? Evidence from Europe. *ECB Working Paper Series no. 1063* .

Robinson, D. T., & Sensoy, B. A. (2011). Cyclicality, Performance Measurement, and Cash Flow Liquidity in Private Equity. *Charles A. Dice Center Working Paper No. 2010-021* .

Scellato, G., & Ughetto, E. (2012). Real effects of private equity investments: Evidence from European buyouts. *Journal of Business Research* .

Smith, A. J. (1990). Corporate ownership structure and performance: The case of management buyouts . *Journal of Financial Economics, Volume 27 Issue 1* , 143-164.

Sousa, M. (2010). Why do Private Equity firms sell to each other?

Strömberg, P. J. (2009). The Economic and Social Impact of Private Equity in Europe: Summary of Research Findings.

Strömberg, P. (2007). The new demography of private equity.

Tavares, P. C., & Minardi, A. M. (2010). Does Private Equity Investment Work as a Quality Certification for IPOs in Brazil?

van Frederikslust, R. A., & van der Geest, R. A. (2001). Initial returns and long-run performance of private equity-backed initial public offerings on the Amsterdam Stock Exchange. *EFMA 2001 Lugano Meetings* .

Von Drathen, C. (2007). The Performance of Private Equity-Backed Initial Public Offerings in Germany. *London Business School Working Paper* .

von Drathen, C., & Faleiro, F. (2007). The Performance of Leveraged Buyout-Backed Initial Public Offerings in the UK. *London Business School Working Paper* .

Von Drathen, C., & Faleiro, F. (2008). The Performance of Leveraged Buyout-Backed Initial Public Offerings in the UK.

Wright, M., Burrows, A., Ball, R., Scholes, L., Meuleman, M., & Amess, K. (2007). The implications of alternative investment vehicles for corporate governance: a survey of empirical research. *OECD Working Paper* .

Wu, T. (1997). Management buyouts and earnings management. *Journal of Accounting Auditing and* , 373-389.

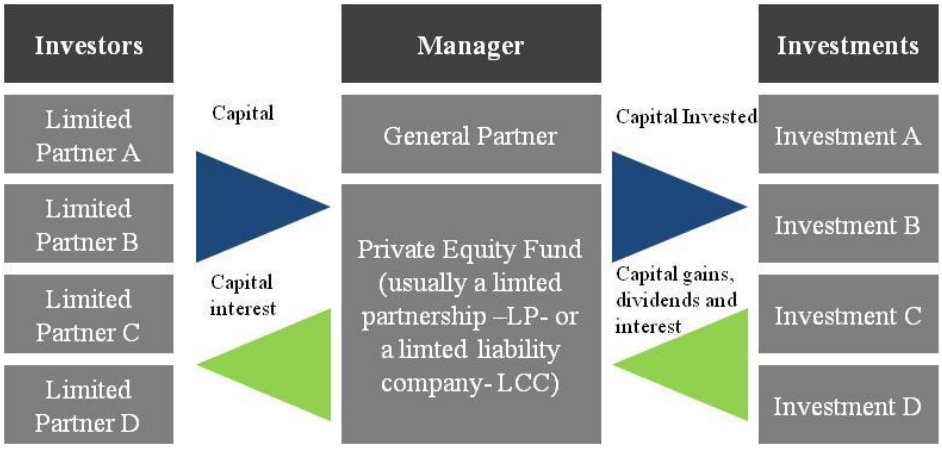
Appendix

Table 11. Standard Deviations 1996-2006 (all values expressed are %)

All Private Equity	20.5
Venture Capital	44.5
Mezzanine	10.2
Buy-outs	21.0
S&P 500 Index	14.9

Source: Deutsche Bank Group, Thomson Financial, Phillips Hager & North Investment Management Ltd

Figure 3. Typical Private Equity Fund Structure and main cash flows



Source: Adapted from HSBC report and by John Gilligan and Mike Wright.

Table 12. Literature on Private Equity Fund Performance

Author	Sample	Finding
Ljungqvist & Richardson (2003)	73 funds over the last two decades	Find internal rates of return averaging 19.81 percent, net of all fees, for their sample of funds. This translates in excess returns on the order of five to eight percent per annum relative to the aggregate public equity market
Cumming & Walz (2004)	259 buy-outs from the U.S. and the U.K. from 1984-2001	Find an average (median) return to LBOs of 26.1% (31.4%) and an average return to MBOs to be 21.5% (18.5%) net of market index returns (country-specific Morgan Stanley Capital International (MSCI))
Kaplan & Schoar (2005)	746 funds from 1980-2001	Document that private equity generates excess returns on the order of five to eight percent per annum relative to the aggregate public equity market.
Philappou and Gottschalg (2006)	1328 mature private equity funds from 1980 to 2003	Find an average fund performance net-of-fees of 3% per year below that of the S&P 500 for mature funds. Adjusting for risk brings the underperformance to 6% per year.
Harris, Jenkinson & Kaplan (2012)	nearly 1400 private equity (buy-out and venture capital) funds in the US	Provide evidence that the average U.S. buy-out fund performance has exceeded that of public markets for most vintages for a long period of time. The outperformance versus the S&P 500 averages 20% to 27% over the life of the fund, corresponding to more than 3% per year.

Table 13. Summary of Long-run performance of PE-Backed firms[37]

Author	Period	Sample	Findings
DeGeorge & Zeckhauser (1993)	1983-1987	62 RLBOs	RLBO outperform their peers prior to the IPO, but the difference is performance declines afterwards
Holthausen & Larcker (1996)	1983-1988	90 RLBOs	Find significantly better accounting performance at the time of the IPO, but no evidence of stock outperformance after the IPO.
Amess (2003)	1986-1997	UK MBOs	Presents results indicating a superior performance of MBO firms before the buy-out which is further enhanced in the four years after the PE entry but not beyond
Cao & Lerner (2006)	1980-2002	496 RLBOs	Consistent long-term outperformance over the US market as a whole and other IPOs
von Drathen & Faleiro (2007)	1990-2006	128 LBO-Backed IPOs	PE-Backed IPOs outperform the stock market and non-PE-backed IPOs. Find that the higher the share capital held by the buyout group after the offering, the higher the outperformance
Von Drathen (2007)	1990 -2007	138 PE-Backed	PE-Backed IPOs outperform the stock market over the three-year following IPO
Leslie & Oyer (2008)	1996- 2005	144 PE Backed	Find little evidence that PE-owned firms outperform public firms in profitability or efficiency
Cao (2008)	1981-2006	594 RLBOs	Find no evidence of operating performance deterioration following IPO
Lerner, Sorensen, & Strömberg, 2008	1980-2005	495 LBOs	Find no evidence that LBOs are associated with a decrease in patent filling
Mario Levis (2010)	1992-2005	204 PE IPOs	Private equity-backed IPOs exhibit superior performance in the 36 months following the IPO
Tavares & Minardi (2010)	2004-2007	53 Brazilian IPOs	Provide evidences that PE investment works as a quality certification for IPOs in Brazil
Jelic & Wright (2011)	1980–2009	1,225 buy-outs in UK	Find a lack of significant changes in efficiency and profitability following initial public offerings. For secondary buyout they document a long term decrease in profitability
Boucly et al. (2011)	1994-2004	839 French LBOs	Document a rise in capital expenditures post-buyout
Harford & Kolasinski (2012)	1993-2001	788 US private equity buyouts	Find that portfolio companies do not under invest and that special dividends to sponsors are not correlated with future financial distress.

[37] Adapted from Cumming, Wright, & Siegel (2007) with additional findings added by the authors of this study

Table 14. Exits Included in the final sample

Nº	Company Name	Exit Year	Exit Type	Entry Year	Entry Type
1	Dinno Sante	2010	Trade Sale	2007	MBI
2	Ekis	2010	Trade Sale	2006	MBO
3	Fountaine Pajot SA	2010	Trade Sale	2002	LBO
4	Louisiane	2010	Trade Sale	2005	MBO
5	MWBrands SAS	2010	Trade Sale	2006	LBO
6	Faceo SA	2010	Trade Sale	2007	LBO
7	Leasecom Group SAS	2010	Trade Sale	2007	Secondary Buy-out
8	Medica SA	2010	IPO	2006	Secondary Buy-out
9	Ramsay Sante SA	2010	Trade Sale	2005	LBO
10	Serimax SAS	2010	Trade Sale	2004	LBO
11	Marinvest	2010	Trade Sale	2006	LBO
12	PERRIN	2010	Trade Sale	2007	MBO
13	Autobar	2010	Trade Sale	2004	LBO
14	Spontex	2009	Trade Sale	1989	LBO
15	Linedata Services	2009	Trade Sale	2007	PIPE
16	Orangina Schweppes France SAS	2009	Trade Sale	2006	LBO
17	BFi OPTiLAS International S.A.S.	2009	Trade Sale	2006	LBO
18	BJ Partenaires	2009	Trade Sale	2005	LBO
19	Monier SAS	2009	Trade Sale	2007	LBO
20	Services et Gestion Informatiques Logiciels	2009	Trade Sale	2007	LBO
21	Ortec	2009	Trade Sale	2002	LBO
22	Clestra SA	2008	Trade Sale	2000	LBO
23	Julie Owandy Group	2008	Trade Sale	2004	LBO
24	Plein Vent	2008	Trade Sale	2005	MBO
25	Rivard SA	2008	Trade Sale	2000	MBO
26	Score Groupe	2008	Trade Sale	2004	MBO
27	Depolabo SA	2008	Trade Sale	2006	MBO
28	Du Pareil Au Meme	2008	Trade Sale	1998	LBO
29	Eider	2008	Trade Sale	1998	LBO
30	Epolia	2008	Trade Sale	2003	LBO
31	Faab	2008	Trade Sale	2004	Turnaround
32	ICM Group	2008	Trade Sale	2001	LBO
33	Insert France	2008	Trade Sale	1999	LBO
34	Micromania SA	2008	Trade Sale	2006	LBO
35	Societe National Maritime Corse Mediterranee	2008	Trade Sale	2006	LBO
36	Mateleco	2008	Trade Sale	2004	LBO
37	Bertin Technologies	2008	Trade Sale	1999	LBO
38	YACHTS DE PARIS	2008	Trade Sale	2006	Secondary Buy-out
39	Datavance Group Sarl	2008	Trade Sale	2005	LBO
40	CAE Groupe	2007	Trade Sale	2002	LBO
41	Cogedim	2007	Trade Sale	1998	LBO
42	Corona Medical SAS	2007	Trade Sale	2001	MBO
43	Faure Herman	2007	Trade Sale	2004	LBO
44	Groupe Bouhyer SAS	2007	Trade Sale	2004	LBO

45	Groupe TPX	2007	Trade Sale	2005	LBO
46	Ideale Residence Mobile	2007	Trade Sale	2004	MBO
47	IRH Environnement	2007	Trade Sale	2003	LBO
48	JWA Actuaries	2007	Trade Sale	2005	LBO
49	Lariviere	2007	Trade Sale	2005	LBO
50	Marathon Group, The	2007	Trade Sale	2006	LBO
51	SAUR	2007	Trade Sale	2005	LBO
52	Valdunes Entreprises	2007	Trade Sale	2004	LBO
53	Financiere Cameca S.A.S	2007	Trade Sale	2005	Secondary Buy-out
54	Laho Luxembourg	2007	Trade Sale	2005	Secondary Buy-out
55	LBC S.A.	2007	Trade Sale	2004	Secondary Buy-out
56	Dammann	2007	Trade Sale	2005	LBO
57	Bonus	2007	Trade Sale	2005	MBI
58	Condifresh SA	2007	Trade Sale	2004	LBO
59	MMP	2007	Trade Sale	2004	LBO
60	Oxbow	2007	Trade Sale	2003	LBO
61	Clextral Group	2007	Trade Sale	2004	MBO
62	Axmed	2006	Trade Sale	2003	LBO
63	Calvet	2006	Trade Sale	1997	MBO
64	Gardiner Group Europe	2006	Trade Sale	2003	LBO
65	Legrand SA	2006	IPO	2002	LBO
66	moulineauxSportfive S.A.	2006	Trade Sale	2004	LBO
67	Oldham Gas	2006	Trade Sale	2001	LBO
68	Comptage Immobilier Services	2006	Trade Sale	2004	Secondary Buy-out
69	Comptoir des Cotonniers	2006	Trade Sale	2004	MBO
70	GIBAUD SAS	2006	Trade Sale	2002	Secondary Buy-out
71	France Air	2006	Trade Sale	2004	LBO
72	GroupeFlo	2006	Trade Sale	2003	PIPE
73	CS Dermatologie	2006	Trade Sale	2002	LBO
74	BCS	2006	Trade Sale	NA	LBO
75	CFC Expert	2005	Trade Sale	2003	LBO
76	CGBI	2005	Trade Sale	2005	PIPE
77	Drakkar Holdings SA	2005	Trade Sale	2002	LBO
78	Entrepose Contracting	2005	IPO	2002	LBO
79	International Metal Services	2005	Trade Sale	2004	Turnaround
80	La Calhene	2005	Trade Sale	2001	LBO
81	La Monegasque Vanelli SAS	2005	Trade Sale	2002	LBO
82	Librairie du Savoir	2005	Trade Sale	1998	MBO
83	Ipsen	2005	IPO	2000	LBO
84	Panzani Lustucru	2005	Trade Sale	1998	LBO
85	Atys	2005	Trade Sale	2002	LBO
86	Nexity	2005	Trade Sale	2000	Secondary Buy-out
87	Antargaz	2004	Trade Sale	2001	LBO
88	Labeyrie	2004	Trade Sale	2002	PIPE
89	Joyau	2003	Trade Sale	2000	Secondary Buy-out
90	LeNappageModern	2001	Trade Sale	1998	Secondary Buy-out

Table 15. Final Sample Breakdown

The following table shows the main characteristics of the deals included in the final sample in terms of type of investment, exit year, holding period and sales of portfolio firms. The reported sales are in Millions of Euro and respect to the year before the exit.

Panel A: Breakdown by Type of Investment		
	Number	%
LBO	56	62.2
MBI	2	2.2
MBO	13	14.4
Secondary Buy-out	11	12.2
PIPE	4	4.4
Growth Buy-out	2	2.2
Turnaround	2	2.2
Total	90	100.0

Panel B: Breakdown by Exit Year		
	Number	%
2001	1	1.1
2002	0	0.0
2003	1	1.1
2004	2	2.2
2005	12	13.3
2006	13	14.4
2007	22	24.4
2008	18	20.0
2009	8	8.9
2010	13	14.4
Total	90	100.0

Panel C: Breakdown by Time to Exit		
	Number	%
(0,2]	30	33.3
(2;4]	42	46.7
(4;6]	7	7.8
>6	10	11.1
Total	89	98.9

Panel D: Breakdown by Sales		
	Number	%
(0,20]	24	31.6
(20;75]	31	40.8
(75;150]	9	11.8
(150;500]	12	15.8
>500;Max]	0	0.0
Total	76	100.0

Table 16. Variable definitions

Indicator	Measurement
Return on Assets (ROA)	Net Income / Total Assets
Return on Invested Capital (ROIC)	(EBITDA - Operating Tax) / (Fixed Assets + Other Current Assets except Cash + Working Capital)
EBITDA Margin	EBITDA / Sales
Sales Growth	Sales t+1/Sales t -1
Leverage	(Long Term Debt + Other Non Current Liabilities except Provisions + Loans + Other Current Liabilities) / Total Assets
Labor Cost Ratio	Cost Employees/Sales
Working Capital	Stock + Debtors – Creditors
Working Capital/Sales	Working Capital /Sales
Asset Turnover	Sales/Total Assets

Figure 4. Mean Adjusted change in EBITDA Margin

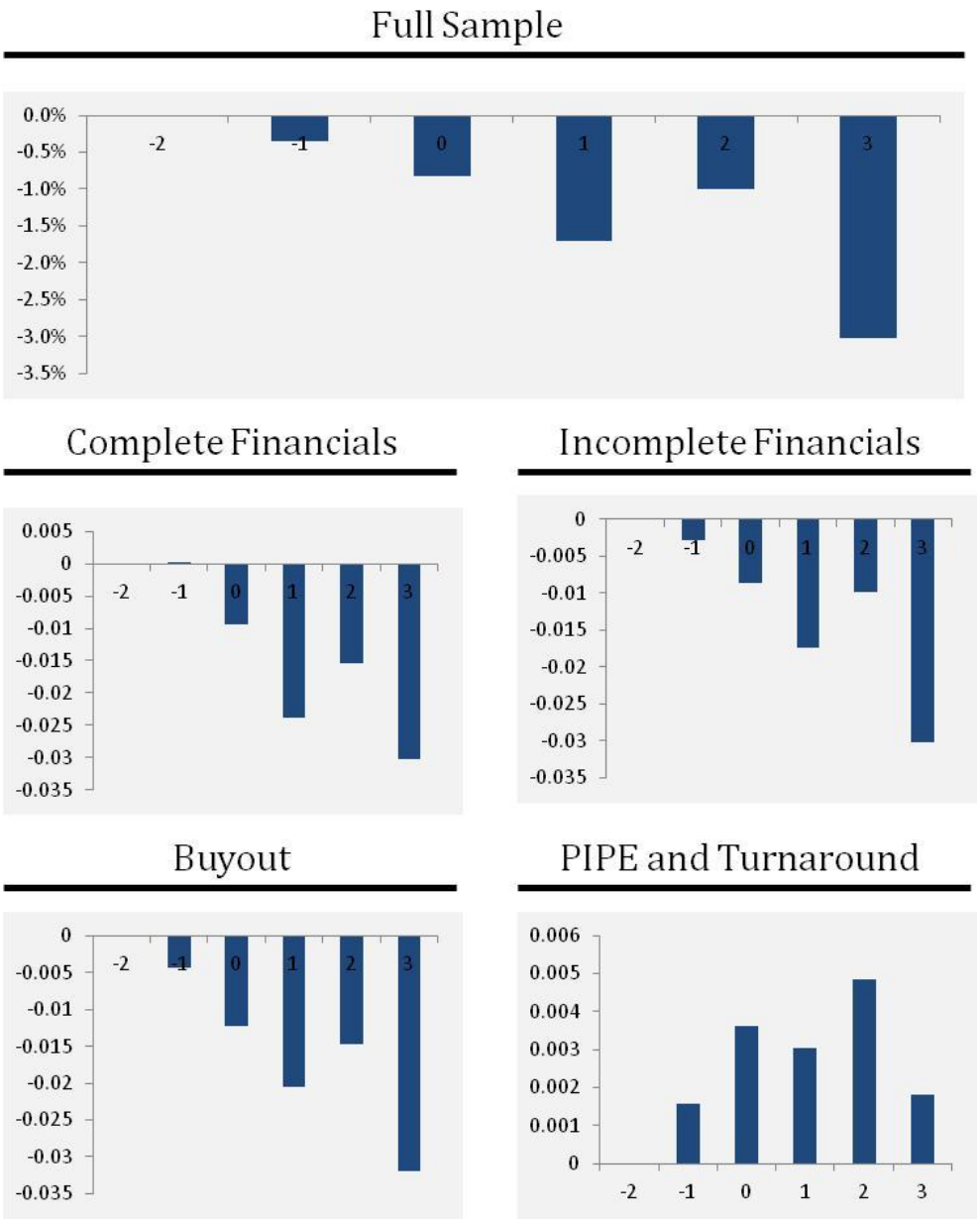


Figure 5. Mean Adjusted change in ROA

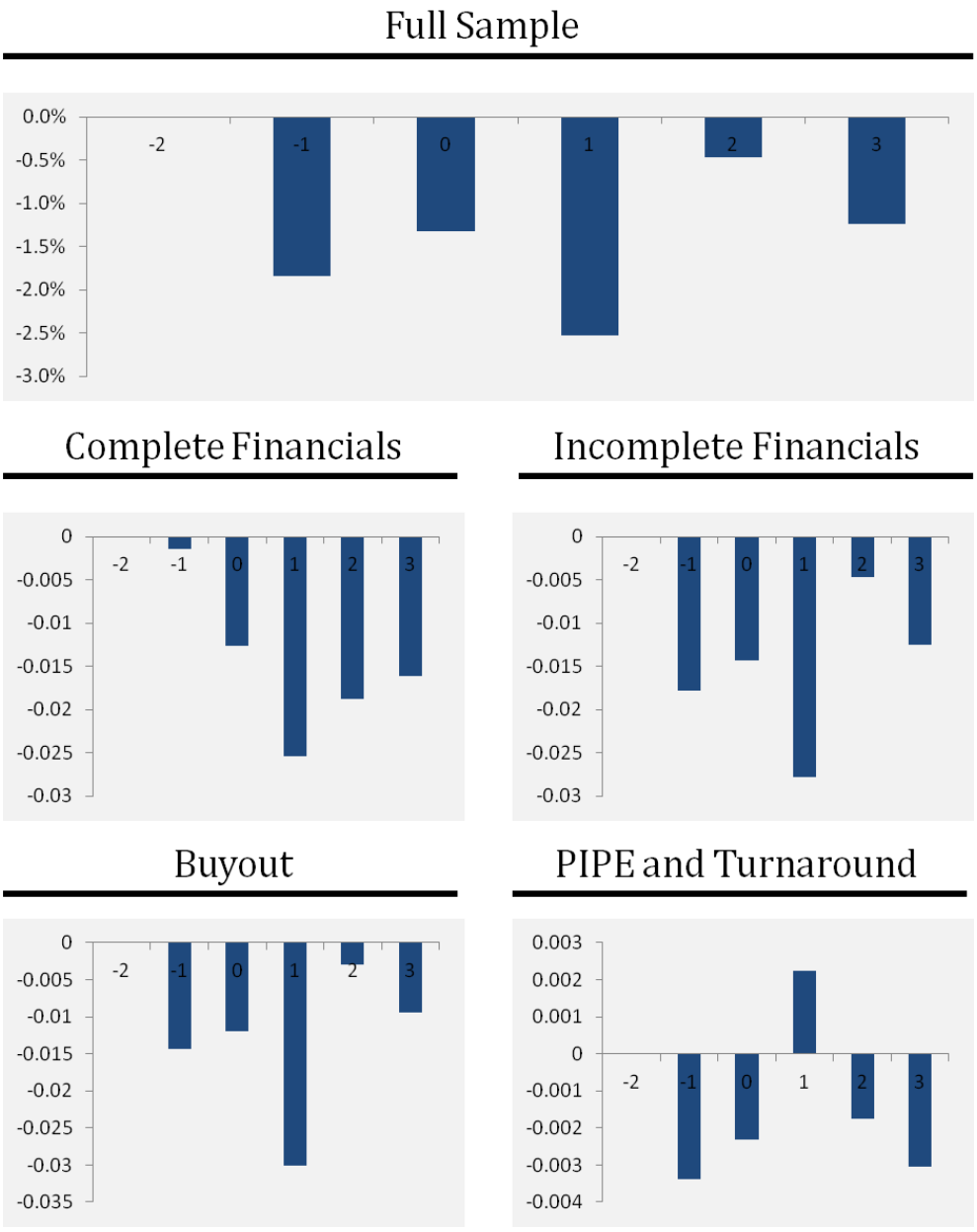


Table 17. Difference in Difference regressions including control variables

This table reports the difference-in-differences estimates on EBITDA Margin, ROIC, ROA using size, leverage and industry control variables. In Columns 1,3 and 5 the dependent variables are regressed as in equation (1). In Columns 2,4 and 6 the dependent variables are regressed as in equation (2). Panel A includes all deals classified as buy-out with exit prior to 2009 that have financial data available for all the years in the window [-2;3] around the exit of the PE firm. Panel B includes all deals classified as buy-out with exit prior to 2009 regardless of data availability. Size is the logarithm of total assets. Leverage is the ratio of short term plus long-term debt to total assets. Industry dummies are computed using the 1 digit of the SIC Code of each firm. For a detailed description of the regression variables see Table XX and Table for equation (1) and (2) respectively. T-statistics are calculated using robust standard errors clustered by deal. *,** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Panel A: Sample with Complete Accounting Data

	Ebitda Margin				ROIC				ROA			
	(1)		(2)		(3)		(4)		(5)		(6)	
PE-Backed	0.06	**	0.02		**0.06**	*	0.06		0.03		0.02	
Post	0.00				-0.02				-0.01			
Post x PE-Backed	**-0.08**	***			**-0.07**	**			**-0.03**	**		
Post t - 2 x PE-Backed			-0.01				-0.03				0.00	
Post t+ 1 x PE-Backed			**-0.05**	***			**-0.07**	*			**-0.05**	**
Post t+ 2 x PE-Backed			**-0.03**	**			**-0.08**	**			-0.01	
Post t+ 3 x PE-Backed			**-0.04**	**			-0.04				-0.01	
Size	**0.02**	**	**0.02**	*	**0.02**	**	**0.01**	*	**0.01**	**	**0.01**	*
Leverage	**-0.28**	***	0.04		**-0.28**	***	**-0.26**	***	**-0.10**	*	**-0.10**	*
Constant	0.00		-0.08		0.00		-0.01		-0.04		-0.04	
Industry Dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Post Dummies	-		Yes		-		Yes		-		Yes	
Nº of Deals	41		41		37		38		49		49	
R2 (%)	0.18		0.19		0.13		0.16		0.10		0.11	

Panel B: Sample including firms with incomplete accounting data

	Ebitda Margin				ROIC				ROA			
	(1)		(2)		(3)		(4)		(5)		(6)	
PE-Backed	0.03		0.01		**0.06**	**	0.06		0.03		0.02	
Post	**-0.01**	*			-0.01				-0.02			
Post x PE-Backed	**-0.03**	**			**-0.05**	**			-0.02			
Post t - 2 x PE-Backed			0.01				-0.04				0.00	
Post t+ 1 x PE-Backed			-0.02				-0.05				-0.03	
Post t+ 2 x PE-Backed			0.00				**-0.05**	*			0.01	
Post t+ 3 x PE-Backed			-0.02				-0.03				0.00	
Size	0.01		**0.01**	*	**0.02**	**	**0.01**	***	**0.01**	**	**0.01**	*
Leverage	-0.02		-0.02		**-0.27**	***	**-0.27**	***	**-0.11**	**	**-0.12**	***
Constant	-0.01		-0.11		0.03		0.10		0.00		-0.02	
Industry Dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Post Dummies	-		Yes		-		Yes		-		Yes	
Nº of Deals	55		55		52		52		63		63	
R2 (%)	0.08		0.10		0.14		0.16		0.10		0.11	

Table 18. Yearly regression including fixed firm effects

This table reports the estimates on the impact of the exit on EBITDA margin, ROIC, ROA and Sales Growth. All the dependent variables are regressed as in equation (2) but including fixed firm effects. As a result, PE-Backed dummy is dropped from the regression. In columns 1,3 and 5 we include all deals classified as buyout with exit prior to 2009. In columns 2,4 and 6 we regress all deals classified as buyout with exit prior to 2009 that have financial data available for all the years in the window [-2;3] around the exit of the PE firm. The year before the exit (Post t-1) is used as the reference point and does not appear in the regression. The year of the exit is also excluded. The variables Post t – 2 x PE-Backed up to Post t+3 x PE-Backed represent interactions between the Post dummies and the PE-Backed variable. To save space, the coefficients of the Post dummies are not shown. T-statistics are calculated using robust standard errors clustered by deal. *, **and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Dependent Variable:	EBITDA Margin		ROIC		ROA	
	(1)	(2)	(3)	(4)	(5)	(6)
PE-Backed x Post t-2	0.002	-0.003	-0.035	-0.039	-0.003	0.001
	(0.22)	(-0.3)	(-1.2)	(-1.2)	(-0.2)	(0.07)
PE-Backed x Post t+1	**-0.028**	**-0.043**	-0.052	-0.074	**-0.033**	**-0.050**
	(-1.8)*	**(-2.9)*****	(-1.2)	(-1.5)	**(-1.7)***	**(-2.4)****
PE-Backed x Post t+2	-0.012	**-0.031**	**-0.064**	**-0.102**	0.000	-0.016
	(-0.8)	**(-2.0)****	**(-1.9)***	**(-2.5)****	(-0.0)	(-0.7)
PE-Backed x Post t+3	**-0.031**	**-0.040**	-0.051	-0.065	-0.013	-0.016
	(-1.7)*	**(-2.2)****	(-1.1)	(-1.3)	(-0.6)	(-0.7)
Constant	0.103	0.105	0.121	0.146	0.081	0.086
	(24.6)***	**(22.2)*****	**(10.9)*****	**(11.0)*****	**(11.5)*****	**(10.4)*****
POST dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	500	394	454	366	588	486
Adjusted R^2	0.8506	0.8323	0.6595	0.6124	0.6826	0.6595

Déclaration sur l'honneur

Je, soussigné, Carlos Miguel Magalhães Moreira, certifie sur l'honneur que je n'ai rien plagié dans le travail ci-joint, ce qui signifie que je suis le seul auteur de toutes les phrases dont le texte est composé. Toute phrase ayant un autre auteur que moi a été mise entre guillemets, avec indication explicite de sa source. Je suis conscient(e) qu'en contrevenant à la présente règle je transgresse les principes académiques reconnus et m'expose aux sanctions qui seront prononcées par le conseil de discipline.

J'atteste également que ce travail n'a jamais été présenté dans le cadre d'études antérieures à ESCP Europe.

S'il s'agit d'un travail réalisé dans le cadre d'études effectuées en parallèle, je dois le préciser.

Les propos tenus dans ce mémoire n'engagent que moi-même.

Fait à Paris le 13 May 2013

Affidavit

I the undersigned, Carlos Miguel Magalhães Moreira, certify on the honor that I have not plagiarized the paper enclosed, which means that I am the only author of all the sentences this text is composed of. Any sentence from a different author than me was written in quotation marks, with explicit indication of its source. I am aware that by contravening to the present rule, I break the recognised academic principles and I expose myself to the sanctions the disciplinary committee will decide on.

I also confirm this work has never been submitted during studies prior to ESCP Europe.

If this work has been written during studies conducted in parallel, I must precise it.

The remarks written in those pages only commit me.

Paris, 13th May 2013