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And then they are gone... What's happen when Private Equity exits their portfolio companies?

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Dissertation

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## **Biographical Note**

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## Abstract

Throughout the last two decades the European private equity industry as shown an incredible growth, having even surpassed the United States in 2007 with a higher volume of Mergers and Acquisitions activity. Similarly, the private equity topic has also become one of the most explored topics in the academic world of finance, although a great portion of those studies focus on the United States market and on the value created for their investors.

The Private Equity impact on the portfolio companies is less studied, even less the impact when the Private Equity fund exits the company. This study, using a sample of European companies exited by a PE between 2014 and 2019, helps to fill this gap by studying the changes occurred on a company's operating performance and capital structure after the divestiture by the private equity.

Contrary to our expectation, the outcomes suggest that the performance level of previous PE held companies does not change after the exit of the fund, although not statistically significant the results after the 3-year span do not show any signs of an enhanced or worsened performance in terms of profitability, productivity, efficiency or even financial autonomy. Nonetheless, the results show a small overperformance in terms of profitability and financial autonomy when compared to an industry benchmark.

**Key-words:** Private Equity, Leverage Buyout, Exits, Operating performance, Leverage

## Sumário

Ao longo das últimas duas décadas, a indústria europeia de participações privadas mostrou um crescimento extraordinário, tendo mesmo ultrapassado os Estados Unidos em 2007 com um maior volume de atividade de Fusões e Aquisições. Da mesma forma, o tema das participações privadas tornou-se também um dos mais explorados no mundo acadêmico das finanças, embora uma grande parte desses estudos se concentre no mercado dos Estados Unidos e no valor criado para os seus investidores.

O impacto dos fundos de Private Equity nas empresas detidas pelas mesmas é menos estudado, e ainda menos o impacto quando o mesmo vende a empresa. Este estudo, utilizando uma amostra de empresas europeias vendidas por um fundo PE entre 2014 e 2019, ajuda a preencher esta lacuna, estudando as mudanças ocorridas no desempenho operacional e estrutura de capital de uma empresa após o desinvestimento por parte do fundo de Private Equity.

Contrariamente às nossas expectativas, os resultados sugerem que o nível de desempenho das empresas anteriormente detidas por um fundo PE não se altera após a saída, embora não sejam estatisticamente significativos, os resultados após o período de 3 anos não mostram quaisquer sinais de um melhor ou pior desempenho em termos de rentabilidade, produtividade, eficiência ou mesmo autonomia financeira. E mesmo quando comparados com uma referência da indústria, os resultados também não indicam qualquer tipo de grande desempenho em excesso (positivo ou negativo).

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## **List of abbreviations**

BV – Book value ratio

CAPEX – Capital expenditures

DE – Debt-to-equity ratio

EBITDA – Earnings before interest, taxes, depreciations and amortizations

FCF – Free-cash-flow

GP – General Partner

IPO –Initial public offering

IRR – Internal rate of return

LBO – Leverage buyout

LP – Limited Partner

PE – Private equity

SBO – Secondary buyout

SME – Small medium enterprises



# 1. Introduction

The European Private Equity (PE) market is at the moment at its highest point ever, with record numbers in capital raised and total of transactions each year. This specific market has been at a steady growth for, at least, the last 7 years, from 1,400 deals in 2013 to 2,800 in 2020. The Private Equity topic is also one of the most discussed topics in Finance, with thousands of articles and papers discussing the impact of Private Equity. However, the major studies focus on the US market and when analyzing the change in the operating performance of a company, they do it comparing the company before and during the PE fund investment.

Although all phases of the PE investment process are equally important, it is of vital importance to comprehend whether PE-backed companies continue to withstand themselves and if they are able or not of generating value for all their stakeholders after the PE investor leaves the company.

Hence, this study will analyze how does a company's operating performance and capital structure changes after the exit of the PE, in order to provide a better understanding of value creation/growth in PE transactions. This will be done by comparing the operating performance of a company during the PE fund holding period to the years after the exit, focusing entirely on the European market between 2014 and 2019.

This research has the objective of answering the following questions: How does the company's operating performance and capital structure change after the exit? Do the improvements implemented by the private equity firm prevail 3 years after the divesture?

Nevertheless, it will also be considered the works of Jain and Kini (1994), Levis (2011), Meles (2011), Tian (2012), and Jelic et al. (2018) that have studied whether the effects on PE-backed firms' performance persist over time or whether they dissipate after the PE fund have divested. Even though, they typically do not reach converging findings on the matter. While Levis (2011), in agreement with Meles et al. (2014), observed that PE-backed companies outperform other non-PE-backed firms and the market as a whole. According to Jelic and Weight (2011), PE-backed buyouts do not display post-exit underperformance but also do not outperform their non-PE-backed peers.

Apart from this section, this work is arranged as follows: Section 2 reviews the main literature of this study; Section 3 covers the methodology and the variables; Section 4 describes the sample; Section 5 discusses the empirical findings; and Section 6 offers conclusions, limitations, and recommendations for further study.

## 2. Literature Review

### 2.1. Private Equity Deals:

From the beginning of the 1990s, the private equity (PE) sector has been evolving rapidly, having witness in a 20 year span the venture capital (VC) boom, the technological bust and the Leverage Buyout (LBO) boom in mid 2000s. It was in 2007, that for the first time the volume of Mergers and Acquisitions (M&A) activity involving European targets surpassed the one involving North American firms, in a time where the M&A sector's volume reached an all-time high of US\$4,367 trillion (Moschieri & Campa, 2009).

Accordingly, Andrew Watt wrote in 2008 that "PE is becoming a Europe-wide phenomenon" and that PE firms are a great path to achieve an efficient market economy, through the pressure they make on owners and managers to optimize productive efficiency (Watt, 2008). This was derived by the fact that between the late 1980s and 1990s the M&A activity in Europe was mainly driven by intra-European deals, while between 2001 and 2007 the cross-border deals started to take place. However, over a decade before, in the United States, Jensen (1997) was already spreading that "these new organizations are making remarkable gains in operating efficiency, employee productivity, and shareholder value. Over the long term, they will enhance U.S. economic performance".

Moschieri and Campa (2009) tried to explain these changes and concluded that this economic evolution in the European Union (EU) came essentially from the introduction of a single currency, the appearance of single integrated market and more homogeneous regulations across the EU. Nonetheless, the authors also state a major difference between the United Kingdom and the rest of Europe in terms of PE activity, believing that this derives from a stronger investor's protection, a less concentrated ownership structure, and also from a more evolved capital market. Consequently, the UK became the leader in deals involving PE firms compared to the rest of Europe, given that these other countries, like Spain, Germany and Italy have higher proportion of domestic private deals. In the years after the financial crisis of 2008, there were fewer sources of credit and fundraising opportunities which allowed the private equity segment to grow substantially not only in developed countries but also in emerging economies, like Asia (Hung & Tsai, 2017).

A private equity (PE) firm relies on the money raised from investors to make their investments, this type of funds has two main participants, on one side they have the general

partners (GP) who are responsible for picking the target companies that they think would be a profitable investment for the PE, managing the fund and gathering capital from investors. On the other hand, there are the limited partners (LP)<sup>1</sup>, also referred to as "silent partners", who will only act as investors in the company and whose liability is limited to the amount of money they give while not involved in the day-to-day operation of the business. (see Figure 1).

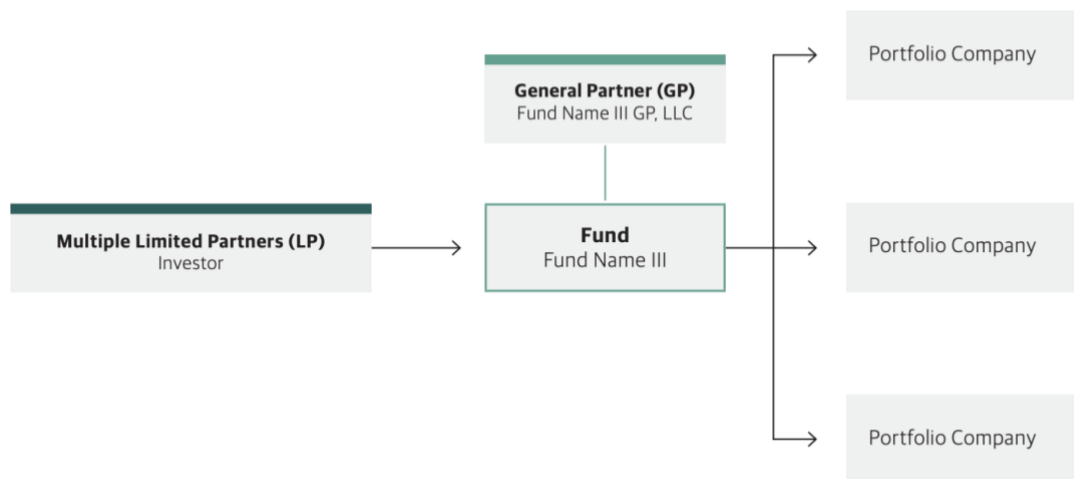


Figure 1- The Structure of Private Equity Funds [Source: Blackstone-The Life Cycle of Private Equity, 2020]

These investors usually are not the average investors that are present in the public markets, once the PE firms often require a minimum investment of US\$250,000<sup>2</sup> or more, attracting mostly institutional investors or retail investors with a lot of capital at their disposal. Limited partners do not have any authority over the fund's investment decisions, if these investors become unsatisfied with the fund, they can only choose to not provide additional capital. The alignment of interests, to a certain level, between the general and limited partners, differentiates private equity from traditional investing (Watt, 2008). Nonetheless, without losing sight of future returns, private equity managers commonly aim to offer various resources to its target company and to work closely with them to generate operational improvements.

<sup>1</sup> Available at: <https://www.investopedia.com/articles/financial-careers/09/private-equity.asp>

<sup>2</sup> Available at: <https://www.investopedia.com/articles/financial-careers/09/private-equity.asp>

### 2.1.1. From the Acquisition to the Exit

The capital raised through the LPs can be invested either in young and emerging businesses, which are known as “Venture Capital Investments”, or in more mature and stable companies, usually termed by “Leverage Buyouts Investments” (Hung and Tsai, 2017). In this latter the PE fund typically uses a small percentage of equity and in order to compensate that low amount they use a large portion of debt to finance the deal. They can also choose between acquiring a private or a public firm, being that by investing in this last one they would have to delist the entire company.

Conventionally, PE firms have a pre-determined life of 10 to 15 years, that can be divided into three phases: the fundraising period, the investment period, and the harvest period. After the GPs raised money from the LPs during the fundraising cycle, the fund will begin to invest this capital during the early stages of the investment stage, which usually takes place in the first 3 to 5 years. Then, in the final 5 to 10 years, the fund exits from all their holdings, and if they were successful, distributes returns to their investors<sup>3</sup> (see Figure 2).

Subsequently, each buyout individually is divided in other three central stages: the acquisition stage, the holding period and the exit phase. Some authors defend that a significant part of the value creation in a buyout happens through decisions that take place during the acquisition phase (e.g., Baker & Montgomery, 2009; Achleitner et al., 2011)). This initial phase starts with the due diligence and negotiation process, where the GPs develop a business plan and define an acquisition price for the deal, this step is vital for the success of the buyout deal as a whole.

Throughout the holding period, that typically ranges between three to five years (Jelic & Wright, 2011), is when the operational and organizational strategies, defined in the business plan, are set in practice with the objective of improving the target firm’s overall performance. At this stage, the PE manager focuses on increasing the value of the target companies in order to sell them for a profit a few years later and to be able to give back good returns to the LPs. This segment also has a great impact on the final equity return of the fund (IRR), with the possibility of affecting future fundraisings.

The last stage, and from the investors (LPs) perspective the most important, once is during the exit phase that the investment return is determined (the difference between

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<sup>3</sup> Available at: [https://pws.blackstone.com/wp-content/uploads/sites/5/2020/09/the\\_life\\_cycle\\_of\\_private\\_equity\\_insights.pdf](https://pws.blackstone.com/wp-content/uploads/sites/5/2020/09/the_life_cycle_of_private_equity_insights.pdf)

acquisition and exit price). The divestiture can arise just six months after the buyout, however they must have the right strategic buyers and economic conditions present. On the other hand, an exit can also drag along for seven or more years if the investment underperforms, the economy staggers or the right buyers do not appear. Nevertheless, the longer an investment remains in a PE portfolio, the higher the required exit price will be to meet target IRRs<sup>4</sup>. This can be a critical step for a specific investment, after years of doing all the right things, a poorly planned or executed exit can turn a great deal into a mediocre one<sup>5</sup>. Nonetheless, the GPs have at their disposal a variety of strategies they can choose from, like sales to other private equity funds, initial public offerings (IPOs) or other types of divestitures, that will be detailed later on.

### 2.1.2. Different types of Exits

The exit route chosen by the PE firm is a very important decision that will affect the final returns in a specific investment and successful exits are critical to guaranteeing attractive returns for investors and, in turn, to raising additional capital. According to Sudarsanam (2005) that analyzed the different factors that determine the diverse exit routes, and found that operating performance, firm size, length of holding period by the fund and whether the firm belongs to the 'high-tech' industry are all significant determinants when a PE has to choose the best exit strategy. Aligned with some important authors in this field (e.g., Cumming and Macintosh, 2001, 2003a, 2003b; Wright and Robbie, 1998), there are five main possible ways for a PE fund to divest from its portfolio companies: secondary buyout (SBO), trade sales (TS), Initial Public Offering (IPO), buy-backs and write-offs.

Recently, the most common exit route is the secondary buyout (SBO), also known by secondary sale, which represented 30% of all the divested capital in Europe in 2020<sup>6</sup>. Corroborating this, Jenkinson and Sousa (2015) also found that between January 2000 and December 2014, 43% of all the private equity exits in Europe were secondary buyouts. This type of exit consists in maintaining the target companies under private ownership, that is, it refers to a sale from a private equity to another. An exit by a SBO is very attractive from the PE firm point of view, the exit price is gotten by an auction that involves a variety of potential

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<sup>4</sup> Available at: <https://theprivateequiteer.com/phases-of-the-private-equity-fund-life-cycle/>

<sup>5</sup> Available at: <https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/private-equity-exits-enabling-the-exit-process-to-create-significant-value>

<sup>6</sup> McKinsey Global Private Markets Review 2020

buyers, where the acquirer pays the full price and the returns that will be achieved by the seller are known accurately. Also, in this case, the fund's investors get the capital invested plus the returns back quicker.

However, Jenkinson and Sousa (2015) also concluded that secondary deals tend to happen later in the PE's life compared to the primary deals, suggesting that funds may tend to invest in secondary transactions only when they cannot source good primary deals. Which connects to the findings of Achleitner et al. (2011) that transactions that happened later in a PE fund's life cycle, that is, closer to the liquidation date, are more likely to produce lower equity returns.

The second most used exit strategy, in the European market, was the trade sales, where the PE fund sells its holdings to a strategic buyer, which usually is a larger company from the same industry. The acquirer, usually expects a greater competitive advantage to come from the transaction, intending to hold the acquisition over the long term, for that reason it is willing to pay the value of strategic options embedded in the target price, trusting in higher future cash flows from the target. The major dissimilarity between a secondary buyout and a trade sale is that, in the first one only the PE fund sells its interest to the trade buyer, while the management and other investors preserve their stakes in the firm, while in a trade sale all shareholders are dragged into the sale (Povaly, 2007). A good positive aspect of a trade sale is that the negotiations take place with a single buyer, which allows a quicker and more efficient process, that is not tied up to the regulatory restrictions related to public transactions, such as an IPO.

An initial public offering, that consists in a public sale of a portion of the target company's shares, is being used as the third most common divestiture route. However, as affirmed by Jenkinson and Sousa (2015), an exit by an IPO is far more uncertain, it starts with an investment bank price indication, but the final price is only known the day before the bookbuilding closure. Furthermore, through an IPO exit the PE firm is only capable of selling a proportion of the investment, being obliged to retain the other portion for a long period of time (many months or even years), besides the fact that in most public sales, the fund loses a portion of the possible returns due to the underpricing problem of IPOs (see, for instance, Beck, J. (2017)). So, for these reasons an IPO is not really an exit, from the perspective of the PE, it is a path to an exit.

Regarding the choice of the PE most profitable divestiture strategy, Jenkinson and Sousa (2015) found evidence that the conditions in the debt and equity markets partake a strong

influence on the exit choice. Therefore, if we are in a time where debt is cheap and easily accessible the proportion of secondary buyouts tends to increase, and on the other hand if the public market is passing through an optimistic and bullish phase the percentage of initial public offerings as an exit route tend to increase. However, between an exit through secondary buyouts or trade sales, the choice falls specially on the target company's characteristics, while smaller companies that experienced higher growth are more likely to be sold through a trade sale, companies that can function well with high levels of debt (due to low investment needs, e.g.) are more suitable for a secondary exit. Sudarsanam (2005) also concluded in his study that when exits markets are not advantageous, PE managers hold on to better performing companies for longer periods, waiting for a favorable exit market conditions, while divesting from other holdings through trade sales. Correspondingly Jensen (1997) establish that many PE investors keep the target companies under private ownership, given that a secondary LBO or a private sale generate high returns and huge efficiency gains.

Finally, concerning the last two main possible exits, in a buyback, the target company and its managers will repurchase the shares held by the PE, which in some cases, will be triggered by the exercise of contractual rights taken by the PE at the time of the buyout. On the other hand, a write off happens when the PE walks away from its investment, which usually involves the failure of the portfolio company.

## 2.2. Value creation by PE fund

Private Equity firms acquire businesses with the goal of exiting at a higher equity value than what they initially invested and at the same time PE investors expect a high internal rate of return (IRR) to compensate them for the low liquidity of their investment.

Regarding the topic of value creation on PE backed companies there are numerous different opinions, while many studies focus mostly on operational improvements as sources of value creation, the study performed by Achleitner et al. (2011) indicate that the pricing at entry and exit is an essential factor in order to reach high equity returns. In line with this previous study, Watt (2008) shows evidence that the sizeable returns earned by PE investors and managers are not only due to the improvements made in a company's operating efficiency but rather, that some of those returns, come from a transfer of wealth from other stakeholders of the firm. Defending that on average workers from target firms are pressured harder and that to create value from tax efficiency, PE's gains are due to taxpayer losses.

On the other hand, Jensen (1997), Lichtenberg & Siegel (1990), Smith (1990), Jelic and Weight (2011) and Kaplan (1990) agreed that LBOs are able to increase operational efficiency without massive cuts in the research and development department or big number of layoffs. Proving that buyouts do not cause the dismissal of the target firm's workers, causing however on average a slowdown in the recruitment of new employees, but on the positive side, production worker wage rates increase after LBOs.

According to Wright et al. (2000), PE funds create value by decreasing agency costs and also by generating a shift from a managerial to an entrepreneurial mindset, which leads to an increase in growth. Achleitner et al. (2011) also believe that when the target firm achieve higher sales growth during the holding period, this leads also to higher exit prices and at the same time it was shown, by the same authors, that timing is a very important determinate as well, having a great effect on both entry and exit pricings, concluding that higher prices are paid when other companies in the same sector show high valuations.

Similar to Wright et al. (2000), Bull (1987) also showed evidence of an increase in target companies' financial performance after buyouts and he explains this phenomenon by the fact that management focus changes, from minimizing volatility in reported profits to boosting cash flows and this change showed a greater impact on performance than from income tax savings alone. The author, by interviewing both the executives of institutional investors and the chief executive officers of LBO companies, discovered that all of them foresee a higher return on investment after the buyout and also a more efficient use of the firm's corporate assets.

On a different front, Valkama et al. (2013) found that GDP growth and industry growth affect the target companies' returns positively and increases the likelihood of achieving higher returns than the market, however they affect more significantly the performance of high performing firms than low performing ones. Equally, the equity returns are positively impacted by the risk-adjusted market return. Their study also showed that leverage does not increase value creation in buyouts, but rather inflate equity returns on successful acquisitions, stating that it has no impact on the probability of getting higher returns than the market or a good exit.

These findings were also supported by Axelson et al. (2013) who find negative effects of leverage at the fund level in their analysis of the drivers of leverage. However, for these authors the leverage tool is used resourcefully by PE investors, in order to increase equity returns from buyouts, in contrary of many governance factors that do not show any creation



of value. This happens once with higher levels of debt the lower will be the proportion of equity invested in the deal, which should increase the returns and, at the same time the risk. For this reason, the easy access to debt and lower interest rates are connected to greater proportions of debt on the financing structures of buyouts – “When credit is abundant and cheap, buyouts become more leveraged” (Axelson et al., 2013, p.2264). Hung and Tsai (2017) support, however that with the evolution of this industry, PE firms have grown more competitive, having found ways to use less leverage. The financial advantage of a LBO sponsor is no longer a source of value creation, in recent times is more valuable the management discipline they apply in the companies they acquire.

Regarding changes in valuation multiples, much less research is available, nonetheless Guo et al. (2011) showed that PE-backed companies improved the valuation multiples between entry and exit more than the group of public companies not backed by PE firms.

This study will focus more on these three drives of value creation – Operating Performance, Leverage and CAPEX, firstly due to the available data and also because they represent the core sources of value creation.

### 2.2.1. Operating Performance

Considering operational performance as a source of value creation, several studies (Cumming et al., 2007; Kaplan, 1990; Lichtenberg and Siegel, 1990) have analyzed this aspect and show that LBOs can actually create value by improving the operating performance. Jensen (1989) referred in his study that the main source of value creation in buyouts come from organizational transformations that lead to improvements in companies’ operating and investment decisions, stating that “these organizations are not managed to maximize earnings per share but to maximize value, with a strong emphasis on cash flow” (p. 7).

Kaplan (1989) in his study found that, on average, operational earnings increase 42% from the year before the acquisition deal to the third year after and over the same period target firm’s cash flows improved by 96%. Discovering also that, in the first three post-buyout years, the multiples of operating income to assets and to sales, on average, exceed the industry changes by 20%. Additionally, the difference between operating income and CAPEX (net cashflow) net of industry changes, experienced, in the same period, larger results than the last pre-buyout year.

At the same time, Smith (1990) also found evidence that operating returns increase considerably from the year prior to the year after the buyout, being the corrections in the

management of working capital one of the contributors for this growth, while the industry adjusted accounts receivable collection period and, simultaneously the inventory holding period net of industry trends decrease meaningfully. Additionally, Jensen (1997), Lichtenberg & Siegel (1990), Smith (1990) and Kaplan (1990) have correspondingly uncovered in their studies that PE backed companies increase significantly their productivity during the holding period.

Specifically, Lichtenberg and Siegel (1990) supported the idea that companies involved in LBOs had considerably higher rates of productivity when comparing to other companies in the same industry, explained, in one way, by the fact that ownership change tend to cause above average improvements in firm's productivity. More specifically, due to the boosted effort put by the target company's employees, caused by an amplified sensitivity of their financial rewards and penalties to their performance and, also due to the reduction of the percentage of resources misapplied to inefficient activities, instigated by a more intensive monitoring of managers by investors. Guo et al. (2011) defended the same ideology, proving in their study operational improvements of PE-backed firms exceed those of comparable publicly listed peers, but also that the improvements in industry valuation multiples and realized tax benefits, from increasing leverage, are equally important as operating gains when it comes to explaining realized equity returns.

### 2.2.2. Financial Performance

Corporate governance mechanisms, like active private equity surveillance and the incentives from managerial equity ownership affect meaningfully and knowingly buyout returns. On the other hand, financial performance of buyouts is hard to measure, particularly in the case of accounting measures which might be distorted by earnings manipulation (Cumming et al., 2007). Additionally, financial related value creation sources, come not only from the high leverage used, that cause amplified returns, or from tax savings, but also from the management focus on cash flows to guarantee the investment and sustainable growth of the company.

Jensen (1989) found that the use of debt in buyouts facilitates a reduction of available free cash flow (FCF) and also that it coerces managers to attend debt payments rather than spend it in inefficient projects. Consistently, Guo et al. (2011), coherent with the benefits of higher levels of debt on LBO transactions, stated that firms with larger increases in leverage, due to the buyout, present higher cash flow gains. Similarly, Achleitner et al. (2010) found

statistical evidence that, in European buyouts between 1991 and 2005, 32% of the value created in these deals was explained by effects of leverage. At the same time, they discovered that the median debt-to-equity ratio (DE) decreased from 1.4 at the time of acquisition to 0.6 at the time of divestment, which attests the creation of value in this type of transactions.

Kaplan (1989) also discovered evidence that capital expenditures are 20% lower in LBOs compared to non-LBO firms, and the reason for this major difference usually are the divestures from low-return projects that are associated with the low-growth or declining industries that attract PE firms. Similarly, Smith (1990) also defended that the CAPEX falls after buyouts in percentage of sales, nevertheless it does not affect the operating returns once they consist in a nonoperating use of cash. On another front, Wright et al. (1996) showed evidence that U.K. firms that went through a buyout generated significantly higher increases in return on assets in comparison to similar firms that did not, over a period of two to five years after buyout.

Contrary to what would normally be expected given the amount of financial leverage in LBO deals, Kaplan and Stein (1993), found that systematic risk of equity in leveraged buyouts is much smaller than what would normally be expected given the amount of financial leverage in these transactions.

### 2.3. After the Exit

Finally, some studies (e.g., Jain and Kini, 1994; Levis, 2011; Meles, 2011; Tian, 2012; Jelic et al., 2018) have studied whether the effects on PE backed firms' performance persist over time or whether they dissipate after the PE fund have divested. Plus, it is this topic that is of special interest to this dissertation, studying both publicly and privately held firms.

Jain and Kini (1994) were the firsts to study the changes in companies' operating performance as they make the transition from private to public ownership, concluding that after the exit, the market-to-book ratio, price/earnings ratio, and earnings per share decline significantly and that overall, their results showed that private companies were unable to retain their pre-exit performance levels. They found a substantial decline in operating performance succeeding the IPO, however there was a meaningful positive relation between post-IPO operating performance and equity preservation by the original entrepreneurs. Additionally, specific to the IPO exit route, they present evidence that the high expectations built around a company's high pre-IPO operating performance levels may cause the results obtained in this study, since even with increase in sales and capital expenditures, the pre-IPO

performance levels are not sustained, leading to a decline in expectations. Even presenting high post-issue growth in sales and capital expenditures, evidence show that their profitability levels decrease (e.g., Pagano and Panetta, 1998; Jelic et al., 2018).

Meles et al. (2014), in line with Jain and Kini (1995), observed that PE-backed companies outperform other non-PE-backed firms, their results showed that the persistence of the benefits offered by the PE fund depend on the length and type of the PE investment, the nature of the PE backed firm (bank-based versus nonbank based), and the divesture strategy used (IPO versus other exit strategies). More specifically, they found strong evidence that only the Venture Capitalist firms provide favorable long-term effects for their portfolio firms, that the relationship between the length of the PE investment and the post-exit period firm operating performance is represented by an inverted U- shape function, that a bank-based company is more likely to outperform its matched firms over the post-exit period<sup>7</sup> and finally, that the companies that exit through an IPO show lower changes in performance. Regarding this last point addressed by Meles et al. (2014), it is also supported by other authors like Jain and Kini (1994) and Pagano and Panetta (1998), although seeming unexpected that the high-quality firms that go public show lower long term performances post exit.

Opposing to this last finding, Sousa and Jenkinson (2013) stated that firms that exited by a SBO evidently underperform in comparison to firms that went through a public sale, in the first three full years after the divesture, explaining that this phenomenon could be partially caused or by a longer holding period in the former deal or by a purchasing PE investor with less experience. Their study proved that shorter holding periods (2 to 4 years) in the previous deal causes better operating performance than longer holding periods (4 to 7 years), for secondary firms. Additionally, it was seen that companies that go through a SBO make less investments than IPO firms, in order to be able to satisfy their high debt payments, related to two leveraged buy-out deals that the target firm went through, which, in a way, compensates for their operational underperformance, by increasing their net cash flow more than IPO firms.

Levis (2011) on the other hand, in his study on the UK PE industry, defended that private equity-backed IPOs, in the three years after the public sale, present better operating and market performance when compared to other non-PE-backed IPOs and the market as a whole. The continuing association of PE managers and the marked reduction of debt closely

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<sup>7</sup> Which is explained by the fact that a bank-based PE firm might be interested in a long-term growth of their portfolio firms with the goal of yielding synergies with the banking core business (Hellmann et al., 2008)

after the public sale, cause, eventually, a positive aftermarket performance. This superior performance is also, according to their study, positively related to the PE backed companies' leverage ratios.

Jelic and Weight (2011) also realized a study on the UK PE industry, where they defend that besides PE backed buyouts not exhibiting post exit underperformance, they also fail to over-perform their non-PE backed equivalents. At the same time, they found strong evidence for a lack of meaningful changes in profitability and efficiency after a public sale. Regarding SMBO exits, their study shows enhancements of efficiency and dividends, although profitability remains unchanged until year three, after which there is generally a decline. While the PE backed deals show considerably higher internal rate of returns compared to similar non-PE backed firms, the results obtain by the authors provide weak support for similar profitability over performance.

Recently, Jelic et al. (2018) found also evidence that the performance of a PE-backed buyout-IPO is not any different from a non-PE backed buyout-IPO, concluding that this “raises questions regarding the extent to which benefits of PE ownership extend once the buyout structure ends. More research on this topic is needed.” (p.28).

### 3. Methodology

In this section it is presented the methodology used for this study, in particular the model applied followed by the description of its variables.

#### 3.1. The Model

To compare the performance of PE-backed companies in the three full fiscal years after the exit to the full fiscal year before the exit, the EBITDA margin<sup>8</sup> will be used as a profitability measure, return on assets<sup>9</sup> as productivity measure and assets rotation ratio<sup>10</sup> as efficiency measure, as suggested by Jain and Kini (1994) and also used in other studies (e.g., Guo et al., 2011; Kaplan, 1989b) as operating performance measures. Additionally, to measure the effects of the exit on the capital structure of the PE-backed company, the financial autonomy ratio<sup>11</sup> will be used, which measures the ability of a company not to depend on outside capital to satisfy their purposes.

Once, having a horizon of more than a year might lead to better conclusions about the impact that PE firms had in the target companies, I will be measuring the growth changes in operating performance and capital structure of those companies over a three-year post-exit period (excluding the year of the exit) related to the last full fiscal year before the exit strategy. The fiscal year of the exit will not be accounted for as it includes both pre- and post-exit operations, making it more difficult to distinguish between pre- and post-exit performance.

Additionally, all the variables will be presented before interests and taxes, thus controlling for effects resulting from leverage or other financial decisions. Similarly, to prevent that the changes in financial and operating performance are not due to the exit itself, but due to macroeconomic effects, I will compare the findings to a control group, composed of comparable businesses from the same industries, only they won't have been owned by a PE firm. This will be done using the difference-in-difference (DID) approach, that consists in comparing the difference in the performance before and after the exit to the performance for the same time period for a control group. I will then compare companies that went through this transaction with companies that did not (firms from the same industries that

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<sup>8</sup> EBITDA / Revenues

<sup>9</sup> EBITDA / Total assets

<sup>10</sup> Revenues / Total assets

<sup>11</sup> Equity/Assets

did not went through a PE exit) , thus eliminating possible changes in the economy that could affect the results.

Theoretically, let  $Y_{it}^1$  be the outcome in period t (after the exit strategy) for a firm i which has been exposed to a divestiture process, and  $Y_{it}^0$  the outcome for a similar firm that was not, in the same period t. Therefore,  $Y_{it}^1 - Y_{it}^0$  would be the effect of a divestiture operation. In line with the previous thinking, it was built the following regression:

$$Y_{it} = \beta_0 + \beta_1 Dpe_i + \beta_2 Dpos_t + \beta_3 Dpe_i * Dpos_t + \beta_4 \log(Total Assets)_i + \varepsilon_{it} \quad (1)$$

The performance of the PE baked firms  $Y_{it}$  will be determined by the four dimensions already discussed: profitability measure (EBITDA margin), productivity measure (ROA), efficiency measure (assets rotation ratio) and finally autonomy measure (financial autonomy ratio).

$Dpe_i$  is a dummy variable taking the value 1 for PE detained firms and 0 if they belong to the control group. It controls for differences in constant performance  $Y_{it}$  between PE backed firms and the control group, its coefficient represents, on average, over the entire period, what is the difference between companies held by PE and those not held (if the coefficient is positive, they would perform better and if negative otherwise). The dummy variable  $Dpos_t$  was defined as taking the value 1 in the post divestment years and 0 for the pre exit year, for both PE detained and non detained firms, its coefficient compares for all companies, both owned and non-owned, the impact the year of exit had in its performance. The term  $Dpe_i * Dpos_t$  is the variable of interest for this study, its coefficient should give us the effect, on average, on a company's performance after the exit strategy, to the companies owned by PE. This coefficient also represents the DID estimator of the effect of the exit strategy on the sample chosen.

Lastly, it was also included in the model the variable  $\log(Total Assets)$ , to control for the size of the companies. The inclusion of this variable in the model is justified by the fact that the performance of a business is also influenced by its dimension, independently of a divestiture operation or not. The logarithmic of total assets is recommended instead of total assets to reduce the scale effect, and consequently the impact of outliers. It controls for cost differences linked to firm size and for the ability of larger firms to diversify and gain

economies of scale.  $\varepsilon_{it}$  is the error term, which represents the difference between the expected values at a particular time and the values that were actually observed.

We complete this analysis calculating the variation of each variable from the average, one year before the exit to three years after the procedure. It is going to be used the t-student and the Wilcoxon signed-rank tests in order to evaluate if the variables changes (mean and median changes, respectively) are statistically different from zero. The main goal is to test if the exit from a PE firm creates impact on the companies' performance. The rejection of the null hypothesis by the level of significance (5%) verifies that the measure under consideration creates impact on the companies.



## 4. Sample

In this section, it is first described the sample used in this study, followed by the descriptive statistics and ending with the explanation of the control group.

### 4.1. Selected Sample

The sample was gathered from Zephyr and Orbis and includes all the completed Private Equity exits that happened in Europe between 2014<sup>12</sup> and 2019 – 882 exit deals. Regarding the period after the exit, it was considered three years (as in Kaplan, 1989; Levis, 2011; or Sousa and Jenkinson, 2013) as the time period needed to analyze the impact of the exit on portfolio companies, however, in order to increase the sample, 2019 exits will also be studied and in that case only two years of data will be considered.

According to these requirements 647 transactions were selected. Were, also excluded deals where the acquiror was a PE firm or another investment company, by doing this, the sample was reduced to 156 transactions. Additionally, the targets that did not had information before the exit were also excluded from the sample, which led to a final sample of 118 exit deals.

All variables, with exception of dummies variables, were winsorized at their 5<sup>th</sup> and 95<sup>th</sup> percentile to mitigate the influence of extreme values.

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<sup>12</sup> As data from Orbis is only available for the last ten years (since 2013) and data from the years before the exit is essential to this study, only exits that occurred on an after 2014 were considered.

## 4.2. Descriptive Statistics

As we see in Table 1, we have a good dispersion of exit deals between the years considered for this study, however we have lower deals in 2019 due to lack of data from more recent years.

**Table 1: Exist by year**

This table presents the number of deals divided by the year of the exit and their respective percentages.

Year of the exit	Number of deals	%
2014	24	20%
2015	22	19%
2016	17	14%
2017	20	17%
2018	20	17%
2019	15	13%
<b>Total</b>	<b>118</b>	

Table 2 shows the distribution of the 118 portfolio companies across the different industries and for this it was used the NACE Rev. 2 main section<sup>13</sup>, which is divided in 21 main industries that go from letter A to U. The prevalent sector in the sample used was the Manufacturing industry, that includes all the physical or chemical transformation of raw materials (materials, substances, or components) into new products, having a weight of 23% on all the data.

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<sup>13</sup> NACE is the statistical classification of economic activities in the European Community, being the subject of legislation at the European Union level, which imposes the use of the classification uniformly within all the Member States. <https://nacev2.com/en>

**Table 2: Companies by Industry**

This table presents the sample gathered divided by the targets' industries and their respective percentages.

Sector	Number of deals	%
C - Manufacturing	27	23%
D - Electricity, gas, steam and air conditioning supply	1	1%
E - Water supply; sewerage, waste management and remediation activities	1	1%
F - Construction	3	3%
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	19	16%
H - Transportation and storage	3	3%
I - Accommodation and food service activities	2	2%
J - Information and communication	9	8%
K - Financial and insurance activities	17	14%
L - Real estate activities	1	1%
M - Professional, scientific and technical activities	22	19%
N - Administrative and support service activities	8	7%
O - Public administration and defence; compulsory social security	2	2%
Q - Human health and social work activities	2	2%
R - Arts, entertainment and recreation	1	1%
<b>Total</b>	<b>118</b>	

Table 3 displays the scattering of the target companies by exit route, being distributed quite evenly by the different types of exits, except for management buy-outs that represent almost 40% of all the exits, being the one that has the highest weight.

**Table 3: PE exits split by different exit routes**

This table presents the sample gathered divided by different types of exits and their respective percentages.

Type of Exit	Number of deals	%
Acquisition	28	24%
IPO	23	19%
Management buy-out	45	38%
Minority Stake	22	19%
<b>Total</b>	<b>118</b>	

The statistics summary of the independent variables, EBITDA Margin, Return on Assets, Asset Rotation Ratio and Financial Autonomy Ratio is summarized in Table 4. In this table it can be seen the great discrepancy between the average and median values, mainly on the first two variables, which are connected to the presence of outliers in the sample, it can also be seen looking at the maximum and minimum values, that have some economically impossible values. For that reason, only the median figures will be of interest for this study.

**Table 4: Descriptive statistics for the dependent variables for the year immediately before the exit.**

This table presents the descriptive statistics for the EBITDA Margin, Return on Assets, Asset Rotation Ratio and the Financial Autonomy Ratio, in the year before the exit took place. The descriptive statistics are mean (%), median (%), maximum (%), minimum (%), and standard deviation (%) for the sample of 118 observations.

Variable	Year N-1				
	Mean	Median	Standard Deviation	Max	Min
EBITDA Margin	-52.2%	3.6%	495%	3508%	-2813%
Return on Assets	-3.6%	3.2%	28%	45%	-141%
Asset Rotation Ratio	93.1%	87.4%	82%	480%	0%
Financial Autonomy Ratio	37.0%	36.3%	28%	99%	-93%

### 4.3. Control Group

A control group is described as a group that is very similar to the targeted group, though it has not been affected by the procedure that is being tested (in this case by a PE exit). It is extremely advantageous to use a control group in this type of research, once it allows for the elimination of some external factors that could alter the final results of the study. By this reason, the control group treatment will be indispensable to this dissertation's study, since the idea is to compare the changes in performance of a PE backed firm after the PE fund exits the company to the changes a "normal" company went through in the same time period.

So, after the primary sample was gathered, it was also collected another 118 companies, which make the control group used in this dissertation. These firms were collected manually, matching each one of them to each PE detained firm, primarily filtering by industry sections (using the NACE Rev. 2 main section as explained in the segment above) since the main objective of this control group is to dissolve any industry growth over the years in analysis.

After having the original companies split by industries, it was done several retrieves from Orbis, one for each industry, with the only requirement being that the companies be active and not be held by a PE company. Then it was used each of these retrieves to find similar companies to the original firms, this selection was done using the value of total assets in the year prior to the exit (which will vary depending on the original company used) and for that reason the main sample was also divided in years of exit (having this way the companies that exit the PE in 2014 all together and the same for the other years). After having done this split, the gathering of the control group became simpler, just with two columns in the retrieves: one for the value of Total Assets of the year before the exit (however the exit year changed for each group of companies created before, for the 2014 group the column should give the Total assets of 2014, and so on) and another column for the return-on-assets (ROA) values (which follow the same logic as before, for the 2014 exit group, the ROA was calculated using only 2014 figures).

Group by group, it were gathered the 118 comparable companies, that had not been owned by a PE firm. In Table 5 it is displayed the descriptive statistics of the new sample gathered (control group), where it can be seen, comparing with Table 4, the resemblances between the two groups, which will be better explained in the univariate analysis.

**Table 5: Descriptive statistics of the control group for the dependent variables for the year immediately before the exit.**

This table presents the descriptive statistics of the control group for the EBITDA Margin, Return on Assets, Asset Rotation Ratio and the Financial Autonomy Ratio, in the year before the exit took place. The descriptive statistics are mean (%), median (%), maximum (%), minimum (%), and standard deviation (%) for the sample of 118 observations.

Variable	Year N-1				
	Mean	Median	Standard Deviation	Max	Min
EBITDA Margin	-55.4%	2.7%	380%	871%	-3623%
Return on Assets	-3.3%	2.7%	22%	29%	-97%
Asset Rotation Ratio	108.9%	87.4%	94%	475%	0%
Financial Autonomy Ratio	27.7%	27.8%	45%	100%	-351%

## 5. Empirical Results

In this section, it will be presented and analyzed the results attained by using the methodology described previously to answer the two main question of this work: “How does the company's operating performance and capital structure change after the exit? Do the improvements implemented by the private equity firm prevail 3 years after the divesture?”.

For this, it was done a Multivariable Analysis, where the effects on the four performance measures chosen were estimated performing the Ordinary Least Squares (OLS) method with robust standard errors. But before that, the univariate analysis, which is the simplest kind of statistical analysis, will be discussed. Its simplicity stems from the fact that there is only one variable involved. But it's vital to remember that univariate analysis can yield inaccurate results when multivariate analysis is more appropriate.

Also, in order to minimize the effect of outliers or/and abnormal extreme values, the sample in question was winsorized, which means that the 5% smallest and 5% largest values were replaced by the observations closest to them. Because it can substitute outliers with less extreme values, the winsorized mean is less susceptible to them. In other words, it is more resistant to outliers than the arithmetic average.

### 5.1. Univariate Analysis

The main characteristics of the two samples present in this study (one containing the PE detained companies and the control group) are presented in Table 6. Parametric (t-test) and non-parametric (Wilcoxon) tests were used to test if both samples are different or not, regarding the four main variables. According to the t-test the means of the two independent groups used in this dissertation, for the four variables in analysis, are statistically different for a level of significance of 5%. However, according to the Wilcoxon test, the medians from all the four variables were not statistically different between the two groups.

Last but not least, the disparity between the means and median values indicates the existence of outliers. For that reason, the key variables were winsorized at percentiles 95 and 5, which helped to lessen the issue, but the primary difference still existed, particularly in the EBITDA margin variable. So, the median values will be used, as they are less impacted by the presence of outliers. In Table 6, it can be seen the differences between the two groups one year before the exit:

**Table 6: Differences between the group of PE Detained Firms and the group of Comparable Firms (control group) for the dependent variables for the year immediately before the exit.**

This table presents the descriptive statistics of the original sample and the control group for the EBITDA Margin, Return on Assets, Asset Rotation Ratio and the Financial Autonomy Ratio, in the year before the exit took place. The descriptive statistics are mean (%), median (%), maximum (%), minimum (%), and standard deviation (%) for the sample of 118 observations. Equality tests are presented for every variable and refer to the two sub-samples, “PE detained firms” and “Comparable firms”. The tests of equality are the t-test, for the mean, and the Wilcoxon signed-rank test, for the median. \*\*\*, \*\*, \*, Significant at 1, 5 and 10 percent levels, respectively.

Ano N-1				
Variable	EBITDA Margin (%)	Return on Assets (%)	Asset Rotation Ratio (%)	Financial Autonomy Ratio (%)
<b>PE Detained Firms</b>				
<i>n=118</i>				
Mean	-12.59	1.08	87.27	36.51
Median	3.91	3.57	87.37	35.19
Standard Deviation	58.56	13.53	64.39	19.73
Max	36.42	23.25	246.87	77.92
Min	-368.81	-49.48	1.50	-7.27
<b>Comparable Firms</b>				
<i>n=118</i>				
Mean	-9.27	0.97	91.74	30.58
Median	2.69	2.82	84.67	27.76
Standard Deviation	46.70	12.02	61.48	20.87
Max	24.77	23.26	251.80	76.98
Min	-327.65	-51.44	2.70	-14.32
<b>Difference</b>				
Mean	-3.32***	0.11***	-4.47***	5.93***
Median	1.23	0.75*	2.69	7.43

From the analysis of Table 6, we can see that the differences between the two samples, in the year prior to the exit. Although the difference between the two groups are not as insignificant as they should be, the difference-in-difference methodology partially overcome this problem as it analyses change and not levels. For the financial autonomy ratio, although not statistically significant, the median difference shows that the PE owned firms may have quite a financial strength advantage when compared to the independent firms (+7.43 p.p.).



In Table 7, we are looking at the year immediately after the exit and considering the median changes between the targeted group and the control group, it can be concluded that the differences are not statistically significant (with the exception of the variable Return on Assets).

**Table 7: Differences between the group of PE Detained Firms and the group of Comparable Firms (control group) for the dependent variables for the year immediately after the exit.**

This table presents the descriptive statistics of the original sample and the control group for the EBITDA Margin, Return on Assets, Asset Rotation Ratio and the Financial Autonomy Ratio, in the year after the exit took place. The descriptive statistics are mean (%), median (%), maximum (%), minimum (%), and standard deviation (%) for the sample of 118 observations. Equality tests are presented for every variable and refer to the two sub-samples, “PE detained firms” and “Comparable firms”. The tests of equality are the t-test, for the mean, and the Wilcoxon signed-rank test, for the median. \*\*\*, \*\*, \*, Significant at 1, 5 and 10 percent levels, respectively.

Variable	Year N+1			
	EBITDA Margin (%)	Return on Assets (%)	Asset Rotation Ratio (%)	Financial Autonomy Ratio (%)
<b>PE Detained Firms</b>				
<i>n=118</i>				
Mean	-13.51	-1.20	94.55	39.42
Median	4.50	3.58	85.28	38.90
Standard Deviation	61.81	16.90	68.38	18.52
Max	36.32	22.39	246.33	77.00
Min	-339.23	-51.27	2.32	-1.17
<b>Comparable Firms</b>				
<i>n=118</i>				
Mean	-6.99	-1.16	91.96	34.34
Median	2.69	3.47	86.17	32.67
Standard Deviation	38.27	13.64	62.22	21.03
Max	36.52	21.56	243.69	77.94
Min	-243.80	-52.40	4.33	-13.30
<b>Difference</b>				
Mean	-6.52***	-0.03***	2.59***	5.07***
Median	1.80	0.11*	-0.89	6.23

Same as before, in terms of financial autonomy, the ex-PE backed firms show more independence from their creditors (6.23 p.p.) than the firms that did not had the same

background. Additionally, comparing to the year prior to the exit, the previously owned companies show, on median, a better financial position in the year after the exit (roughly 4 p.p. difference – although not statistically significant). Once the other variables have opposites signs, on the mean and median values, they will not be interpreted, being considered insignificant.

In Table 8 and 9, it can be observed the differences between the two groups, two and three years after the exit strategy by the PE firm, respectively:

**Table 8: Differences between the group of PE Detained Firms and the group of Comparable Firms (control group) for the dependent variables two years after the exit.**

This table presents the descriptive statistics of the original sample and the control group for the EBITDA Margin, Return on Assets, Asset Rotation Ratio and the Financial Autonomy Ratio, two years after the exit took place. The descriptive statistics are mean (%), median (%), maximum (%), minimum (%), and standard deviation (%) for the sample of 118 observations. Equality tests are presented for every variable and refer to the two sub-samples, “PE detained firms” and “Comparable firms”. The tests of equality are the t-test, for the mean, and the Wilcoxon signed-rank test, for the median. \*\*\*, \*\*, \*, Significant at 1, 5 and 10 percent levels, respectively.

Variable	Year N+2			
	EBITDA Margin (%)	Return on Assets (%)	Asset Rotation Ratio (%)	Financial Autonomy Ratio (%)
<b>PE Detained Firms</b>				
<i>n=118</i>				
Mean	-12.89	0.26	90.61	35.67
Median	3.97	3.75	74.59	35.47
Standard Deviation	58.36	14.37	63.90	19.53
Max	41.83	22.86	242.90	77.85
Min	-308.08	-54.45	1.53	-12.30
<b>Comparable Firms</b>				
<i>n=472</i>				
Mean	-9.56	-0.90	83.62	34.62
Median	3.10	2.39	75.78	32.38
Standard Deviation	51.84	13.74	66.19	20.14
Max	36.27	19.69	260.18	77.89
Min	-299.90	-45.87	1.42	-9.87
<b>Difference</b>				
Mean	-3.33***	1.16***	6.99***	1.05***
Median	0.87	1.35*	-1.19	3.09

Looking at Table 8, in the second year after the exit, the productivity performance of the ex-PE detained firms when compared to the control group shows an improvement of 1.35 percentage points (statistically significant) in their return on assets, however this variance was caused by a decrease of productivity from the control group companies and not an increase from the ex-PE detained ones. Nonetheless, it still shows that the companies under research can manage their balance sheet more effectively and productively to produce profits than the control group companies. In addition, and in line with the previous tables, the Autonomy performance of the former PE detained firms is better than that of the control group; but, over time, this difference has shrunk, and it is currently 3.09 percentage points (comparing to the year before the exit where it was 7.43 percentage points). This ratio decrease shows the reduction of the financial strength of these companies in the second year after the exit, however it just goes back to the same values as in the year before the exit (35.19%), so their need for more debt might not be connect to the exit itself.

Table 9 shows that for three of the four variables, there are hardly any differences between the two groups, which may indicate that as time passes after the exit, the former PE-backed companies tend, on median, to the control group. Which may indicate that the targets' improvements achieved by PE firms over time deteriorate.

The Efficiency measure (Asset Rotation ratio) does, however, show a negative difference from the Control group of 17.41 percentage points, even though this difference is not statistically significant. However, this difference is primarily caused by the Control group companies' increased efficiency, which had a median increase, from N+2 to N+3, of about 20 percentage points. Nonetheless, if significant, this difference would mean that the industry benchmark (control group companies), over the three years in analysis, increased their capacity to generate more revenue per dollar of assets while the previously PE-owned companies showed a decrease of this ability over the three post exit years.

**Table 9: Differences between the group of PE Detained Firms and the group of Comparable Firms (control group) for the independent variables three years after the exit.**

This table presents the descriptive statistics of the original sample and the control group for the EBITDA Margin, Return on Assets, Asset Rotation Ratio and the Financial Autonomy Ratio, three years after the exit took place. The descriptive statistics are mean (%), median (%), maximum (%), minimum (%), and standard deviation (%) for the sample of 118 observations. Equality tests are

presented for every variable and refer to the two sub-samples, “PE detained firms” and “Comparable firms”. The tests of equality are the t-test, for the mean, and the Wilcoxon signed-rank test, for the median. \*\*\*, \*\*, \*, Significant at 1, 5 and 10 percent levels, respectively.

Variable	Year N+3			
	EBITDA Margin (%)	Return on Assets (%)	Asset Rotation Ratio (%)	Financial Autonomy Ratio (%)
<b>PE Detained Firms</b>				
<i>n=118</i>				
Mean	-17.38	-0.76	85.20	34.43
Median	3.27	2.49	73.65	32.25
Standard Deviation	61.99	14.58	60.80	19.87
Max	41.72	23.29	242.90	77.36
Min	-278.44	-38.26	3.42	-0.87
<b>Comparable Firms</b>				
<i>n=118</i>				
Mean	-12.80	-2.58	94.93	34.27
Median	2.48	1.92	91.06	32.66
Standard Deviation	52.33	15.74	66.99	20.90
Max	41.90	17.83	237.28	77.75
Min	-365.98	-54.23	2.15	-10.13
<b>Difference</b>				
Mean	-4.58***	1.82***	-9.73***	0.16***
Median	0.79	0.57*	-17.41	-0.41

## 5.2. Multivariate Analysis

In this section are presented the estimations of the cross-sectional OLS regressions, where the model presented in Section 3.1. was then estimated per each dimension considered in this study (profitability, productivity, efficiency and autonomy). For each variable, the model was first estimated considering the three years after the exit operation as a whole (column 1), and then just comparing the period after the operation with the period before (column 2).

### 5.2.1. Profitability

Table 10 shows the effect that the exit of a PE from a company, causes on the firm's profitability, more precisely on the EBITDA margin, on average. As mentioned before, the variable's  $Dpos*Dpe$  (model 1) and  $D_1*Dpe$  (model 2) coefficients represent the impact of a PE exit on the company performance, in the three-year period or just in the first year, respectively.

Although not statistically significant in both regressions, the effect is positive according to the model. It indicates that there is not a significant impact on a company's profitability after a PE exits, which might mean that the changes done by the PE during the holding period prevail at least three years after the divesture.

Regarding the coefficient of the control variable ( $Log(Total\ Assets)$ ), it can be observed that we have a slightly over performance in terms of profitability by the bigger companies in the sample (statistically significant for a level of significance of 1%). It can also be seen, looking at  $Dpos$  coefficient that throughout the years in analysis, on average, the companies lost a small fraction of their profitability (however not statistically significant).

**Table 10: Multivariate Analysis - Profitability**

This table presents the results of the regressions using the EBITDA margin as the independent variable, and the variables  $Dpos*Dpe$  (model 1) and  $D_{-1}*Dpe$  (model 2) as the variables of interest, which measure the impact of the exit. Notes: The standard error for each explanatory variable is displayed below the respective coefficient estimate, within parenthesis. \*\*\*, \*\*, \*, Significant at 1,5 and 10 percent levels, respectively.

Variables\Regression	(1)	(2)
Constant	<b>-0.043 *</b> (0.022)	<b>-0.045 **</b> (0.021)
Dpos	<b>-0.005</b> (0.014)	
D <sub>-1</sub>		<b>-0.005</b> (0.014)
Dpe	<b>0.019</b> (0.017)	<b>0.030 **</b> (0.010)
D <sub>-1</sub> *Dpe		<b>0.007</b> (0.007)
Dpos*Dpe	<b>0.017</b> (0.019)	
Log(Total Assets)	<b>0.007 ***</b> (0.002)	<b>0.007 ***</b> (0.002)
Number of observations		795
R-squared	1.54%	1.49%

### 5.2.2. Productivity

Table 11 exhibits the effect that the exit of a PE from a company causes on the firm's productivity, more exactly on the ROA, on average. The coefficients of the variables  $Dpos*Dpe$  (model 1) and  $D_{-1}*Dpe$  (model 2), which measure the impact of the exit, is once more positive but not statistically significant, suggesting that the productivity remained the same after the exit.

When considering only the year following the exit, the results are comparable, which suggests that the divestment operations did not significantly alter productivity performance. These results are not consistent with the univariate analysis done in the previous section, where we concluded that as the time goes by, after the exit, the ex-PE backed firms tend, on median, to the control group. However, multivariable analysis provides a broader and more

realistic picture than looking at a single variable and offers a robust test of significance when compared to univariate methodologies. For these reasons, we assume that these results are more accurate. Therefore, the results suggest that PE exits do not affect, neither negatively nor positively, until this point, the productivity and profitability of their targets.

**Table 11: Multivariate Analysis - Productivity**

This table presents the results of the regressions using the ROA as the independent variable, and the variables  $D_{pos} * D_{pe}$  (model 1) and  $D_{-1} * D_{pe}$  (model 2) as the variables of interest, which measure the impact of the exit. Notes: The standard error for each explanatory variable is displayed below the respective coefficient estimate, within parenthesis. \*\*\*, \*\*, \*, Significant at 1,5 and 10 percent levels, respectively.

Variables \ Regression	(1)	(2)
Constant	<b>0.051</b> *** (0.016)	<b>0.050</b> *** (0.015)
Dpos	<b>-0.003</b> (0.010)	
D_1		<b>-0.002</b> (0.010)
Dpe	<b>0.008</b> (0.012)	<b>0.010</b> (0.007)
D_1*Dpe		<b>0.013</b> (0.014)
Dpos*Dpe	<b>0.008</b> (0.014)	
Log(Total Assets)	<b>-0.002</b> (0.001)	<b>-0.002</b> (0.001)
Number of observations		795
R-squared	0.45%	0.52%

### 5.2.3. Efficiency

Table 12 expresses the impact that the exit of a PE from a company causes on the firm's efficiency, more accurately on the asset's rotation ratio, on average. Once again, the coefficients of the variables  $D_{pos} * D_{pe}$  (model 1) and  $D_{-1} * D_{pe}$  (model 2) is positive, although not statistically significant. However, unlike the two previous variables analyzed, the efficiency variable shows that the ex-PE detained companies make a slightly worst use of

their assets when it comes to generate revenues than the never-detained companies (although also not being statistically significant).

Additionally, looking at the control variable ( $\text{Log}(\text{Total Assets})$ ), it is possible to say that the bigger companies have a slightly worst efficiency performance than smaller companies (coefficient of this impact is statistically significant for a significance level of 1%).

**Table 12: Multivariate Analysis - Efficiency**

This table presents the results of the regressions using the Asset Rotation Ratio as the independent variable, and the variables  $D_{pos} * D_{pe}$  (model 1) and  $D_{-1} * D_{pe}$  (model 2) as the variables of interest, which measure the impact of the exit. Notes: The standard error for each explanatory variable is displayed below the respective coefficient estimate, within parenthesis. \*\*\*, \*\*, \*, Significant at 1,5 and 10 percent levels, respectively.

Variables \ Regression	(1)	(2)
Constant	<b>1.486</b> *** (0.126)	<b>1.481</b> *** (0.117)
Dpos	<b>0.002</b> (0.077)	
D_1		<b>0.016</b> (0.076)
Dpe	<b>-0.051</b> (0.091)	<b>-0.025</b> (0.055)
D_1*Dpe		<b>0.058</b> (0.105)
Dpos*Dpe	<b>0.056</b> (0.106)	
Log(Total Assets)	<b>-0.052</b> *** (0.010)	<b>-0.052</b> *** (0.010)
Number of observations		797
R-squared	3.77%	3.83%

#### 5.2.4. Autonomy

Finally, Table 13 displays the impact that the exit of a PE from a company causes on the firm's autonomy, more precisely on financial autonomy ratio. In line with earlier findings, it is also evident that the effect of the exit on the firms' financial autonomy is almost



nonexistent, being also not statistically different from zero [ $Dpos*Dpe$  (model 1) and  $D\_1*Dpe$  (model 2)].

Nevertheless, when examining the other variables included in the regressions, the coefficient of the variable  $Dpe$  is statistically significant in both models for the autonomy test, indicating a very slight outperformance of the previously PE detained firms over the control group. Additionally, the coefficient of variable  $Dpos$  (which is statistically significant for a threshold of significance of 10%) demonstrates a small gain in financial strength produced by the 236 business that make up this study over the three post-exit years under analysis. Finally, when we look at the control variable ( $Log(Total Assets)$ ), we can observe that larger organizations have slightly worse financial independence, depending more on debt than smaller companies (coefficient of this impact is statistically significant for a significance level of 1%).

**Table 13: Multivariate Analysis - Autonomy**

This table presents the results of the regressions using the Financial Autonomy Ratio as the independent variable, and the variables  $Dpos*Dpe$  (model 1) and  $D\_1*Dpe$  (model 2) as the variables of interest, which measure the impact of the exit. Notes: The standard error for each explanatory variable is displayed below the respective coefficient estimate, within parenthesis. \*\*\*, \*\*, \*, Significant at 1,5 and 10 percent levels, respectively.

Variables \ Regression	(1)	(2)
Constant	<b>0.479</b> *** (0.040)	<b>0.504</b> *** (0.037)
Dpos	<b>0.041</b> * (0.023)	
D_1		<b>0.015</b> (0.024)
Dpe	<b>0.063</b> ** (0.029)	<b>0.033</b> * (0.017)
D_1*Dpe		<b>0.024</b> (0.033)
Dpos*Dpe	<b>-0.033</b> (0.033)	
Log(Total Assets)	<b>-0.016</b> *** (0.003)	<b>-0.015</b> *** (0.003)
Number of observations	795	
R-squared	4.28%	4.27%

## 6. Conclusion, Limitations and Future Research

### 6.1. Conclusion

The aim of this dissertation was to study the impact occurred on a company's operating performance and capital structure after the divestiture by the private equity firm, by comparing the last fiscal year before the exit to the three years after. The purpose of this dissertation was to understand if the improvements implemented by the private equity firm during the holding period would still prevail 3 years after the divestiture.

This study was based on a sample of 118 deals that involve target companies from all over the European Union, that were sold by their PE invertors between 2014 and 2019.

The expectations for the results were in line with some previous research on this topic, like Jain and Kini (1994) while being the firsts to study the changes in companies' operating performance, they concluded that after the exit, the market-to-book ratio, price/earnings ratio, and earnings per share decline significantly and that overall, their results showed that private companies were unable to retain their pre-exit performance levels.

The results obtained, however were not in line with these expectations, while leading us to conclude that there weren't any significant changes on the targets' performance, in the three-year span after the exit. Suggesting that the firms in analysis retained all the changes, associated to profitability, productivity, efficiency and also financial autonomy. Regardless if the changes done by the PE were positive or negative the results imply that for at least three years after the exit the alterations on the firms' performance prevailed.

The results also show a slight overperformance when compared to the industry benchmark, as it was observed in the univariate analysis, the median ROA of the original 118 companies is higher than the median ROA of the control group, in all the years under study (being this change statistically significant), which may indicate that businesses that have previously been owned by PE firms use their assets more effectively to generate profits than businesses that have not. Moreover, in the multivariate analysis, the results of the variable *Dpe* (which coefficient indicates the average difference between companies held by PE and those not held, throughout the entire period) show too, a small overperformance, significant in terms of profitability and financial independence. Which suggests that, compared to the control sample, the target enterprises exhibit slightly greater operating profitability and a lower reliance on debt to carry out their activities over the three post-exit years. Being in

accordance with the findings of Levis (2011) and Meles et al. (2014) as they also observed in their studies that PE-backed companies outperform other non-PE-backed firms.

## 6.2. Limitations

Some significant limitation that needs to be taken into consideration, have come to light throughout this dissertation. Firstly, the current work did not examine potential variations that might emerge in the results if the exit routes were studied independently, which would allow us to assess what kind of impact the type of exit chosen has on the target company's operational performance and capital structure,

Secondly, the sample size was not optimal, which may have contributed to the non-statistically significant results. A bigger sample size would have allowed for the pursuit of more precise results. It might also be worthwhile to examine other broader markets, such as the Asian market or perhaps the African one.

Lastly, more variables could be added for a more thorough work.

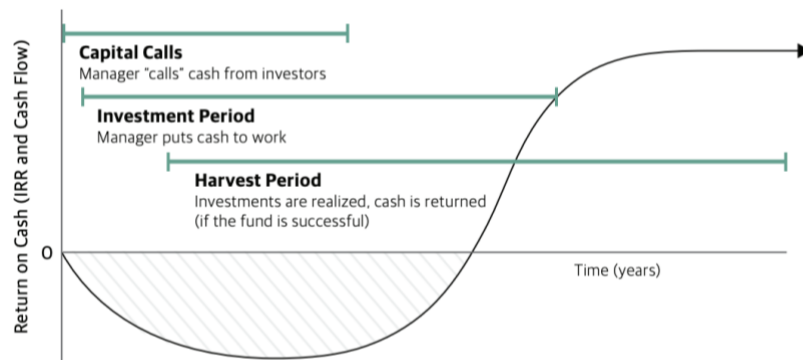
## 6.3. Future Research

One recommendation for future study, to get around one of the constrains of this work, is to expand the sample, both in terms of the number of deals, as well as the markets analyzed. Since it involves diverse cultures and, consequently, various management styles, it is likely that analyzing the global PE activity would raise intriguing questions.

Additionally, it could be interesting to conduct a similar approach to an extended time period, that is, instead of analyzing only three years after the exit, it can be studied the five years post exit, which might help to see more meaningful results.

## Appendices

Figure 2- Illustrative Example of the Timeline of Private Equity Funds [Source: Blackstone -The Life Cycle of Private Equity, 2020]



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