



How Management Buyouts differ from other Private Equity-Backed deals?

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Dissertation

Master in Finance



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2022

Biographical Note

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Acknowledgments

During the master's degree, I was able to improve my hard and soft skills and had the opportunity to expand my knowledge in finance. This journey was also a discovery on who I am, and what I want to be. Throughout the writing of this dissertation, I had the support of multiple people, directly and indirectly.

Firstly, I would like to express my deepest gratitude to my professor and supervisor, Miguel Sousa. I want to express my acknowledgement for his dedication, guidance, knowledge, and promptness, during this dissertation and in the master. I am eternally thankful.

I would also like to thank André for the immense support, comfort, patience, and motivation during this challenging path. And thank my family, especially my grandmother Maria, for always believing in me.

Finally, I would like to thank my colleagues and professors, whom I had the pleasure of meeting during my academic experience, and that made an impact that matters in my experience, therefore, in this dissertation.

Abstract

Mergers and acquisitions (M&A) is a broad subject and it can be analysed from different standpoints. The purpose of this dissertation is to get a better understanding on the motivation and performance of the different buyout alternatives. In particular, the distinction and comparison of operating performance between management buyouts (MBO) and Institutional buyouts (IBO). This research addresses the European market, with PE-backed deals from 2010 to 2020, with a sample containing both private-to-private and public-to-private transactions. Therefore, it fills in the gap on the literature, that is mostly focused on the US market and, in going private transactions.

Our findings suggest that MBOs present a better operating performance than IBOs. Moreover, there is always a positive difference in performance between MBO targets and IBO targets, independently of the period (pre- or post- buyout). Although, buyouts, in general, negatively impact operating performance. Additionally, MBO targets increase their size post-buyout even though not as much as other buyout strategies. The robustness check confirms the results.

All things considered, the findings of this study aid to rationalize the selection of a MBO deal as opposed to an IBO.

KeyWords: Management Buyouts; Operating Performance; Private Equity

JEL-Codes: G24, G34

Sumário

O mundo das fusões e aquisições (M&A) é amplo e pode ser analisado de diferentes perspectivas. O objetivo desta dissertação é compreender a motivação e o desempenho das diferentes alternativas de aquisições de empresas. Em particular, a distinção e comparação do desempenho operacional entre *management buyouts* (MBO) e as *institutional buyouts* (IBO). Esta pesquisa aborda o mercado europeu, com aquisições levadas a cabo por *Private Equity* (PE) de 2010 a 2020. Este estudo, contém uma amostra tanto de transações *private-to-private* como *public-to-private*. Por conseguinte, preenche uma lacuna da literatura que se concentra principalmente no mercado dos EUA e em transações *public-to-private*.

As nossas conclusões sugerem que os MBOs apresentam um melhor desempenho operacional do que os IBOs. Além disso, existe sempre uma diferença positiva entre o desempenho de empresas-alvo de MBO e empresas-alvo de IBO, independentemente do período (pré- ou pós-compra). Embora as aquisições, em geral, tenham um impacto negativo no desempenho operacional. Além disso, as empresas adquiridas através de um MBO aumentam a sua dimensão após a compra, embora não tanto como outras estratégias de compra. A análise de robustez confirma os resultados.

Assim sendo, os resultados deste estudo ajudam a racionalizar a seleção de uma aquisição através de um MBO em oposição a um IBO.

Palavras-Chave: *Management Buyouts*; Desempenho Operacional; *Private Equity*

JEL-Códigos: G24, G34

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1. Introduction

Mergers and acquisitions (M&A) is a broad subject and it can be analysed from different standpoints, such as sources of value creation, accounting, financial, and deal structuring aspects. Focusing on buyouts, it is possible to find in academia and practice many types of buyouts, such as Institutional Buyout (IBO), Leverage buyout (LBO), Management Buy-in (MBI), Management Buyout (MBO), BIMBO (Buy-in Management Buyout), LMBO (Leverage Management Buyout), LBIMBO, etc. The purpose of this research project is to get a better understanding of the motivation and performance of management buyouts (MBO) when compared with other institutional buyout options (IBO).

One of the theoretical explanations for these type of transactions is based on the Agency Theory. The agency conflict arises from the separation of control and ownership, and the institutional acquisitions help to minimize it. In the ground-breaking work of Jensen and Meckling (1976) it was provided the most widely accepted definition of the agency relationship and problem¹. Moreover, a public firm has many advantages but one very recognised disadvantage is the agency conflict (Fama & Jensen, 1983). Note that, it is considered that as the ownership becomes more disperse, managers have less accountability and supervision of their actions, giving space for perquisites and expropriation of value (Jensen & Meckling, 1976; Shleifer & Vishny, 1997).

Thus, the shared ownership is supposed to reduce these problems. This ownership share is a key characteristic of an MBO. Consequently the studies such as the ones conducted by Kaplan (1989) and Smith (1990) focus on a public-to-private sample to try to understand the profitability and performance, and the motivation and potential sources of value creation. In that sense, within the field of MBO, authors argue that the reduced agency costs and new incentive hypothesis (Simons & Renneboog, 2005), the free cash flow hypothesis (Jensen, 1986), the organizational efficiency and control hypothesis (Simons & Renneboog, 2005), the stakeholder wealth transfer hypothesis (Renneboog & Vansteenkiste, 2017), the tax benefit hypothesis (Kaplan, 1989a), among other can rationalize these type of deals.

¹ “A contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent. If both parties to the relationship are utility maximisers, there is good reason to believe that the agent will not always act in the best interests of the principal.”, (Jensen & Meckling, 1976, p. 308).

The main characteristics of any private equity (PE) deal is the ownership concentration, massive leverage and the quality control and monitoring of the business (Kaplan & Strömberg, 2009). However, the alignment of interests (with greater share of ownership is expected a better performance), the tax benefits associated with debt and the wealth transfer with the restructuring of the companies' personnel and assets, exist in most of institutional buyouts and so the question that arise is that are management buyouts desirable/interesting in PE context? If we take that into account one may wonder if the (potential) creation of value is (only) justified by the reduction of the distance between ownership and control. Please note that the private equity usage of MBO is relatively small to other deals². Nonetheless, there are two hypothesis of value creation of Management Buyouts that PE sponsors might not be able to benefit in other type of deals. One is the earnings management hypothesis (with accounting manipulation), and the other the insider information hypothesis. Although, as any other hypothesis, there is not a consensus in the existence of accounting manipulation in order to depreciate the price prior to the deal (DeAngelo (1986) vs. Perry & Williams(1994)); nor a consensus of the usage of inside information (Harlow and Howe (1993) vs. Lee, (1992)).

The relevance of this investigation stems from the fact that most of the literature on MBO (value creation and performance) is focused on the US market, whereas this research proposal will address the European market. Furthermore, most research was conducted in the 1980s (coinciding with the emergence and boom in going private deals, mostly PE-backed MBO) and has been scarce ever since. Additionally, most of the literature resorts to a sample of public-to-private companies. Because this segment is not the majority of MBO deals (Chung, 2012; Harris et al., 2005; Renneboog & Vansteenkiste, 2017) this research, using a broader sample that contemplates both public-to-private and private-to-private deals, is better prepared to answer this question. Another unique aspect of the project is that besides measuring and interpreting the operational performance before and after the MBO deal, it is going to be conducted a side-by-side comparison between other (adjusted for comparable) buyout deals (IBO).

² For instance, in this dissertation sample MBO transactions from (2010-2020) are roughly 1/7 of the (2010-2020) IBO transactions. Also Strömberg (2008) with a data set of more than 21,000 LBO transactions across the globe (1970-2007), showed that only 6.7% of those transactions accounted for Public-to Private transactions.

The remainder of this dissertation is structured as follows. In the chapter 2, a review of the existing and relevant literature will be conducted and will be presented the hypothesis of this thesis. Chapter 3 describes the methodology, the sample collection and treatment. Lastly, in chapter 4 is presented the results followed by chapter 5 were the main conclusions and further research will be discussed.

2. Literature Review

2.1 General introduction to buyouts

An institutional buyout (IBO) is commonly referred as the acquisition of a firm by institutional (or private equity) investors only. In some circumstances, the incumbent management may be retained, and the managerial performance can be rewarded with equity stakes in the new company. According to Renneboog and Vansteenkiste (2017), what separates an IBO from an MBO is whether the incumbent management team was part of the bidding (case of an MBO) or the equity component is part of a remuneration package. Other authors such as Bédu and Palard (2021) go as far as restricting an MBO as a transaction resulting in a majority-owned firm by the incumbent managers (otherwise, it is a typical IBO). A MBO (management buyout) is when the incumbent managers buy totally or partially the company. This practice is usually accomplished with the participation of other investors, such as private equity investors, and with external funding, such as debt (some may refer in this case as a LMBO (Fox & Marcus, 1992) one the other hand, some may consider a MBO as specific type of LBO (Renneboog & Vansteenkiste, 2017)). An LBO occurs when a non-strategic bidder acquires a company with small portion of equity and large portion of debt (Kaplan & Strömberg, 2009). An MBI take place when an outside management team (usually alongside a private equity Investor) buys a firm and replaces the incumbent management team. A BIMBO is a mixture of the two strategies, MBO and MBI (Renneboog & Vansteenkiste, 2017).

MBOs are common when corporations want to sell a business unit or subsidiary because of poor performance or lack of synergy, or, from the management point of view, when managers of those subsidiaries realize that the company can grow without the parent constraints (Tutuncu, 2021). Or when private firms present significant investment constraints with large future growth opportunities (Chung, 2012). Furthermore, it is also very common in family-owned firms with succession issues, when owners are going to retire and desire to sell the company to their managers or employees (Howorth et al., 2004; Scholes et al., 2008). Additionally, it can take the form of a secondary MBO (Bédu & Palard, 2021). Consequently, there are multiple ways of studying buyouts, therefore the empirical results might vary across time and research approach.

The most renowned paper, Kaplan (1989b), showed evidence on the changes of operating results for management buyouts. The conclusions were that in 3 years after, operating income before depreciation (EBITDA) and net cash flow increases, additionally, the capital expenditures (CAPEX) decreases. Coherent is that the market value (adjusted for market returns) also increases from two months before the buyout announcement to the post buyout sale (valuation). The results are believed not to be a result of layoffs or the exploitation of shareholders through inside information of managers, but instead of improved incentives. Moreover, Smith (1990), investigated the operating performance (measured by cash flows before interest and taxes) changes in management buyouts. The results showed that there was an increase in operating performance from the year before to the year after the deal, and that increased is sustained in the subsequent periods. These findings were not attributed to past trends and were not the product of layoffs, reductions in expenditures, and fixed assets, among others. In both studies the authors adjust for industry trends.

Besides measuring operating performance using stock prices and profitability measures, some literature measures performance at a lower level of aggregation through the total factor productivity (TFP). The work of Lichtenberg and Siegel (1990) exposed a strong positive effect on TFP in the first three years post-buyout, for a sample of LBO (mainly MBO) comprehending 1983-1986. Additionally, the authors studied employment, wages and innovation, and the research states that employment and compensation of white-collar workers decline and the investment in research (R&D) does not decline after the buyout. Harris et al. (2005), follows up the previous work, using a definition of MBO as the management purchasing controlling interest. The authors concluded that for a sample of MBO UK plants (1994-1998) are less productive than comparable plants before the transfer of ownership. Nonetheless, and consistent with Lichtenberg and Siegel (1990), MBOs experience a significant increase in productivity after buyout. According to the authors these findings relate to reduced agency costs and augment of economic efficiency, and not due to reductions in R&D, wages and layoffs of blue-collar personnel, among others. Both studies take into consideration and suggest more research concerning privately held companies, since they accounted for majority of the deals, (1982-1998).

In more recent literature this appeal remains pertinent with many authors urging for more studies regarding private-to-private transactions (Kaplan & Strömberg, 2009; Renneboog & Vansteenkiste, 2017; Tutuncu, 2021). An interesting and recent research on the evolution of

growth, performance, and employment of MBO, that not only examines the European market as well as it scans through small and medium size companies (SMEs) and takes a more restrictive version of MBO (majority owned by managers after the deal), states that British targets exhibit higher performance and employment level unlike European companies. The results also indicate that divisional MBOs perform better than independent companies' acquisitions (there is no connection to a group organisation). They also studied the influence of PE firms in these deals and concluded that the role remains unclear, and at best is neutral and limited (Bédu & Palard, 2021). Additionally, recently, Tutuncu (2021) showed that there is an (very small) increase in profitability and an increase in growth after the buyout, but that those changes are not related to the MBO transaction (per say). The author indicated that the post-buyout performance difference between divisional or full (independent) firm acquisitions are not significant, contrary to the Bédu and Palard (2021) paper. Another interesting finding is that PE-backed buyouts and buyouts in general have an increasing trend of profitability prior to acquisition. For the author PE firms target already profitable companies that after the MBO their performance declines, however still superior to the industry profitability. When controlled for that selection effect, that superiority even disappears, what is an atypical result in contrast with the literature regarding PE role (in a following sub-chapter this topic will be presented). An evident difference between early literature and more recent literature is that results on performance are more modest for the latter than the former.

2.2 Sources of Value Creation

Besides accessing the impact of the buyout transaction, it is extremely important to detect the potential sources/determinants of a positive (or negative) performance. The following sub-chapters regard the most common sources of value creation found in the literature.

2.2.1 Agency Theory

Farinha (2003) provided a survey on the corporate governance problem, with prominence on the shareholder-manager relationship in companies with dispersed ownership. One interesting conclusion was that most researchers included in the corporate governance concept the existence of a conflict of interest over the wealth generated by the company, and that it cannot be resolved contractually, therefore the existence of various controlling mechanisms. This agency conflict was largely analysed by Jensen and Meckling (1976)

culminating into the much-known theory of the ownership structure. As a result, every buyout paper does not fail to mention Jensen and Meckling (1976) and the influence of Agency Theory for conducting a buyout transaction. In summary, the literature points out that as more equity is in outsiders' hands (the case of public corporations), less is the accountability and supervision of their agents (managers), and that the utility maximization process (of the manager) will imply incentives to expropriation of value, with perquisites consumption, shirking and value-destroying behaviour.

From this theoretical background to the management buyout field, there are three main hypotheses to be extrapolated: incentive realignment³, control⁴, and Free Cash Flow hypothesis. Hence, a MBO is a “mechanism” that allows to minimize the agency conflict by aligning shareholders and managers interest, since managers end up obtaining huge amounts of ownership. Additionally with a restrictive number of investors, particularly PE-investors, there will be an increase in control. And the usual incorporation of great amounts of debt indicates that managers are constrained to discretionarily use the excess of Free Cash Flows (Jensen, 1986; Renneboog & Vansteenkiste, 2017; Simons & Renneboog, 2005).

2.2.2 The Stakeholder wealth Transfer

The stakeholder wealth transfer, in a broad sense, can be referenced to earnings management⁵, asset stripping, bondholder wealth transfer⁶ and employee wealth transfer (Simons & Renneboog, 2005). A lot of the research concerns employee wealth transfer (layoffs and wage reductions), mostly due to the bad reputation attributed to PE investors (Wright et al., 2009). Nonetheless, most literature suggest that this is not usually appointed as a significant source of post-buyout (positive) performance.

2.2.3 The Information advantage or under-pricing hypothesis

The information advantage or under-pricing hypothesis is based on the concept of asymmetric information. The idea that managers are aware or have privileged inside information that allows them to access the “true” value (potential value to be realized) of the

³ This however raises another discussion, regarding the entrenchment of managers. (Shleifer & Vishny, 1997)

⁴ The objective of a PE fund is to control and monitor the target to maximise the return on investment after a holding period of 4 to 7 years, on average. (Bédu & Palard, 2021).

⁵ It will be discussed in chapter 2.2.4.

⁶ For instance: “(i) an unexpected increase in the risk of investment projects, (ii) dividend payments, or (iii) an unexpected issue of debt of higher or equal seniority or shorter maturity” (Renneboog & Vansteenkiste, 2017, p. 8). Note that the bondholder is the pre-buyout bondholder.

company. According to Renneboog and Vansteenkiste (2017), this issue intensifies for small listed firms that have difficulty in using the equity market to fund growth. However, this hypothesis is not possible to be explicitly studied, as so Kaplan (1989b) and Smith (1990) suggest to use the following variables: the number of officers and manager that are not in the buyout deal, the comparison between the post-buyout realizations and the financial projections given by the management team to its shareholders prior to the deal, and compare the performance of firms whose management buyout proposal was not completed. Both studies, as well as Lee (1992), discarded the presence of inside information in MBO. Nonetheless, their contemporaries Harlow and Howe (1993) concluded that “LBO offers by a bidding team that includes members of management are preceded by significant abnormal net buying by insiders (..) in contrast third party LBO announcements exhibit no abnormal net buying by insiders in the pre-announcement period” (p. 117), meaning that MBOs are associated with private managerial information.

The difficulty of detecting the usage of inside information and manager misconduct in a management buyout has long been recognised. As stated by Lowenstein (1985) a matter of suspicion surrounding MBOs is the timing and price. The author pointed multiple of situations such as: (insiders) cutting or increase less dividends, deviating from market expectation; Officers declining to meet with security analysts, therefore withholding important information; overfund employee benefit; hasten investment in long term projects (that will negatively impact reported earnings); persuade the auditors to estimate expenses more conservatively, among others.

2.2.4 Earnings Management

Additionally, some authors attribute a positive performance to earnings management. This topic is particularly interesting because managers must behave in the best interest of shareholders, however if a manager connects with a PE investor to buy the company it has incentives to pay cheaper. There are different types of potential earnings management prior to a buyout transaction: accrual management, real earnings management, and asset reserves revaluation (Mao & Renneboog, 2015). Perry and Williams (1994) found evidence of negative accrual management, using the same method but a different sample than DeAngelo (1986), whose conclusions were the opposite. Mao and Renneboog (2015) concluded that there are negative earnings management (accrual management and real earnings management) preceding an MBO, and that the manipulation is greater than the ones observed in IBOs.

Meanwhile in non-buyout firms, there is positive earnings management since it impacts managers remuneration (bonuses). Interestingly, Tutuncu (2019), evaluated earnings management in MBO of privately held firms (a differentiating point from all of the other authors) and showed that the buyouts are preceded by earnings overstatement (positive earnings management) and followed by performance deterioration. The author even stated that “earnings management is not a generic phenomenon in MBOs and there is considerable heterogeneity with respect to the existence as well as direction of earnings management” (2019, p. 1378). Regarding the paper of Lowenstein (1985) in case of public-to-private transactions it “seems unlikely that management systematically took to conceal information about earnings and prospects or that it depressed the company's stock price or reported earnings. Many of these companies had substantial reputations for being well managed and open to security analysts” (p. 743). The author even pointed out that it would not be in management best interest to understate earnings when in need of resorting to MBO as a defensive mechanism against hostile takeovers.

There are more hypothesis for the sources of value creation such as tax benefits (Kaplan, 1989a), transaction cost reduction (H. DeAngelo et al., 1984) takeover defence strategy (Lowenstein, 1985), etc.

2.3 PE-Backed Deals

2.3.1 Definition and Evolution of PE

Private equity (PE) is considered an alternative asset class or type of financing for companies. The private equity firm is responsible for raising equity capital via (usually) a “closed-end” fund with a limited life (typically 10-13 years). Those funds are organized as limited partnerships⁷ with the private equity firm serving as the general partner (Kaplan & Strömberg, 2009). The characteristics associated with PE investments are: PE funds hold significant (typically majority) portions of equity⁸ (Kaplan, 1989b; Kaplan & Strömberg,

⁷ Limited Partners provide most of the capital (directed to the investment in the fund's companies and management fees of the management of the fund). General partners are in charge of managing the fund and usually provide 1% of the total Capital. Limited Partners tend to be accredited investors, i.e., institutional investors such as pension funds, university endowments, insurance companies, as well as qualified clients, i.e., wealthy individuals (HNWI). For more information see, Kaplan and Strömberg (2009).

⁸ Concentrated ownership post-buyout.

2009); PE firms have strong incentives on being active shareholders⁹ in order to achieve superior returns in a limited period of time (Jensen, 1989; Wood & Wright, 2009); PE firms are seen as specialized investment firms (Cressy et al., 2007); and PE-backed deals are usually financed with huge portions of debt (60%-90%), therefore the term leverage buyout being used as a synonym for PE (Kaplan, 1989b; Kaplan & Strömberg, 2009).

PE is subject to boom-and-bust cycles, influenced by economic and financial conditions, for instance, the interest rates (lending market), the earnings and stock market values (capital markets).

Private Equity emerged around the 80s as a result of the favourable conditions on junk bond debt market, and it was most concentrated¹⁰ in US, Canada and UK (Bharath & Dittmar, 2010; Kaplan & Strömberg, 2009). The transactions value went from \$1.4 billion in 1979 to \$77 billion in 1988 (Bharath & Dittmar, 2010). During this period half of the M&A deals were LBOs, an increase from 4% to 27% (1981-1986) both in number and average size of the deals (Lichtenberg & Siegel, 1990). According to Kaplan and Strömberg (2009) the first buyout wave perpetuated the idea that leveraged buyouts is equal going-private transactions of large companies, in mature industries.

In the 90s, junk bond crashed, and many of PE deals (LBOs) resulted in default and bankruptcy. Going private transactions “virtually disappeared” by the early 1990s and were scarce up to 2000s. Nonetheless, private-to-private deals were more resistant during that time and took most of the activity. Additionally, this era was accompanied by an activity growth in different industries (technology, media, telecommunications, health, and finance). Overall, the value of transactions dropped about 3 times during the entire period, although deals between 1990 to 1994 was two times superior to the golden years of the 80s (1985-1989) and if not included the period of the *Tech Bubble*, from 1995-2004 there was a steady growth. In the end of the period there was a rise in popularity of secondary buyouts (+20% total transaction value), divisional buyouts and the growth of the European (UK included) PE market (48.9% worldwide LBO transaction value), (Kaplan & Strömberg, 2009).

⁹ “Private equity firms typically become active investors through taking board seats and specifying contractual restrictions on the behaviour of management which include detailed reporting requirement” (Wood & Wright, 2009, p. 361).

¹⁰ Accounted for more than 89% and 93%, respectively of the global LBO deal transactions and transaction value (Kaplan & Strömberg, 2009).

Another wave of LBOs, particularly public-to-private, happened mid-2000s. The years of 2006-2007 the private equity market experience extreme capital committed, and it was observed an intensification of past trends and growth in new markets (e.g., Asia). According to (Kaplan & Strömberg, 2009), the new wave rivalled the activity of the first wave, mostly affected by the return of public-to-private transactions, however the with the turmoil in the debt markets followed by the financial crises (2008), PE activity dropped.

In 2021 the global private equity deal volume and count reached new hit records, respectively \$2.04 trillion and more than 14,000 deals (McKinsey & Company, 2022). Hence, whenever it is discussed the evolution of this corporate organization, Jensen (1997) Harvard article entitled “eclipse of the public corporation” surfaces to validate at the time statements that PE would become the dominant organization form as a result of the superiority in corporate governance, active owners, managerial incentives, efficient capital structure and others (Strömberg, 2008). Therefore, it is still important and relevant to study the private financial markets.

2.3.2 PE Impact on Portfolio Companies

The most appointed motives for any company to seek PE financing are to alleviate financial constraint, mitigating of information asymmetry through due diligence, close monitoring, PE reputation in the capital markets, and advanced management skills and industry networks. All in all, to help the target to implement their expansion strategy and generate growth (Boucly et al., 2011; Chung, 2012).

Regarding MBO in particular, Lowenstein (1985) stated that in the early 1970s companies that were doing MBO were small “many of them the product of a market bubble that permitted even start-up companies, with no operations whatever, to sell securities publicly” (p. 735), and the bought back of the publicly owned shares would be undeniable occurrence due to the (at the time) stock market decline and the fragmented public investor with no mechanism for collective bargaining. In the going private transaction literature from the 80’s-90’s, MBOs were analysed through the perspective of a minority stake for the management since this was the most common deal. According to Lowenstein (1985) the reason was that the size of the companies analysed were too large and “managers no longer can hope to own a controlling block of stock” (p. 736). More recently and, according to (Chung, 2012) MBOs are still comparability scarce. In his study of private-to-private UK

LBOs (1998-2007), the average ownership of the largest owner pre-deal is 86% and most of these owners (97%) are already managers, and that the average ownership of the owner-managers drops to 7% after the buyouts. Overall the relationship between the managers of the target firm and a PE firm can be as distinct as management seeing PE as “allies/white Knights” in the case of participation in the buyout deal, or as “rivals” in case of PE being part of an hostile takeover (Kaplan & Strömberg, 2009; Lowenstein, 1985). This raises a significant question, why would PE partner with managers (and vice-versa), and does the partnership improve the performance?¹¹

As already acknowledged in chapter 2.1, whenever we are talking about performance based on (operating) profitability (Kaplan, 1989b), cash flow (Smith, 1990), productivity (Lichtenberg & Siegel, 1990), or other measures, it is reported superiority in performance for MBOs. Note that, PE firm’s ability of producing above the market returns is key to continue to raise additional funds, hence the seeking of maximizing performance and value of their portfolio companies. (Cressy et al., 2007)

On a more recent literature, Cressy et al. (2007) work for a sample of UK buyouts (general) from 1995-2002, concluded that PE-backed buyouts perform better (operating performance) post-buyout than comparable companies, and that superiority is due to the superior corporate governance/activism and industry-specialization. Nonetheless, Guo et al., (2011) tried to contribute to literature with a sample of US buyouts from 1990-2006 and concluded that LBOs were “conservatively priced”, “less highly levered” than the buyouts of the 1980s (first wave). Nevertheless, the default risk is still significant for the companies. Additionally, they proved that the firms in their sample experience large increases in value from the buyout to the PE exit (which entails large returns on capital and debt invested). When it comes to operating performance, the gains are either comparable or slightly above of a control group formed by firms matched by industry and pre-buyout characteristics. Cash flow improvements are smaller than those reported in the first wave, and the larger the debt increased followed the buyout, the larger the gains. Interesting, is the fact that this study reports that CEO replacement after buyout is associated with superior Cash-Flow performance. Likewise, Jelic and Wright (2011) examined the long-term performance of

¹¹ That is what is being tested in this dissertation, by resorting to a sample of PE-backed deals, contrasting MBO with other IBO.

management buyouts (post-buyout and post-exit performance). Among many findings, they concluded through a univariate analysis that “output” (Inflation adjusted- sales), employment, and profitability, present significant increases, however their results in a multivariate analysis only confirmed the “output” improvement. Moreover, besides PE backed deals achieving significantly higher returns than non-PE backed firms, when it comes to superior performance on profitability the results were weak. Fidrmuc et al. (2013) using a sample of Public-to-private transactions from the UK (1997-2003), concluded that post-deal performance for both MBO (general) and PE backed deals outperform the industry. Nevertheless, though the MBO improves the performance after the deal, the PE backed deals were already performing above the peers. Therefore, the authors established that the PE role is passive. On a slightly different note, Bruining et al. (2013), assessed whether or not the PE firms with their short-term strategy regarding profits and high deal prices jeopardizes the management ability to “initiate and sustain” entrepreneurial management post MBO (Netherlands, 1996–2004). The finding was that for majority PE-backed buyouts there is a significant increase in entrepreneurial management.

All in all, more recent literature has been showing that either overall buyout operating performance or PE firms influence on operating performance is not as positive and consensual as in early literature contributions. These disparities can either be tracked to the different methodologies and samples¹², as well as the characteristic of each (and new) wave.

2.4 Public-to-Private vs. Private-to-Private

As stated in the last paragraph, one may wonder if “going private” (Public-to-Private) buyouts or “private-to-private” buyouts present significant differences in performance, since they embody different ex-ante firm attributes and motives for the buyout (Harris et al., 2005).

To introduce this topic of Public-to-Private transactions, Bharath and Dittmar (2010) formulated different theories regarding the costs and benefits of public firms going private. Those theories can be of various types, regarding the driving forces behind each model: information considerations, access to capital, control, liquidity, agency, and other considerations. The results strongly support the importance of information and liquidity in being a public firm, on the other hand (lesser need for) access to capital, control, and Free-

¹² For instance Jelic and Wright (2011) appoint the treatment of selection bias as a possible justification.

Cash-Flow theories at some extent, play an increasingly role on the decision of a public company going private. More interesting, is the finding that factors inherent and observable of a company at the time of its public listing determines if eventually will reverse its public status (and not just the path of a firm). Still regarding public companies, according to Chung (2012) the motivation of a leverage buyout is less likely due to resource-constraints¹³. The reason for the going private transactions are more associated with reducing agency costs (Renneboog et al., 2007). Also, it may simple indicate that the company no longer needs public resources (Chung, 2012). The public status allows a company to establish its (market value) as well as engaging in M&A activity (specifically using shares as currency for acquisitions). In situations where public companies are not as active in the market for corporate control, it is more likely to go private (Bharath & Dittmar, 2010). Lastly, the costs of compliance (e.g. reporting) is sometimes appointed as a rationale for public-to-private deals, however Lowenstein (1985) stated that: “the old explanations seem feeble. Surely, a billion-dollar company does not go private to save legal fees and the other routine expenses of having publicly traded securities” (p. 743).

As for Private-to-Private transactions, it is important to acknowledge that private companies have limited and/or costly access to public financing, both due to information asymmetry and ownership structure. Private firms are more likely to be financially constrained, both in internal and external financing. Therefore, when facing an investment opportunity, *ceteris paribus*, private companies will face more difficulties in implementing. Not only that, but the presence of owners with undiversified portfolios may obstruct the additional risks associated with new expansion strategies. Another premise is that sometimes managers are not knowledgeable enough on how to implement new and innovative strategies (Chung, 2012). Boucly et al. (2011) found that LBO targets grows significantly more after de deal than comparable firms. Debt increases after the deal to finance asset growth. The author points out to the fact that the ownership structure previous the buyout deeply affects the results. Meaning that, for private-to-private transactions, the increase in size, capex, and debt (post-deal) is more prominent (than other buyouts), particularly in companies from financially dependent industries. Once again consistent with the idea that PE deals foment the access to capital, specifically debt, of their portfolio firms. Additionally, most privately held firms

¹³ Even Bharath and Dittmar (2010) showed that when public companies are constrained in financing terms it is more likely for them to remain public.

(smaller firms) do not benefit as much from the agency costs reduction, since most of their ownership structure is already concentrated (e.g. family business), (Harris et al., 2005; Tutuncu, 2021).

2.5 The Importance and Aim of This Study

In the present work and following many of the literature presented in this dissertation, the goal is to evaluate the operating performance of MBOs and compared it to a more broader buyout strategy, IBOs¹⁴. The evaluation of the difference in performance between MBOs and IBOs is relevant even in a PE setting. Although, the main characteristics of any private equity deal is the ownership concentration (reduced agency costs¹⁵), massive leverage (tax benefits and expenditure constrains) and the quality control and monitoring of the business (Kaplan & Strömberg, 2009), which indicates that majority of the presented of sources of value creation for an MBO are not different from any other PE-backed deal, there are two hypothesis of value creation of MBO that PE sponsors might not be able to benefit (as strongly) in any other type of deals. One is the earnings management hypothesis, and the other is inside information hypothesis.

Moreover, there is an immense gap of research since the 90s-00s era, with research being particularly scarce for the last decade. Additionally, most research is condensed in the US market where studies on MBO, and buyouts in general, use a sample of Public-to-Private deals, mostly due to the regulatory constrains to access private data, which in itself imposes that from those deals, only companies that post-deal issue public debt can be used, presenting important selection bias (Smart & Waldfogel, 1994; Tutuncu, 2021).

To the best of our knowledge this is the first study that analysis a sample exclusively after the 2008 financial crisis.

As a result of the previous chapters, the research question (or hypothesis to test) is:

- **Management Buyouts outperforms other buyouts strategies (IBOs)?**

¹⁴ To the best of our knowledge, only Mao and Renneboog (2015) accomplished something similar, while studding earnings management.

¹⁵ Plus, if we account that majority of the deals are private to private, this effect is even smaller. (Tutuncu, 2021)

Additionally, whether PE firms take upon the role of active shareholders, are just great “cherry pickers” of their portfolio companies, or alleviate financial constraints, among others, the literature unanimously highlights that companies that undergo buyouts with PE sponsoring tend to perform better than their counterparts, meaning non-PE-backed deals. Also, more recent literature that resorts to a sample of private-to-private deals or mixed deals (Boucly et al., 2011; Chung, 2012) relatively lower performance than the early studies that were about going private deals (Kaplan, 1989b; Smith, 1990). Hence, through a robustness analysis, it will be tested if PE-backed deals perform better than non-PE backed deals, and if Public-to-private deals perform better than private-to-private deals.

3. Data Sample and Methodology

This section aims to describe the methodology used and the sample adopted. The sample selection and methodology are an adaptation and combination of the work of Kaplan, (1989b), Boucly et al. (2011), Guo et al. (2011), and Tutuncu (2021).

3.1 Methodology

To achieve the goal of this study, the methodology will contain a univariate and multivariate analysis. A univariate analysis does not deal with causes or relationships, whereas a multivariable analysis does. The reason why it is going to be performed in this dissertation is to examine how each aspect of performance behaves before including in a multivariable analysis. In the univariate analysis, in line with what other authors have done, the variables are proceeded to be adjusted by the control sample. In the multivariate analysis a difference-in-differences (DID) regression will be constructed. The method of DID aims to capture the difference in outcomes across MBOs (treatment/target firms) and IBOs (control group), before and after the buyout (between pre-treatment and post-treatment).

To perform a pre- and post-buyout analysis of performance, it is necessary to choose a limited time window. Even though some authors use extensive periods of time, in this dissertation it is used a time span of 6 years¹⁶, 3 years preceding the buyout and 3 years post-buyout. The reason to use more than just the year prior to the buyout is given by Smith (1990) since analysing past changes offers an opportunity to access whether the post-buyout performance is attributable to the MBO are just a continuation of past trends. The explanation for 3 years post-buyout completion concerns the avoidance of survivorship bias¹⁷ and the chaos of treating post-buyout years with and without the PE-sponsor as the same. According to Kaplan (1989b) the new company will have in some moment in time a “valuation”, maybe because it was liquidated, sold to a strategic buyer, went through an IPO, resorted to public debt markets, etc. Kaplan (1989b) stated that the average time from the going-private date to a valuation date was 2.68 years (1980-1986). According to Strömberg

¹⁶ As common practice, information concerning the year 0, the year of completion of the buyout, will not be considered as it can contain pre- and post- buyout effects.

¹⁷ With extensive periods of time, there would be huge survivorship bias and it could not be guarantee that the sample is a representative sample. The survivorship bias would imply that only successful companies would be represented since others might have been sold or liquidated too early. To get a more thorough analysis of long-term performance this study must be linked to the exit routes and deal status of all transactions. An evaluation on the exist routes would entail a new type of dissertation, although very interesting.

(2008) the median individual holding periods for LBO transactions with PE sponsors are 42 months (3.5 years), 34 months (2.83 years) without a PE sponsor (1974-2007). Overall, holding periods of PE funds have increased since the 80s and 90s, especially if it is taken into consideration secondary buyouts (Kaplan & Strömberg, 2009; Tutuncu, 2021).

3.1.1 Univariate Analysis

This analysis starts by looking to the percentage change and adjusted change (adjusted by the benchmark/control sample, therefore adjusting for target industry, macroeconomic effects, and most importantly, the buyout environment) of profitability and growth variables. The construction and the necessity behind a control sample will be explained in following subchapters.

It will be paid more attention to median results to avoid the outliers' effects. Therefore, Wilcoxon signed-rank tests are going to be performed for the median changes, to access if are they are statistically different from zero.

It is important to keep in mind that it is only possible to make extreme rough comparisons between the literature and this dissertation due to many reasons: (1) most literature assesses buyouts performance in general and not exclusively management buyouts (at least, not in the definition used in this dissertation); (2) Samples are fundamentally different as they represent different periods and geographies (3) when referenced the control or matched sample, in this dissertation it is being compared against other buyout strategy (IBO), and not non-buyout firms.

3.1.2 Multivariate analysis

3.1.2.1 DID Method Explanation

The econometric model developed in this dissertation is the difference-in-differences (DID)¹⁸ model. When studying performances in M&A, what most researchers want to access is whether the companies would be different if they had not been acquired. Unfortunately, there is not a “crystal ball” to reveal what the consequence of a non-acquisition would be; therefore, it is extremely important to form a comparable control group. The DID method

¹⁸ “The DID identification strategy is to compute the difference of the mean outcomes of treated and controls after the treatment and subtract the outcome difference that had been there already before the treatment had any effect” (Lechner, 2010, p. 176).

ignores industry and economic factors that affect companies in similar ways, thus not attributing to MBO a performance impact that it is not responsible for (further information in Appendix I). However, in this study it is not only examined the operating effect of an MBO. In fact, it is tested what is the operating effect of an MBO relatively to other types of buyouts, more precisely IBO. In another words: “What would be the operating performance of a target firm if it was acquired through an MBO rather than a typical Buyout?” Even though it is not compared to non-buyout firms, the IBO deals gathered to constitute the control sample do need to be comparable, for doing so, the Propensity Score Matching method was used.

As most econometric models there are limitations associated with the DID estimator. A few of the most important: It can overstate the true MBO effect, in case of “surprises”. The model assumes that the MBO sample had not been subjected to the treatment, both subpopulations (MBO and IBO) would have experienced the same time trends (common trend assumption). Nonetheless this is not an unbearable limitation since Smart and Waldfogel (1994, p. 509) in their study about the disparity between DID and difference-in-surprises (DIS), concluded that the evidence that DID overstates the true MBO effect is weak (Lechner, 2010). Another important limitation regards the violation of the stable unit treatment value assumption. STUVA implies consistency and no interference of the “treatment”. Consistency meaning that the treatments are well-defined, which importance it is emphasised in chapter 3.1.2.3 (meaning that MBOs are a well distinct from IBOs). The no interaction is slightly more difficult to control, but also to detect in this sample. The interference will imply that an MBO event can influence the performance of another IBO. Lastly, survivorship bias and selection bias. Survivorship bias as explained prior is being partially controlled and selection bias is partially mitigated because the baseline case study requires that both subsamples (MBO and IBO) are backed by PE firms. For instance, majority of studies on LBO/MBO performance draw attention to the fact that selection bias can occur when comparing MBO firms and industry firms, since buyouts are not exogenous events (for example, companies with high growing prospects tend to be targeted by PE funds) and they are not randomly distributed (Bédu & Palard, 2021; Boucly et al., 2011). Not only that, but the matching process of the control group already considers pre-buyout characteristics.

3.1.2.2 Regressions Specification

$$Y_{it} = \beta_0 + \beta_1 DMBO_i + \beta_2 DAfter_t + \beta_3 DMBO_i * DAfter_t + \beta_4 Controls_{it} + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \begin{cases} ROA_{it} \\ ROS_{it} \end{cases}$$

$$Controls_{it} = DUK_i ; DPUB_{it} ; DPAND_t ; DCRISIS_t ; DTECH_i ; \log(Total\ Assets)_{it}$$

3.1.2.3 Variables

Operating performance is measured using the return on assets (ROA, i.e., EBIT/Total Assets) and return on sales (ROS, i.e., EBIT/Sales). The division by assets and sales allows to partially control for divestitures (and acquisitions) and differences in growth (Kaplan, 1989b). The ratio allows for compatibility across deals. We use both indicators since comparisons pre- and post-buyout using ROA can be difficult, since (usually) the accounting value of assets changes after the buyout. Moreover, these are the operating performance variables on most of the literature review, which allows for a rough comparison between the results (e.g., Bédu & Palard, 2021; Boucly et al., 2011; Guo et al., 2011; Jelic & Wright, 2011; Kaplan, 1989; Tutuncu, 2021).

DMBO is the treatment variable, and it is a binary variable, i.e., a variable that equals to 1 for an MBO, and 0 otherwise (IBO). In this dissertation, the MBO definition is all or some of the incumbent management acquires (ultimately obtains) at least 50% of the company¹⁹. The motivation for strictly setting the minimum threshold at 50% stems from more recent literature drawing attention to the fact that most studies on MBO intertwine with the studies on IBO (LBO), and it would not be possible to perform the desirable methodology without a concrete distinction between IBO and MBO. For instance, Kaplan (1989b) and Smith (1990) estimated that the median post-buyout ownership for management (after a “Management Buyout”) was respectively, 22.6% and 16.7%. DAFter is a binary variable that equals 1 in post-buyout (MBO) years, 0 otherwise. Variants of this last variable is the

¹⁹ Zephyr definition (2022): All or some of the existing management of the company buy at least 50% of the company from its existing owners. A private equity company is often brought in to aid the purchase through provision of equity funding. A ‘new company’ (newco) is normally formed by the management team specifically to purchase the Target and often the newco’s name is an anagram of the Target. The Acquiror company would also show ‘MBO Team’ unless the name of the newco is known. If the name of the newco has been released, this company would be entered as the Acquiror. If the Private Equity firm backing the deal takes a majority stake in the Target, the deal is not defined as an MBO and would be coded as an IBO.

DAFTER1, AFTER2, AFTER3, where the post buyout effect is analysed for each year after buyout ($t+1$; $t+2$; $t+3$). Additionally, DPUB is a binary variable that equals 1 if the buyout was a publicly held firm in the year pre-buyout, 0 otherwise. DUK is a binary (and control) variable that equals 1 if the buyout target headquarters are in the United Kingdom of Great Britain and Northern Ireland. There are two reasons for controlling this country. In this dissertation sample, this is the most common geographic region. Not only that, the UK market is a strongly developed buyout (LBO) market and it has been the second largest market in the world. (Bédu & Palard, 2021; Strömberg, 2008). However, in geographies where capital and credit markets are not as large and well-functioning, PE buyouts are extremely important relaxing financial constraints and developing growth opportunities (Boucly et al., 2011). Log (Total Assets) is the logarithm of the buyout company total assets, a commonly used control variable that aims to control for companies' size since it can influence performance. The logarithm will control for outliers. DCRISIS, is a binary (and control) variable that equals 1 if pre-buyout performance is referenced to the years 2008 or 2009, otherwise it equals 0. Same thing applies to DPAND, is a binary (and control) variable that equals 1 if pre-buyout performance is referenced to the years 2020 or 2021, otherwise it equals 0. These control variables are intended to control for the abnormal performance (impacts) that occurred during the financial crises and covid-19 pandemic. Finally, within the field of buyout performance valuation, some papers control for the High-Tech industry due to their substantial growth potential and high portion of intangible assets making the accounting performance different from traditional industries (Jelic & Wright, 2011; Tutuncu, 2021). In this study is represented by the section J. Information and Communication, in the Broad Structure of NACE Rev.2 Industry classification. Consequently, DTECH is a binary (and control) variable that equals 1 if the buyout target is from the Information and Communication industry, otherwise it equals 0.

3.2 Data and Sample selection

The data was collected from Zephyr and Orbis databases²⁰. The motivation behind the selection of those databases resorts in Zephyr containing information regarding private equity-backed deals and whose parties involved display an identification number (*BvD ID number*) that can be used to collect the financial/accounting information from the portfolio

²⁰ Available at <https://zephyr.bvdinfo.com/> (Zephyr, 2022) and <https://orbis.bvdinfo.com/> (2022)

companies/targets of those deals using Orbis platform. Additionally, Zephyr defines management buyouts as intended for this dissertation.

From Zephyr it was gathered two data sets, one filtered by private equity and (deal type) management buyout (completed and assumed-completed), and the second data collected was filtered by private equity and (deal type) institutional buyouts (completed). In both samples, the geographic region is the European continent²¹ and the time window of those deals falls between 2010-2020. Initially presenting 1,124 deals of Private Equity-Backed MBOs and 8,312 for Private Equity-Backed IBOs²². The data was scanned to identify the public-to-private and private-to-private deals, and the necessary variables were respectively assigned from Orbis.

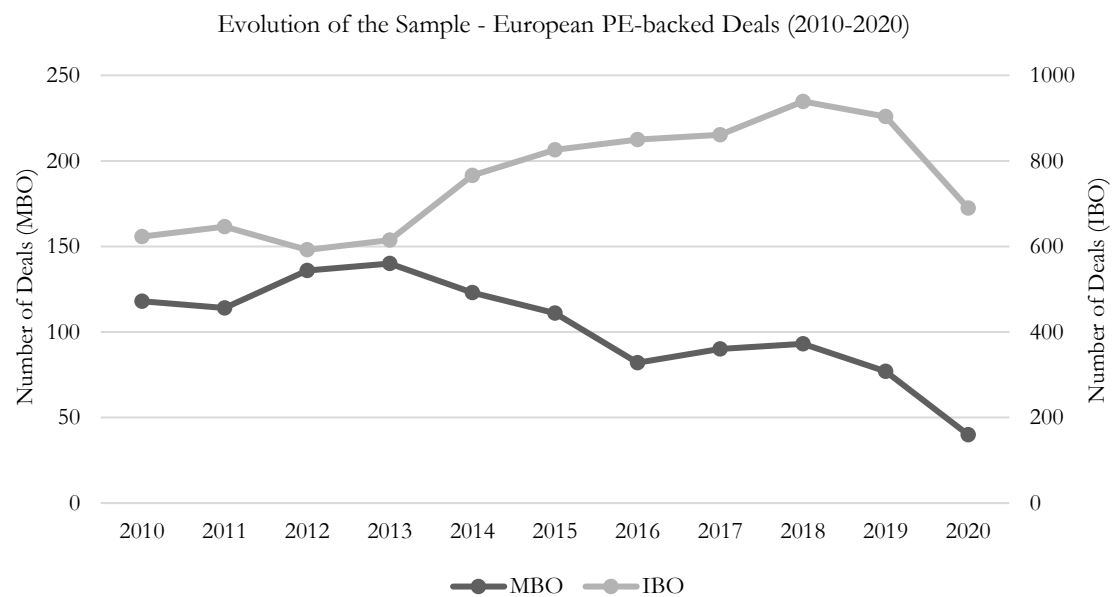
The number of buyout deals (MBO and IBO) by year is presented in Figure 1. In the figure is visible that in the last decade these two concepts of buyouts presented an opposing trend. Another clear observation is that IBO deals (PE-backed) are clearly more frequent than MBO deals (PE-backed), over the entire period is 7.4x more, and with the decreasing trend of MBOs that gap widens. When accounting for deal value (2,867 IBO deals and 245 MBO deals whose deal value (estimated included) are available) it is observed a similar negative trend in MBOs and positive in IBOs, and the immense disparity (overall IBOs were 47x larger in value) between deals values from IBOs (PE-backed) and MBOs (PE-backed) (Figure 2). From these deals, 178 are going private transactions, 2 MBOs in France and UK (both in 2015), and 176 IBOs in multiple countries from 2010-2020.

Unfortunately, since there has only been 2 PE-backed MBO deals that constituted a public-to-private transaction, it will not be possible to study the agency costs difference between a MBO and an IBO.

²¹ Eastern European Countries: Bulgaria, Czech Republic, Estonia, Hungary, Moldova, Poland, Romania, Slovakia, and Ukraine, Russia; Western Europe Countries: Austria, Belgium, France, Ireland, Luxembourg, Monaco, Netherlands, Switzerland, Germany; Northern Europe: United Kingdom and Ireland; Denmark, Finland, Iceland, Norway and Sweden, Lithuania, Latvia, Estonia; Southern Europe Countries: Serbia, Andorra, Italy, Spain, Malta, Croatia, Bosnia and Herzegovina, Slovenia, Portugal, Greece.

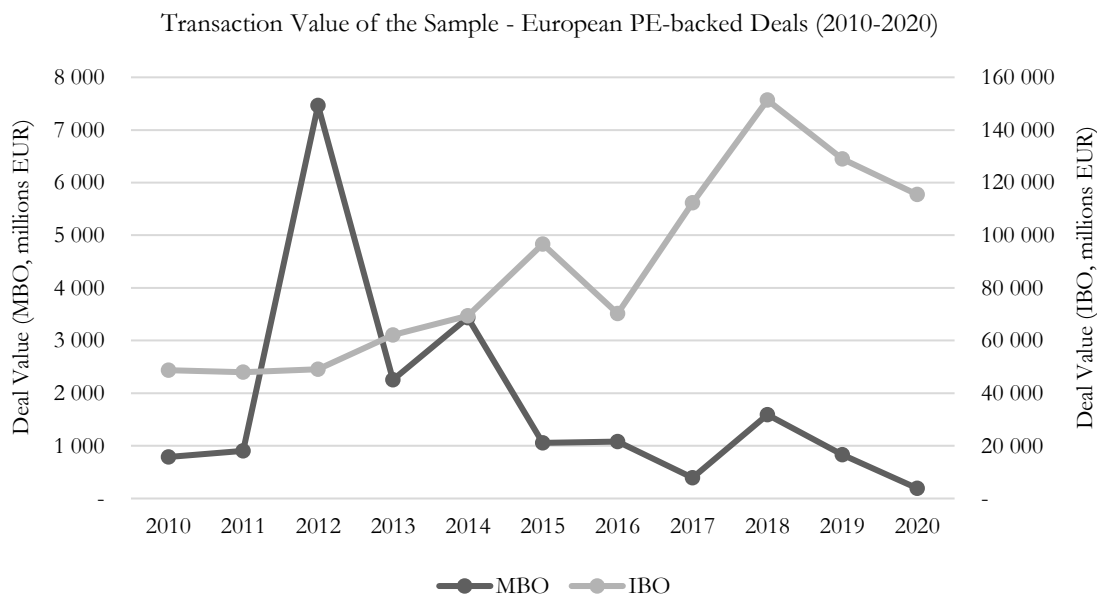
²² For the robustness check, was also collected Non-Private Equity- backed MBOs and IBOs resulting in a total of deals (PE-backed and non-PE-backed) of 3,250 and 8,345.

Figure 1. Evolution of MBO and IBO.



Source: Zephyr

Figure 2. Transaction Value of MBO and IBO.



Source: Zephyr

3.2.1 Analysis and Treatment of the sample

The raw data collected was treated, by removing deals whose target *BvD ID number* is missing, since without that identification it could not be collected the company's performance variables. Another concern is the resurgence of the same target company in different deals between 2010-2020 (duplicate Target *BvD ID number*). Whenever the time span between deals in a company is equal or less than 6 years, the dataset cannot contain the duplicate on the risk of considering an observation as pre-buyout and post-buyout at the same time. As visible in Table 1., some deals fall under the previous condition more than 2 times, some extreme cases as 4 and 5 times are the consequence of the data platform provider (zephyr) errors (i.e., accounting as different deals, (deals that occurred a few days/months apart, implying that those registrations are unreasonable and, therefore, glitches). Additionally note that, the duplicates in target (identification) are not only of concern intra-sample but inter-samples (MBO and IBO).

Table 1. Number of targets involved in deals between 2010-2020

MBO		IBO		Full Sample	
Number of companies	Number of deals	Number of companies	Number of deals	Number of companies	Number of deals
1,044	1	6,461	1	7,329	1
25	2	510	2	608	2
	3	33	3	43	3
	4	5	4	5	4
	5	1	5	1	5
Total of deals:	1,094	Total of deals:	7,605	Total of deals:	8,699

Source: Zephyr

Since none of the deals had more than 6 years between them, all duplicates (and more) were erased. Subsequently, deals with completed and assumed date missing, as well as target country code, were eliminated. After the previous treatments we get the geographical distribution shown in Table 2. As expected, most of the deals (either MBO or IBO) occurred in Great Britain (GB).

Table 2. Distribution of deals by geography of the target company, for deals completed between 2010-2020

MBO			IBO			Full Sample		
Country Code	Number of Deals	%	Country Code	Number of Deals	%	Country Code	Number of Deals	%
GB	552	50.5	GB	1,741	22.9	GB	2,293	26.4
FR	306	28.0	FR	994	13.1	FR	1,300	15.0
NL	52	4.8	DE	931	12.3	DE	977	11.2
DE	46	4.2	NL	618	8.1	NL	670	7.7
BE	21	1.9	IT	589	7.8	IT	604	7.0
IT	15	1.4	ES	522	6.9	ES	534	6.1
FI	15	1.4	SE	362	4.8	SE	374	4.3
ES	12	1.1	DK	227	3.0	FI	238	2.7
SE	12	1.1	FI	223	2.9	DK	237	2.7
CH	11	1.0	PL	209	2.8	PL	212	2.4
Others	51	4.7	Others	1,178	15.5	Others	1,248	14.4
Total	1093		Total	7594		Total	8687	

Source: Zephyr

Later on, 30 observations (1 MBO and 29 IBO) were dropped due to lack of information in Orbis platform. Additionally, deals whose companies did not have the 4-digit NACE Rev.2 industry code were removed. The industry segmentation distribution is shown in Table 3. Manufacturing, Information and Communication, Financial and Insurance Services, and Professional, Scientific and Technical Activities are the most frequent within the full sample. Manufacturing leads in both subsamples (24.5% in MBO and 23.1% in IBO), however, in the MBO sample is followed by Information and Communication (14.7%) meanwhile for the IBO sample is followed by Financial and Insurance Services (15.4%).

Lastly, some companies have missing data in certain variables. This lack of information can be due to many factors, nonetheless it was kept information regarding a certain deal if, at least, could be guaranteed a minimum of one year prior and one year after the buyout, of the performance variable. Additionally, it was required for deals to fully have information regarding the variables needed to construct the control sample (explained further in 3.2.2).

Table 3. Distribution of deals by industry of the target company, for deals completed between 2010-2020

The table provides a breakdown of industry using the Broad Structure of NACE Rev.2.

NACE Rev.2 Code			Number of Deals					
Section	Divisions	Industry Description	MBO	%	IBO	%	Full sample	%
C	10-33	Manufacturing	221	24.5	1,418	23.1	1,639	23.3
F	41-43	Construction	35	3.9	179	2.9	214	3.0
G	45-47	Wholesale and retail trade; repair of motor vehicles and motorcycles	116	12.9	762	12.4	878	12.5
H	49-53	Transportation and storage	20	2.2	136	2.2	156	2.2
J	58-63	Information and communication	133	14.7	742	12.1	875	12.5
K	64-66	Financial and insurance activities	97	10.8	941	15.4	1,038	14.8
M	69-75	Professional, scientific and technical activities	107	11.9	822	13.4	929	13.2
N	77-82	Administrative and support service activities	96	10.6	364	5.9	460	6.5
Q	86-88	Human health and social work activities	14	1.6	161	2.6	175	2.5
Others (a)			63	7.0	601	9.8	664	9.4
Total			902		6,126		7,028	

(a) A - Agriculture, forestry and fishing (01-03); B - Mining and quarrying (05-09); D - Electricity, gas, steam and air conditioning supply (35); E - Water supply; sewerage, waste management and remediation activities (36-39); I - Accommodation and food service activities (55-56); L- Real estate activities (68); O - Public administration and defence; compulsory social security (84); P - Education (85); R - Arts, entertainment and recreation (90-93); S - Other service activities (94-96)

Source: Orbis

3.2.2 Control Sample

The control sample was created based on the Propensity Score Matching procedure. This is a different approach from most of the literature presented in this dissertation, although it is an extremely popular method in social-economics papers, such as the labour market, governmental policies, etc. The method is therefore available for studies regarding empirical studies, as the issue of fundamental valuation (cannot observe the outcome with and without treatment for the same individual at the same time) and selection bias need to be addressed. The matching approach is crucial for being able to attribute the difference in outcomes (operating performance) to the treatment (management Buyout). This method as many others has its own limitations, being the underlying assumption the unconfoundedness. Most literature resorts to (simple) covariates matching, meaning that for each MBO deal it would be gather variable by variable the most similar observation in the IBO deal sample (which

can result in contradictory suggestions and entailing to select the variable that is more important). If we have more than one variable and a lot of observations in the sample, it becomes a very complicated procedure – Dimensionality Curse.

The propensity score matching will allow to account more for the variables that are strong predictors, and with resource of a statistics software (such as SPSS statistics) it is an easy and automated process to do. In simplistic terms, the propensity score is the probability [0,1] of a unit being assigned to a particular treatment (MBO) regarding (conditional to) a set of (observed) covariates. Then one by one, treated, and controlled observations will get their own predicted probability based on the fitted regression. Subsequently is the process of matching based on those scores. Lastly, the chosen match was a 1:1; with replacement²³ and a minimum matched tolerance possible (0.02) to obtain a match to every deal in the MBO sample. The variables (covariates) used in this logistic regression are inspired by the literature review, the Log (Total Assets) of the year pre-buyout will be used as a proxy for company size, the ROA of the year pre-buyout for profitability and the NACE Rev.2 (four digits code) for industry (e.g., Boucly et al., 2011; Kaplan, 1989). Additionally given the differentiated nature of this dissertation, comparing to other buyout strategies, the buyout deal year was also taken into consideration.

The final sample is constituted by 338 MBO deals and 338 IBO deals. All deals are mostly from UK (24.0%), France (20.7%), Germany (14.8%), and Belgium (12.7%) in the Manufacturing (29.6%) and Information and communication (16.6%) industry, with more frequency between the years 2012-2016 and between 2018-2019.

²³ Matching with replacing entails that more than one IBO deal can be used for more than one MBO deal, whereas without replacement it can only be used once. According to Lechner (2010) the matching with replacement implies a trade-off, meaning that the quality of matching increases (less selection bias), however it can increase the variance of the estimator. A problem identified by the author is that matching without replacement is that estimates will depend on the order in which observations are matched, therefore, it should be ensured that they are done randomly.

3.3 Descriptive Statistics

To have a better understanding of the MBO group and IBO group it was performed a statistical analysis on the relevant variables for this dissertation. As shown in Table 4, there is a considerable high dispersion in size, in the year pre-buyout, regarding entire sample and subgroups, as mean and median deviate a lot, most likely pointing to the presence of outliers. Moreover, the MBO and IBO groups are statistically different, in median values, for size (Total Assets) and Cash Flows (EBIT as a proxy), more specifically MBO involves smaller and more profitable companies than IBOs. Regarding operational ratios, MBO targets pre-buyout deal years ($t-3$; $t-2$; $t-1$) have a significantly higher ROA, implying that in median terms they use more efficiently their assets. When analysed ROS, it is possible to concluded that, in median and mean values, MBO companies more efficiently transform turnover in profitability than the control sample in the year pre-buyout. Additionally, it is not possible to state that performance measured by ROS in two- and three-years prior are statistically different between samples. If post-buyout years ($t+1$; $t+2$; $t+3$) are analysed, MBO targets present higher operational performance than matched sample (IBO), for both metrics (ROS and ROA) and with ROA being statistically different at 1% significance level all post-buyout years either using the T-student test and Wilcoxon signed-rank test. This is extremely relevant since one may wrongly infer that just because MBO has a greater observed performance than IBO that that is attributed to the event of the MBO itself. Note that, the MBO sample deal was already presenting performance advantage compared to IBOs. Note also, to conduct the following multivariate analysis, ideally the measures before the deal should be equal for both samples. However, when dealing with empirical studies that is something difficult to happen. Finally, the observed difference is more prominent in mean values and more similar in median values. Some mean values reach extreme results indicating strong influence of an outlier or potentially a data platform record typo (Orbis), which it is not possible to fact-check for all companies (private companies from multiple countries). To control for outlier's impact, all variables were transformed through the winsorize technic.

Table 4. Summary of statistics and comparisons between samples (MBO and IBO)

The table provides statistical information on key variables for the MBO sample, the control sample (IBO) and for the full sample of buyouts, completed between 2010-2020. Firstly, reports financial statement variables regarding the pre-buyout period (-1). And secondly it reports the Operational performance variables of interest, pre (-3; -2; -1) and post buyout (+1; +2; +3). The two tailed T-student test and Wilcoxon signed-rank tests were performed to access the mean and median values, respectively, of the MBO sample are significantly different from the IBO (control Sample). Significance levels of 1%, 5% and 10% are denoted by ***, **, * respectively.

Variables	MBO					IBO					Full Sample					Differences (a)	
	Median	Mean	Mean Win. (b)	Std. Dev. Win. (b)	N	Median	Mean	Mean Win. (b)	Std. Dev. Win. (b)	N	Median	Mean	Mean Win. (b)	Std. Dev. Win. (b)	N	Median	Mean Win. (b)
Financial Statement Variables (th EUR)																	
Total Assets (-1)	11 266.5	35 004.8	16.34	1.18	338	15 042.2	62 499.0	16.48	1.70	338	12 765.1	48 751.9	16.41	1.47	676	- 3 775.7**	- 0.1369
Turnover (-1)	17 191.3	45 530.3	16.50	1.66	338	17 151.9	72 038.2	16.40	2.31	335	17 151.9	58 725.2	16.45	2.01	673	39.4	0.1060
EBIT (-1)	1 177.4	2 332.7	1 673.2	2 139.9	338	768.2	434.2	1 634.1	2 479.8	338	1 043.9	1 383.4	1 654.21	2 309.2	676	409.2**	39.1520
Operational Performance (%)																	
ROA (-3)	9.5	10.7	11.5	12.7	207	6.0	8.8	9.0	12.3	233	7.5	9.7	10.2	12.5	440	0.0347***	0.0251**
ROA (-2)	9.6	10.8	11.0	13.7	269	6.3	9.6	10.1	14.3	284	8.3	10.1	10.5	14.0	553	0.0326*	0.0091
ROA (-1)	10.2	11.3	11.7	14.6	338	6.3	7.4	9.6	16.8	338	8.8	9.3	10.7	15.8	676	0.0387***	0.0216*
ROA (1)	9.9	9.8	10.4	13.7	323	4.4	11.9	6.4	15.1	323	7.5	10.9	8.4	14.5	646	0.0550***	0.0395***
ROA (2)	8.9	9.6	9.0	12.3	286	3.9	3.0	5.1	12.7	277	6.6	6.4	7.1	12.7	563	0.0498***	0.0394***
ROA (3)	8.4	9.0	9.1	9.3	231	4.0	5.4	5.4	9.7	234	6.7	7.2	7.2	9.7	465	0.0441***	0.0369***
ROS (-3)	6.2	-14.7	6.8	9.8	206	5.3	2.5	6.1	10.4	224	6.0	-5.8	6.4	10.1	430	0.0091	0.0071
ROS (-2)	6.7	1 875.6	6.9	11.3	268	5.6	-574.3	6.6	12.1	278	6.2	628.2	6.7	11.7	546	0.0117	0.0032
ROS (-1)	7.0	-5 674.1	7.1	12.4	337	5.6	-4 443.9	4.1	16.4	334	6.6	-5 061.7	5.6	14.6	671	0.0145**	0.0295***
ROS (1)	7.1	7.1	7.0	12.2	322	4.3	-249.7	3.6	14.9	320	6.0	-120.9	5.3	13.7	642	0.0277***	0.0338***
ROS (2)	5.8	-5 8194.9	6.8	8.5	285	3.6	-2.0	4.3	10.1	272	4.8	-29 777.6	5.5	9.4	557	0.0217***	0.0251***
ROS (3)	5.2	4.9	5.8	10.9	231	4.4	-3.7	4.3	13.4	229	4.9	0.4	5.1	12.2	460	0.0082*	0.0150

a) Differences of % variables in p.p.

b) Total Assets and Turnover are not winsorize, rather it is used the logarithm of the variables. Therefore, there is no meaningful commentary to the absolute measures.

4. Results

This chapter contains the results obtained by the application of the methodology explained in the previous chapter to provide an answer to the main question of this dissertation: does MBOs outperform IBOs?

4.1 Univariate Analysis

In this section it will be initiated the assessment of the main hypothesis of this dissertation, by examining the study variables individually. In accordance with many studies (e.g. Boucly et al., 2011; Guo et al., 2011; Kaplan, 1989b), the analysis focus in the percentage change²⁴ of profitability and growth (as the process of increasing size) adjusted by the control group (IBO sample firms), partially providing a correction of industry and macroeconomics effects. The adjusted growth is calculated as follows: i) first it was computed for each MBO (target company) their change between the periods of interest, ii) subsequently, the same is done to each matched IBO (target company). The adjusted change of each MBO during a determined period is the difference between the two values in the same period. Lastly, as mentioned prior, the results are reported as the median and not the mean, to exclude the outlier's impact.

As visible in Table 5 the median MBO show an increasing trend in operating income (EBIT) prior to the buyout (statistically significant at 1% level). The improvements post-buyout is positive and significant (at 5% and 1% levels), although smaller than pre-buyout, (additionally, the table shows shrinkage in operating income measured from the year preceding the buyout to the third year after the buyout, however it is not statistically significant). When operating income change is adjusted by the control sample change, it is possible to conclude that MBOs increase their operating performance by 26% from one year prior to one year after the buyout completion, implying that MBO outperformed other buyout strategies (IBO) after the buyout completion. Regarding the median percentage change for the year preceding the buyout to the third year after, the median numbers

²⁴ The change is calculated differently for the relative and absolute variables. In case of relative variables is calculated as $Y_{t+j}^i - Y_t^i$. Due to potential change of signal between “new” value and “old” value, and when a negative value become less negative, the change for absolute variables is calculated as $\frac{Y_j^i - Y_t^i}{|Y_t^i|}$. The variable in analysis is represented by Y , i is the buyout target company, t represents the first year and j the last year of the period in study $[t; j]$.

indicates that MBO positive performance and superiority against IBOs is reverted, however it is not statistically significant.

Table 5. MBO effects on growth and profitability.

The table provides the median percentage change and adjusted change in operating income, operating income over total assets (ROA), and in operating income over sales (ROS) for 338 management buyouts (MBO) completed in 2010-2020. The changes are analysed between intervals of time (i to j) and the interpretation goes as follows: - 1 and +1 represents, respectively, the fiscal year ending prior to buyout completion and first full fiscal year of before the buyout completion. The adjusted median change is the median of MBO target firms change subtracted by the control firms (IBO) change. The two tailed Wilcoxon signed-rank tests were performed to access whether the median percentage change is significantly different from zero. Significance levels of 1%,5% and 10% are denoted by ***, **, * respectively.

		From year i to year j				
		-3 to -2	-2 to -1	-1 to 1	-1 to 2	-1 to 3
Operating Income (EBIT)						
% Change		12.44***	17.85***	14.08***	7.13**	-0.98
	N	200	269	323	286	231
Adjusted % change		0.12	1.49	25.99**	28.67	-5.0
	N	137	227	308	235	161
Total Assets						
% Change		8.30***	8.10***	14.01***	22.46***	27.64***
	N	212	277	324	290	241
Adjusted % change		4.50	1.40	-1.05	-6.51*	-12.41***
	N	148	237	313	242	175
Turnover						
% Change		7.38***	7.74***	10.89***	15.14***	18.91***
	N	199	268	321	284	230
Adjusted % Change		-2.23	0.44	-1.26	-2.54	-19.93**
	N	130	220	302	231	157
ROA						
Change (p.p)		0.5	0.8**	-0.8*	-1.8***	-2.2***
	N	200	269	323	286	231
Adjusted Change (p.p)		-1.1	0.6	2.5	1.9	1.8
	N	138	277	309	236	162
ROS						
Change (p.p)		0.3	0.7**	0.000	-0.7**	-1.2***
	N	198	267	321	284	230
Adjusted Change (p.p)		-0.6	0.6	1.4	0.1	-1.8
	N	130	218	301	230	157

The positive change in operating income prior and after the buyout is in line with conclusions of Kaplan (1989b). However, these results are more conservative than the results that the author achieved (15.6%, 30.7%, and 42.0%, for the years +1, +2, and + 3 in comparison with year -1). Considering the adjusted change, the author presented a smaller change compared to this dissertation. The more recent study of Bédu and Palard (2021) for European SMEs targets of majority owned MBOs, the authors concluded that operating income growth (measured as EBITDA growth) post-buyout years is lower for the targets

firms when compared to control sample of non-buyout firms, suggesting that new owners-managers in majority MBO do not perform better than control firms' management team. Note that, regarding Bédu and Palard (2021) and Kaplan (1989), the adjusted change is not fully comparable to this dissertation, since in this dissertation it is also being discounted the effect of buyouts in general, and one thing does not invalidate the other.

Regarding the size of MBO targets it is possible to observe that, for the various periods presented in Table 5, total assets median percentage change is always positive and statistically significant at 1% level. Contrary to operating income the increase is more pronounced post-buyout. When adjusted by the change in control group, post-buyout changes are negative (for the pre-buyout year to the second-year post-buyout and the pre-buyout year to the third-year post-buyout, statistically significant at level 10% and 1%, respectively). Which entails that growth on targets post-MBO are lower than a typical IBO. Concerning turnover, there is a similar trend to total assets in terms of (raw) percentage change, and regarding the adjusted percentage change there is also presented a negative change before and after buyout (however, being only statistically significant at 5% level for the change between turnover in the pre-buyout year to the third-year post buyout completion).

Overall, MBO targets present growth and increase sales after the buyout, and that is partially consistent²⁵ with the findings Boucly et al., (2011) and Chung (2012), and partially inconsistent²⁶ with Guo et al. (2011) and Kaplan (1989b) downsizing results. Most importantly, if compared to an IBO, it is possible to observe that post buyout growth might be attributed to the buyout event, and that, by including the management as a majority owner implies, in median values, that the management buyout will grow less than their counterparts (IBOs). The increase of firm size in this sample, weather it is IBOs or MBOs, can be fomented by the sample characteristics. Those characteristics are: European private-to-private deals (involving small targets), whose financial markets are not so well developed and with financial constraints, in which the presence of PE sponsor might help seize new growth opportunities (Chung, 2012).

²⁵ It is not completely comparable since the study of Boucly et al., (2011) is focused on LBO (not necessarily MBO) and the results presented only contain information corrected by industry (non-buyout) firms.

²⁶ Once again, Guo et al., (2011) and Kaplan, (1989) studies do not use the same type of buyout definition, they are solely composed of American public-to-private deals, and deal targets results are adjusted by non-buyout firms.

The return on assets ratio (ROA), is deteriorated post-buyout period, decreasing 0.8 p.p., 1.8 p.p. and 2.2 p.p. from the year preceding the buyout to one, two, and three year(s) after, respectively. When adjusted by the control sample all changes are not significant, therefore the change of performance between MBO and IBO are not statistically significantly different. The return on sales (ROS), is similarly affected, since it presents increases (statistically significant at 5% level) in the years prior to the deal, but it deteriorates (statistically significant at 1% and 5% levels) in the years following the buyout, more specifically decreases 0.7 p.p. and 1.2 p.p. from the year preceding the buyout to two and three year(s) post-buyout. The adjusted change is not statistically significant as well.

This negative performance of the profitability ratios is rather controversial when compared to previous works. For instance Kaplan (1989b) showed that not only buyout companies present significant increases in operating returns post-buyout (operating income to assets are 13.7, 20.1 p.p. , and 14.6 p.p. during first, second and third year post-buyout compared to the year preceding the buyout, and operating income to sales increase 7.1 p.p., 11.9 p.p. , and 19.3 p.p.), they present a better performance than their industry counterparts (operating income to assets are 16.6 p.p., 36.1 p.p., and 21.3 p.p. during first, second and third year post buyout compared to the year preceding the buyout and operating income to sales increase 12.4 p.p., 23.3 p.p. , and 34.8 p.p.). Boucly et al., (2011) showed an increase of approximately 4.4 p.p. in return on assets, and 1.4 p.p. in return on sales following a buyout.

On a different perspective, the negative (raw) change finding is similar to Guo et al., (2011), although not as negative. The authors concluded that ROS (measured as EBITDA/ Sales) and ROA (EBITDA/ Total Assets) is always negative post-buyout (-1.89 p.p., -10.60 p.p. , and -8.89 p.p. during first, second and third year post buyout compared to the year preceding the buyout for ROS, and -11.44 p.p., -17.02 p.p. , and -15.73 p.p. for ROA), and only through an adjustment by -industry, -performance and -market to book it is seen an increase (7.83 p.p., 11.43 p.p. , and 1.57 p.p. during first, second and third year post buyout compared to the year preceding the buyout for ROS, and 6.07 p.p., 7.70 p.p. , and 6.76 p.p. for ROA), although not even close to Kaplan's (1989b) results (even if it is also a sample of public-to public and US deals).

Additionally, the more recent study of Tutuncu (2021), revealed that there is little evidence of improvements in profitability following a MBO, particularly (raw) changes in ROA are

insignificant (negative and significant if industry adjusted) whereas positive changes in ROS are small (~ 0.005 p.p.). Moreover, and similar to this study, the author concluded that in the years leading up to the buyout is already noticed a tendency of profitability improvement. The author hypothesized that is this tendency effect could be a consequence of earnings management, and that profitability prior to buyout may influence the selection of the target by a PE sponsor. Additionally, and consistent with our conclusions about firm size, Tutuncu (2021) stated that “post-buyout strategies are more growth oriented and put less focus on profitability and efficiency improvements” (p. 21).

Overall, there is a huge contrast between early and more recent literature. One justification for the worst performance in the latest studies when compared to the 80s researches, might be the fact that for the latter studies firms presented fairly poorer pre-buyout performance (Guo et al., 2011). Indeed, in this dissertation, it is observed a positive increase prior to buyout, when Kaplan (1989) presents either negative or small change pre-buyout. Because of that, one might consider that the buyout market has reached its “breakeven” point as a driver of profitability improvements. Note that, as the PE activity (competition) increases, it increases the investment in companies where improvements of performance are not as pronounced.

In summary, MBOs have increased operating income in the years surrounding the buyout more than IBOs, however, only during the first year after the buyout the difference is statistically significant. This figure is subjective to misleading outcomes because of post-buyout divestitures and acquisitions of both samples. For instance, IBOs may have been subjected to considerably more relevant acquisitions making the estimations downward biased, and MBOs results could be upward biased in case of more relevant divestitures. To control for these potential problems²⁷, it is computed the ROA and ROS percentage change. In which is shown that (raw) change post-buyout is negative. Since adjusted percentage change for both ratios are always statistically insignificant it is not possible to state that MBOs outperform IBOs. When it comes to growth and firm expansion, findings are clear that MBOs do increase size, although not as much as other buyout strategies. The focus on growth rather than profitability might be connect to the long-term vision of managers, although as new manager-owners and the company being also owned by a close-end fund it

²⁷ The monitoring of operating income through assets will still imposed the problem of not being controlled for write-ups made for accounting purposes at the time of the buyout (Guo et al., 2011).

is relatively puzzling result. In further research, this puzzle could be address by executing a long-term performance analysis, particularly until the exit of the PE-firm.

4.2 Multivariate Analysis

In the multivariate analysis, it is also going to be assessed the (excess) impact of an MBO on operating performance of companies when compared to other types of buyout strategies (IBO). The effects will be estimated by OLS with Newey–West standard errors, to correct for heteroskedasticity and autocorrelation. Likewise, to the univariate analysis performance will be examined trough ROA and ROS.

The econometric model (1) was estimated considering pre- and post- buyout period. Firstly, pre-buyout period as the entire performance of the three years preceding the buyout, and post-buyout period as the entire three years after buyout (regressions number 1-5). Secondly, it was evaluated the performance impact for each year after buyout (regressions number 6-8). The reason for inserting one variable at a time is to analyse whether the model maintains its robustness and whether it improves the explanatory power of the regression (1). However, in another subchapter, more robustness tests will be done, where the presence of PE sponsoring will be removed, as well as the correction by a control sample with matching IBO deals.

4.2.1 Return on Assets

Table 6 presents the impact on ROA of MBO for the multiple variations of the regression (1). The coefficients of the DMBO variable are always positive and significant (statistically significant at 1%, 5% and 10% levels). The coefficients related to the post-buyout period (associated with variable Dafter) is always negative and significant (statistically significant at 1%, 5% and 10% levels). Most importantly the estimate of the average difference between the ROA of an MBO to an IBO for the post-buyout period is always positive and significant at the 10% level. Therefore, we can conclude that MBOs outperform IBOs. As for the dissection of the impact of MBO after each year post-buyout, the expected difference between MBO and IBO in the first, second and third year after the buyout compared to all the other periods, are not statistically significant. However, when considered all post-buyout periods together there is enough evidence that the MBO does outperform IBO. The control variables, with exception of size, were proven to be insignificant.

Table 6. The effect of MBO on operating performance, measured as ROA.

This table presents multiple regressions of the differences-in-differences approach for the dependent variable: Return-on-Assets (ROA). Continuous Variables (dependent and independent) are winsorize at the 5% level. It was applied the Newey-West estimator, and the Standard errors are presented in parenthesis. Significance levels of 1%,5% and 10% are denoted by ***, **, * respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DMBO		2.733*** (0.473)	1.844*** (0.682)	1.757*** (0.676)	1.382** (0.715)		1.626** (0.674)	1.219* (0.713)
DAFTER	- 2.299*** (0.475)	- 2.338*** (0.473)	- 3.216*** (0.687)	-2.850*** (0.690)	-2.834*** (0.704)			
DAFTER1						- 1.595** (0.663)	- 2.339** (0.973)	- 2.328** (0.987)
DAFTER2						- 2.732*** (0.645)	- 3.422*** (0.932)	- 3.409*** (0.944)
DAFTER3						- 2.753*** (0.682)	- 2.751*** (1.004)	-2.707*** (1.011)
DAFTER*DMBO			1.774* (0.945)	1.604* (0.942)	1.570* (0.944)			
DAFTER1*DMBO							1.910 (1.316)	1.893 (1.316)
DAFTER2*DMBO							1.954 (1.283)	1.918 (1.290)
DAFTER3*DMBO							0.877 (1.354)	0.820 (1.360)
DUK					0.786 (0.642)			0.862 (0.642)
DCRISIS					0.605 (1.458)			0.588 (1.451)
DPAND					0.242 (1.128)			0.206 (1.143)
DTECH					0.572 (0.691)			0.539 (0.689)
DPUB					-1.031 (2.042)			-0.507 (2.047)
LOG (Total Assets)				-0.899*** (1.763)	-0.884*** (0.176)		-1.191*** (0.195)	-1.182*** (0.196)
Constant	10.232*** (0.342)	8.899*** (0.420)	9.333*** (0.490)	24.078*** (3.026)	23.720*** (3.036)	10.232*** (0.342)	28.959*** (3.335)	28.680*** (3.350)
Observations	3343	3343	3343	3343	3343	3343	3343	3343
F-Statistics	23.383***	28.475***	20.170***	23.374***	10.657***	8.7155***	13.102***	8.2538***
Adjusted R-Squared	0.0066	0.0161	0.0169	0.0272	0.0253	0.0068	0.0281	0.0274

4.2.2 Return on Sales

The Table 7 presents the impact on ROS of MBO for the multiple variations of the regression (1). The coefficients of the DMBO variable are always positive and significant (statistically significant at 1%, 5% and 10% levels). The coefficients related to the post-buyout period are always negative and significant (statistically significant at 1%, 5% and 10% levels). Contrary to the conclusion on ROA, the estimate of the average difference between the ROS of an MBO to an IBO for the post-buyout period is always positive but not statistically significant. Therefore, based on ROS ratio it is not possible to state that MBOs outperform IBOs. The control variables, with exception of size and tech industry (Information and Communication industry), were proven to be insignificant.

In summary, for operating performance measured as ROA or ROS there is always positive difference in performance between the targets of a MBO and an IBO, independently of the period (before and after buyout). However independently of being a MBO or an IBO, buyouts will negatively affect the ROA and ROS (being in accordance with the findings of the univariate analysis regarding the growth between the year preceding the deal and the years after). More importantly it was possible to conclude that MBO presents a better operating performance, as measured by the ROA, than other IBO as opposed to what suggested by the univariate analysis where there was no significant difference in the percentage change between deals (post-buyout). Concerning the findings related to the ROS ratio, being that this ratio is just a part of ROA²⁸, it might indicate that the positive impact of ROA is not related to the profitability of the ratio but more so to the productivity factor. Therefore, being that ROA proposes itself as a more complete ratio, the conclusions on this dissertation will lean more towards the ROA findings, although ROS will always be acknowledged.

²⁸ Return on Assets = Return on Sales*Asset Turnover

Table 7. The effect of MBO on operating performance, measured as ROS.

This table presents multiple regressions of the differences-in-differences approach for the dependent variable: Return-on-Sales (ROS). Continuous Variables (dependent and independent) are winsorize at the 5% level. It was applied the Newey-West estimator, and the Standard errors are presented in parenthesis. Significance levels of 1%,5% and 10% are denoted by ***, **, * respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DMBO		1.942*** (0.432)	1.251** (0.600)	1.340** (0.604)	1.269* (0.653)		1.341** (1.341)	1.266* (6.539)
DAFTER	-0.901** (0.433)	-0.926** (0.432)	-1.613** (0.654)	-1.756*** (0.660)	-1.845*** (0.671)			
DAFTER1						-0.640 (0.599)	-1.716* (0.911)	-1.820** (0.920)
DAFTER2						-1.017* 0.6126	-2.039* (0.921)	-2.146** (0.935)
DAFTER3						-1.126* (0.647)	-1.478 (1.001)	-1.512 (1.006)
DAFTER*DMBO			1.377 (0.865)	1.422 (0.865)	1.391 (0.865)			
DAFTER1*DMBO							1.956 (1.189)	1.957 (1.187)
DAFTER2*DMBO							1.706 (1.218)	1.674 (1.217)
DAFTER3*DMBO							0.341 (1.292)	0.275 (1.294)
DUK					0.076 (0.555)			0.083 (0.555)
DCRISIS					-0.286 (1.398)			-0.284 (1.399)
DPAND					0.596 (1.084)			0.555 (1.092)
DTECH					1.650*** (0.614)			1.663*** (1.663)
DPUB					-2.266 (2.044)			-2.254 (2.047)
LOG (Total Assets)				0.443** (0.193)	0.509*** (0.509)		0.447** (0.193)	0.195*** (0.195)
Constant	6.187*** (0.301)	5.230*** (0.383)	5.571*** (0.447)	-1.744 (3.227)	-3.045 (3.259)	6.187*** (0.301)	-1.796 (3.234)	-3.097 (3.263)
Observations	3306	3306	3306	3306	3306	3306	3306	3306
F-Statistics	4.320**	12.253***	9.017***	8.439***	4.769***	1.599	4.455***	3.451***
Adjusted R-Squared	0.001	0.006	0.007	0.008	0.010	0.000	0.008	0.009

4.3 Robustness check

Besides the previous robustness check performed by the inclusion or exclusion of regressors, in this subchapter it will be taken a step further into analysing how the core regression coefficient estimates behave when the sample characteristics are altered.

First, it will be dropped the constrain of the PE-sponsor. Secondly, it will be ignored the usage of a matched sample as a control sample, meaning that it will be accepted any IBO that occurred between 2010-2020. Note that for the latter this is not the correct way of attributing differences in performance to an event, nonetheless it will give us an idea of how relevant it is to control for any influencing factor before making a conclusion.

4.3.1 PE-backed Deals and Non-PE-backed deals

To give a little insight on what this amendment entails, before any treatment of missing values, duplicates and construction of control sample, the PE-backed deals sample was composed of 1,124 MBO and 8,312 IBO. When considered all types of deals there are a total of 3,250 MBO and 8,345 IBO. After the necessary adjustments the sample used in this robustness test is composed of 730 MBO and 730 IBOs. This unbalanced increase in MBO compared to IBO is expected to affect the results. The difference is based on the fact that institutional buyouts require that institutional investors buy majority of a company. Those institutional investors typically are PE-firms, venture capitalist, and financial institutions such as commercial banks. In this case there are relatively few deals between 2010-2020 that only Venture capitalists and/or banks bought the company. Meanwhile for MBO it is more common that a manager or management team buys its firm without the sponsorship of a PE-firm, the case of small and family business (Howorth et al., 2004; Tutuncu, 2021).

For the most complete regressions (column 5 and 8) the (excess) impact on ROA and ROS of MBO targets are negative and significant (5% and 10% levels), (Appendix II & III). This is interesting because by decreasing significantly from the MBO sample the presence of a PE-sponsor, on average the difference in ROA and ROS between MBO and IBO (that remained mostly PE-backed deals) is negative. Comparing to the previous analysis on this chapter this may (roughly) indicate that PE might indeed target more profitable companies (Fidrmuc et al., 2013). Once again, and more importantly MBOs (for both dependent variables) present a better operating performance as the average difference between a MBO

and an IBO for the post-buyout period is always positive and significant at 1% level. Therefore, confirming the robustness of the previous conclusions. Finally, the control variables, with exception of size, UK targets, and going private transactions were proven to be insignificant. Please note that for the going private control variable the coefficient is negative, stating that private-to-private transactions are more profitable than going private transactions. This is a puzzling effect, the coefficient informs us about the impact of reduction of agency costs in performance (typically more associated with going private transactions) is not as strong in public-to-private deals than the private-to-private deals.

4.3.2 Control Sample relaxation.

For the robustness check regarding the relaxation of the matching sample, the multiple regressions were estimated on a total of 337 MBO and 2,579 IBO (Appendix IV & V). Accounting for each dependent variable in analysis, the conclusions on the DID estimator remains the same, meaning that MBOs outperform IBOs. The control variables, with exception of size, UK targets, and going private transactions were proven to be insignificant.

5. Conclusions, Future Research and Limitations

The presented dissertation aims to gain a better understanding on the motivation and performance of different buyout alternatives. In particular, the distinction and comparison of operating performance between management buyouts (MBO) and institutional buyouts (IBO). To this end, the differences in two operating ratios, ROA and ROS, were analysed for the pre- and post-buyout period. Furthermore, this research addresses the European market, with PE-backed deals from 2010 to 2020, with a sample containing both private-to-private and public-to-private transactions. This sample gives relevance to this study as it provides a complement to the previous literature that is mostly focused on the US market and going private transactions.

The subject field of acquisitions is broad, and it has been analysed from different standpoints (e.g., sources of value creation, accounting, financial, and deal structuring aspects). However, little to no concern has been given to the direct comparison between the multitude of buyout concepts. MBO and IBO are fundamentally different, as MBO implies that the incumbent managers buy the majority of the company, usually with the participation of private equity investors and external funding (such as debt), meanwhile in IBO, institutional investors buy the majority of the company. Although MBOs can benefit from most of the determinants of performance of IBOs, the reverse cannot be affirmed. Therefore, the main question of this dissertation is: Do MBOs outperform IBOs?

As common practice, a univariate and multivariate analysis were performed, in some cases the results were contradictory. In the univariate analysis it was concluded that it is not possible to state that MBOs outperform IBOs. Nonetheless, when it comes to firm expansion, findings are clear, MBO targets do increase their size (post-buyout) in accordance to Boucly et al. (2011), Chung (2012), and Tutuncu (2021), although not as much as other buyout strategies. As far as, the multivariate analysis it was concluded that there is always a positive difference in performance between MBO targets and IBO targets, independently of the period. That buyouts negatively impact the ROA and ROS. But more, importantly it was possible to conclude that MBO presents better operating performance than IBO, as opposed to the univariate analysis. Moreover, it was not possible to conclude outperformance of the MBOs compared to IBOs using the ROS indicator (potentially suggesting that the positive impact of ROA is not related to the profitability of the ratio but more so to the productivity

factor). The robustness check by the relaxation of the control group matching sample and the removal of PE-backed deal restriction, confirms the results of the initial multivariate analysis.

After assessing the superiority of MBO, further research would entail evaluating the determinants of that outperformance. Being that the major difference between the two subsamples regards the control of the company by the management team, it should be analysed all the sources of value creation, but most importantly the ones that are more prone to make a difference such as earnings management and inside Information (or under-valuation hypothesis). Additionally, this dissertation could be completed by a study on long-term (sustained) performance after the different exit routes (Jelic & Wright, 2011). And, in line with the motivation of this dissertation, according to Renneboog and Vansteenkiste, (2017), MBO and MBI are nothing alike. When an outside management team decides to buy a company, it is reasonable to assume that the incumbent team is not realizing the company's full potential. Of course, this type of transactions would entail a hostile takeover. Therefore, an interesting way of studying hostile takeovers and amicable takeovers would be comparing a sample of MBI to an MBO.

The limitations associated with this dissertation regard the unavailability to study agency cost reductions of MBO versus IBO through the public-to-private differentiation, as the literature suggests, since the European going private transactions in the MBO sample is small. Also, the lack of data for most deals can impose biased results.

6. References

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7. Appendices

Appendix I. Difference-in-differences estimator

Regression:

$$Y_{it} = \beta_0 + \beta_1 DMBO_i + \beta_2 DAfter_t + \beta_3 DMBO_i * DAfter_t + \beta_4 Controls_{it} + \varepsilon_{it}$$

	Before	After	(After-Before)
MBO Deals (Treatment Group)	$\beta_0 + \beta_1 + \beta_4$	$\beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4$	$\beta_2 + \beta_3$
IBO Deals (Control Group)	$\beta_0 + \beta_4$	$\beta_0 + \beta_2 + \beta_4$	β_2
(Treatment-Control)	β_1	$\beta_1 + \beta_3$	β_3

β_3 : The effect of the treatment (MBO) on the treatment group post treatment period (buyout). This is what defines the name Difference-in-differences as it is not only evaluated the difference between the performance of each group before and after the buyout, as well as then is calculated the difference of those estimation, therefore being name the DID estimator.

Appendix II. The effect of MBO on operating performance, measured as ROA, for PE-backed Deals and Non-PE-backed deals.

This table presents multiple regressions of the differences-in-differences approach for the dependent variable: Return-on-Assets (ROA). Continuous Variables (dependent and independent) are winsorize at the 5% level. It was applied the Newey-West estimator, and the Standard errors are presented in parenthesis. Significance levels of 1%,5% and 10% are denoted by ***, **, * respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DMBO		0.825 (0.574)	- 1.044 (0.711)	- 1.130 (0.709)	- 2.331*** (0.792)		- 1.130 (0.709)	- 2.330*** (0.792)
DAFTER	- 1.253*** (0.333)	- 1.268*** (0.370)	- 3.129*** (0.517)	- 2.988*** (0.519)	- 3.161*** (0.535)			
DAFTER1						- 0.825** (0.392)	- 2.565*** (0.553)	- 2.735*** (0.565)
DAFTER2						- 1.4885*** (0.432)	- 3.268*** (0.612)	- 3.466*** (0.631)
DAFTER3						- 1.565*** (0.487)	- 3.251*** (0.706)	- 3.389*** (0.713)
DAFTER*DMBO			3.761*** (0.727)	3.668*** (0.726)	3.713*** (0.726)			
DAFTER1*DMBO							3.656*** (0.774)	3.685*** (0.774)
DAFTER2*DMBO							3.743*** (0.853)	3.786*** (0.853)
DAFTER3*DMBO							3.612*** (0.963)	3.681*** (0.964)
DUK					2.575*** (0.749)			2.575*** (0.750)
DCRISIS					- 0.400 (1.382)			- 0.399 (1.383)
DPAND					1.085 (0.841)			1.061 (0.843)
DTECH					0.167 (1.013)			0.169 (1.013)
DPUB					- 4.134* (2.416)			- 4.144* (2.420)
LOG (Total Assets)				- 0.383* (0.197)	- 0.376* (0.195)		- 0.379* (0.197)	- 0.372* (0.195)
Constant	8.698*** (0.240)	8.297*** (0.452)	9.205*** (0.491)	15.460*** (3.347)	15.307*** (3.318)	8.698*** (0.355)	15.394*** (3.347)	15.241*** (3.317)
Observations	7314	7314	7314	7314	7314	7314	7314	7314
F-Statistics	14.119***	10.126***	17.424***	15.501***	11.610***	5.398***	7.998***	8.184***
Adjusted R-Squared	0.001	0.002	0.006	0.007	0.012	0.001	0.007	0.012

Appendix III. The effect of MBO on operating performance, measured as ROS, for PE-backed Deals and Non-PE-backed deals.

This table presents multiple regressions of the differences in differences approach for the dependent variable: Return-on-Sales (ROS). Continuous Variables (dependent and independent) are winsorize at the 5% level. It was applied the Newey-West estimator, and the Standard errors are presented in parenthesis. Significance levels of 1%,5% and 10% are denotated by ***, **, * respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DMBO		0.216 (0.579)	- 1.431** (0.684)	- 1.1972* (0.689)	- 1.957** (0.781)		- 1.197* (0.689)	- 1.957** (0.781)
DAFTER	-0.722* (0.384)	-0.726* (0.385)	-2.376*** (0.584)	-2.744*** (0.591)	-2.941*** (0.604)			
DAFTER1						-0.685* (0.416)	-2.559*** (0.637)	-2.767*** (0.648)
DAFTER2						-0.840* (0.467)	-3.159*** (0.727)	-3.397*** (0.743)
DAFTER3						-0.630 (0.519)	-2.497*** (0.797)	-2.637*** (0.799)
DAFTER*DMBO			3.314*** (0.760)	3.559*** (0.762)	3.590*** (0.762)			
DAFTER1*DMBO							3.405*** (0.827)	3.441*** (0.827)
DAFTER2*DMBO							4.122*** (0.925)	4.138*** (0.926)
DAFTER3*DMBO							3.086*** (1.035)	3.126*** (1.034)
DUK					1.572** (0.705)			1.572** (0.705)
DCRISIS					- 0.687 (1.313)			- 0.687 (1.313)
DPAND					1.207 (0.948)			1.243 (0.952)
DTECH					0.559 (0.975)			0.560 (0.975)
DPUB					- 4.049 (4.823)			- 4.023 (4.823)
LOG (Total Assets)				1.026*** (0.232)	1.052 (0.230)		1.026*** (0.232)	1.052*** (0.230)
Constant	4.802*** (0.343)	4.696*** (0.469)	5.503*** (0.509)	- 11.256*** (3.858)	- 11.712*** (3.838)	4.802*** (0.343)	- 11.261*** (3.863)	- 11.707*** (3.841)
Observations	7233	7233	7233	7233	7233	7233	7233	7233
F-Statistics	4.218*	2.297	8.948**	22.383***	12.119***	1.446	11.297***	8.459***
Adjusted R-Squared	0.0004	0.0003	0.003	0.011	0.013	0.0001	0.011	0.013

Appendix IV. The effect of MBO on operating performance, measured as ROA,
accounting the total number of MBO and IBO.

This table presents multiple regressions of the differences in differences approach for the dependent variable: Return-on-Assets (ROA). Continuous Variables (dependent and independent) are winsorize at the 5% level. It was applied the Newey-West estimator, and the Standard errors are presented in parenthesis. Significance levels of 1%,5% and 10% are denotated by ***, **, * respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DMBO		3.402*** (0.620)	2.497*** (0.747)	2.500*** (0.749)	2.070*** (0.757)		2.501*** (0.749)	2.071*** (0.757)
DAFTER	-2.900*** (0.257)	-2.940*** (0.257)	-3.168*** (0.277)	-3.183*** (0.277)	-3.251*** (0.305)			
DAFTER1						-2.332*** (0.267)	-2.636*** (0.287)	-2.684*** (0.310)
DAFTER2						-3.198*** (0.300)	-3.495*** (0.324)	-3.548*** (0.361)
DAFTER3						-3.369 (0.343)	-3.613*** (0.371)	-3.697*** (0.384)
DAFTER*DMBO			1.792** (0.719)	1.823** (0.720)	1.823** (0.722)			
DAFTER1*DMBO							2.095*** (0.780)	2.089*** (0.783)
DAFTER2*DMBO							1.845** (0.848)	1.840** (0.849)
DAFTER3*DMBO							1.470 (0.961)	1.475 (0.964)
DUK					1.054** (0.497)			1.054** (0.497)
DCRISIS					-0.941 (1.224)			-0.941 (1.225)
DPAND					0.077 (0.502)			0.021 (0.505)
DTECH					0.715 (0.687)			0.717 (0.687)
DPUB					-5.095*** (0.916)			-5.113*** (0.917)
LOG (Total Assets)				2.30E-9 (2.60E-9)	3.10E-9 (2.64E-9)		2.41E-9 (2.61E-9)	3.21E-9 (2.64E-9)
Constant	8.803*** (0.246)	8.391*** (0.256)	8.501*** (0.262)	8.425*** (0.306)	8.263 (0.323)	8.803*** (0.246)	8.421*** (0.306)	8.258*** (0.323)
Observations	13031	13031	13031	12939	12939	13031	12939	12939
F-Statistics	158.935***	128.897***	88.230***	66.091***	35.636***	55.648***	34.139***	25.375***
Adjusted R-Squared	0.011	0.019	0.019	0.019	0.023	0.012	0.020	0.023

Appendix V. The effect of MBO on operating performance, measured as ROS,
accounting the total number of MBO and IBO.

This table presents multiple regressions of the differences in differences approach for the dependent variable: Return-on-Sales (ROS). Continuous Variables (dependent and independent) are winsorize at the 5% level. It was applied the Newey-West estimator, and the Standard errors are presented in parenthesis. Significance levels of 1%,5% and 10% are denotated by ***, **, * respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DMBO		1.246** (0.548)	-0.150 (0.644)	-0.047 (0.649)	-0.533 (0.668)		-0.045 (0.649)	-0.532 (0.668)
DAFTER	-2.223*** (0.284)	-2.240*** (0.285)	-2.617*** (0.314)	-2.670*** (0.315)	-2.795*** (0.343)			
DAFTER1						-1.922*** (0.319)	-2.353*** (0.351)	-2.475*** (0.371)
DAFTER2						-2.361*** (0.354)	-2.917*** (0.396)	-3.057*** (0.426)
DAFTER3						-2.499*** (0.394)	-2.842*** (0.438)	-2.933*** (0.451)
DAFTER*DMBO			2.761*** (0.674)	2.781*** (0.674)	2.765*** (0.677)			
DAFTER1*DMBO							2.869*** (0.800)	2.871*** (0.803)
DAFTER2*DMBO							3.508*** (0.770)	3.484*** (0.773)
DAFTER3*DMBO							1.802* (0.924)	1.765* (0.927)
DUK					1.230** (0.503)			1.229** (0.503)
DCRISIS					-1.149 (1.075)			-1.150 (1.075)
DPAND					0.511 (0.624)			0.482 (0.624)
DTECH					1.473** (0.682)			1.476** (0.682)
DPUB					-4.686*** (1.754)			-4.691*** (1.755)
LOG (Total Assets)				6.62E-9** (2.86E-9)	7.54E-9*** (2.92E-9)		6.69E-9** (2.86E-9)	7.61E-9*** (2.92E-9)
Constant	6.501*** (0.239)	6.340*** (0.254)	6.521*** (0.260)	6.199*** (0.317)	5.886*** (0.341)	6.501*** (0.239)	6.195*** (0.317)	5.882*** (0.341)
Observations	11582	11582	11582	11582	11582	11582	11582	11582
F-Statistics	74.399***	42.747***	33.044***	27.688***	18.156***	25.409***	14.325***	12.864***
Adjusted R-Squared	0.006	0.007	0.008	0.009	0.013	0.006	0.009	0.013