ERASMUS UNIVERSITY ROTTERDAM

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The buy and build strategy: Successful or not? A typical PE approach…

How does a buy and build strategy influence the performance of their buyouts? And how well does it work?

Master thesis Financial Economics

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PREFACE AND ACKNOWLEDGEMENTS

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ABSTRACT

This thesis examines the relationship between performance and an upcoming serial acquisition strategy using different performance metrics. The effect of a private equity firm influencing its buyouts in a buy and build strategy has been researched. The sample consists of 61 European platform- and 49 add-on companies during the period of 2010 to 2016. A matching algorithm was created to find similar control firms for the buyouts to find out whether the strategy possibly performs better than standalone deals. No evidence was found that indicates a private equity firm does increase the performance of their buyouts during the strategy. The buyouts however, did outperform standalone deals if some conditions were met. Previous buyout experience by a private equity firm does result in higher performance than standalone deals. Lastly, evidence was found that outperformance occurs when a buy and build strategy spans over longer holding periods than the standard five-year period. Further research should look deeper into other aspects in buy and build strategies such as entry to exit value changes, to further enhance the understanding of the strategy.

Keywords: Buy and build strategy, Portfolio firms, Private equity, Firm performance

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Abbreviation overview

Abbreviations	Definition
LBO	Leveraged Buyout
GP	General Partner
PE	Private Equity
B&B	Buy and Build
ROA	Return on Assets
ROE	Return on Equity
NPM	Net Profit Margin
EBIT	Earnings Before Interest and Tax
EBITDA	Earnings Before Interest, Tax, Debt and Amortization
OR	Operational Revenue
ORPE	Operational Revenue Per Employee
HP	Holding Period
IRR	Internal Rate of Return

1. Introduction

Private equity buyouts have historically earned excess returns over the public equity markets all across the globe, on short- and long-term horizons (MacArthur, 2019). They have been achieving these results through acquiring companies, restructuring them and then successfully selling these for high profits.

According to the latest Global Private Equity report by Bain & Company (2019) private equity firms this year are on track to reach their all-time high deal number records. This is all occurring amidst record breaking values of so-called private equity dry powder; unused capital that should be reinvested. Resulting in an environment that constitutes many private equity firms continuously searching for new deals. This continuous search for deals has led to increased competition and this made it harder to find value increasing acquisitions, the deal market has slightly matured and, as a result, returns for many firms have been decreasing. Some however, have still been earning the high results as they always have done; puzzling researchers as to how they did this.

Private equity firms have therefore been exploring different ways of value creation in the last years. One of these ways is the usage of the buy and build strategy (B&B). This strategy consists of a private equity firm acquiring a company as its "platform" and then building on it through add-on acquisitions. The aim of B&B is to gain value through accelerating revenue growth in operational processes or through other synergies between the two types of companies. According to Brigl et al. (2016) the B&B strategy leads to margin improvements and higher exit valuations. The strategy has gained a lot of attention during the last decade, with add-on acquisitions being over 50% of all private equity deals in 2012 whereas this was 20% in 2000.

According to studies by Hammer (2017), Brigl et al.(2016) and Borell and Heger (2013) the strategy consists of various performance drivers and every strategy works differently. The question then arises what factors could influence the performance of a buy and build strategy, and how should such a strategy be perfected.

Overall the expectations of following a buy-and-build strategy seem to be that value is being created by the private equity firm in their buyouts during the holding period of the strategy. The goal of this study is to shed more light on this fairly unresearched topic of buy-and-build strategies. To do this, the influence of pursuing a buy-and-build strategy on the performance will be examined using various proxies for firm performance in the process. The relationship between both has not yet been extensively researched, some researchers found that buyout experience in a private equity firm boosts performance of the strategy e.g. Kaplan and Schoar (2005), Brigl et al. (2016) and Bansraj and Smit (2017). Bansraj and Smit (2017) and Smit (2001) also found size of targets in the strategy to positively influence the value creation process in the strategy. A complete study on the private equity firm influencing the performance of their buyouts during the strategy was not found.

To the best of my knowledge this is one of the first studies researching what factors actually influence the success of a buy-and-build strategy, and if performance is increased during the strategy takes place. The findings that the paper will have could be important in different ways. First of all, private equity firms could use the findings of this paper to target specific firms for their strategy that according to this thesis will improve the strategy's performance. Secondly, shareholders of firms that are targeted by the private equity firms could on the other hand increase their bargaining position with the findings of this paper. If they know that they possess the capabilities to be crucial in a successful buy and build strategy they are able to increase the prices they ask for selling their shares.

The approach taken in this thesis has been to use several OLS regressions adding covariates step by step to see whether results change. On the side, it was tested whether a buy and build strategy outperforms a standalone deal. The deal sample was based on European firms pursuing a buy and build strategy in the time period of 2010 to 2016. Some evidence has been found to indicate that a private equity firm influences performance of buyout firms during a buy and build strategy, however most results showed insignificant effects. Evidence was found that supports the view of platform companies outperforming standalone deals, although this was not robust to using different performance measures.

Firm size, yield spreads, increasing holding periods and private equity firms' buyout experience all seem to influence the performance of a buyout. Results indicated that a buy and build strategy spanning over five years influences the performance substantially, and implies outperformance compared to standalone deals.

Overall, the significant and insignificant findings in this master thesis contribute to an improved understanding of the buy and build strategy and its performance drivers. There is not enough evidence found to support the hypotheses that firm performance is increased during the buy and build strategy. It is believed that this is due to the sample used in this thesis, or due to the simple fact that private equity firms aim to increase value in other ways than performance increases. Further research should therefore look into other value creating levers than this thesis has done, an increased timeframe, and should aim at finding a sample with less missing data. This would all increase the understanding of the buy and build strategy and its drivers. Practitioners are able to use some of the findings of this paper to select specific targets that would increase the value of their buy and build strategy as much as possible. The results that this master thesis has found could thus be of value for practitioners and has contributed to literature.

2. Literature review

In this section first a brief overview of the history in private equity will be provided. Thereafter existing literature on the private equity process and the drivers of the buy-and-build process will be discussed in sections 2.1 to 2.3. The goal of this master thesis and the tested hypotheses are formulated in paragraph 2.4.

2.1. Historic overview

The seminal paper on the Eclipse of the Public Corporation by Jensen (1989) has documented the history of the public and private corporation extensively. Although the paper stems out of the 90', it is still cited very often today. According to the paper, ever since the rise of the public company in the early 1900's, active investors have been trying to play a role in influencing companies they have equity invested in. They aim at increasing a company's value by improving long term strategy and governance in the company by actively serving on the board of directors. As a result of the upcoming populism in the 30's and the Great Depression, regulation changed and management's role of monitoring became regulated and more costly. This higher cost of being an active investor as a financial institution resulted in sell-offs by these investors in the years after the 40's, resulting in an uprise of publicly owned corporations (Jensen, 1989).

Large investors that were previously actively monitoring companies noticed that these public companies were destroying firm value as they were not as efficiently managed as they were before. A new generation of active investors saw opportunities to increase this value again which led to the increased demand for making public companies private again. This was achieved by buying out entire companies to take them off the public market, and more than often done with a new trend of buyouts, namely the leveraged buyout (Jensen, 1989). Large increases in the returns on their buyouts compared to the prior situation then sparked a new buyout era in the 80's with much higher profits but increasingly more risky investments (Cheffins & Amour, 2007).

According to Kaplan and Stromberg (2009) a leveraged buyout (LBO) consists of acquiring another company in which the deal is financed with a relatively high percentage of debt compared to equity. Debt levels typically are between 60 to 90 percent of the total offer. The acquiring firm is able to gain a controlling interest in their buyout without using as much of their own equity because of using such high levels of debt. Investment firms performing such LBO's are nowadays referred to as private equity (PE) firms or general partners (GP). These firms receive their financing through a fund supported by several limited partners. These limited partners consist of pension funds, wealthy individuals and insurance companies.

The first literature on private equity firms' deals dates back to the 80's. In this period the number of LBOs that were being done skyrocketed. Jensen (1989) was one of the first to predict that LBO's would become the most important corporate buyout structure in the future. However, as Kaplan and Stromberg

(2009) stated, after some high-valued LBOs bankrupted in the early 90's, due to taking on too much debt, the LBO virtually disappeared from the takeover market.

This disappearance was only for a couple of years, as in the mid-2000's the LBO resurfaced across the whole world. With a very high increase in private equity deals increasing until the 2008 turmoil in the world economy started (Rizzi, 2015). As can be seen in figure 1, the deal values have been increasing again since the aftermath of the 2008 financial crisis has ended in 2010.

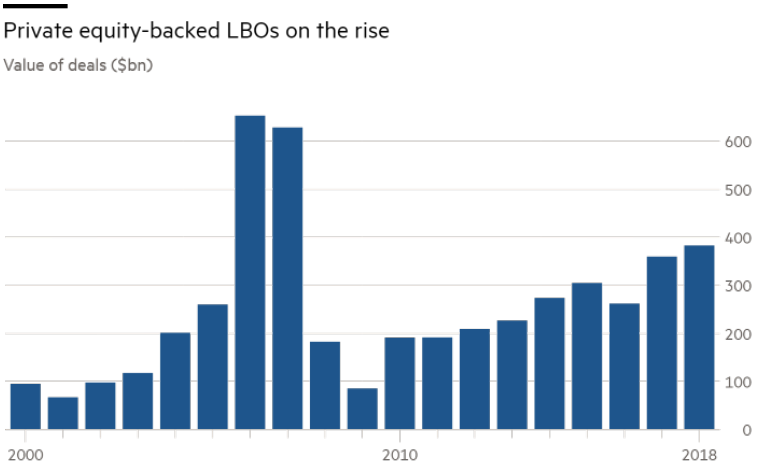

Figure 1. Private equity-backed LBO volume from 2000 until 2018. On the Y axis the deal value ($bn), on the X axis the years

Jensen (1989) stated the goal of a private equity firm after performing an LBO is to maximize firm value. They try to achieve this by restructuring the company bought; the portfolio company. They increase the performance of their portfolio company in different ways, which are called 'the value creating levers'. After the value of the company is then significantly enhanced during the holding period, the general partner seeks to sell the company and capitalize on his investment within a timeframe of three to five years ((MacArthur, 2019); (Kaplan and Stromberg, 2009)).

The GP's enhance the value of their portfolio company in different ways. The main pillars that a private equity firm looks for in enhancing this value are the financial, the governance and the operational pillars. These will now be further explained.

First the financial pillar, the general partner aims to change a manager's compensation scheme to solve the principal agent problem and thereby create value. According to Jensen (1989) management incentives are built around a strong relationship between pay and performance. The goal of the private equity firm is then to increase the financial performance of the portfolio company by linking the managers' pay to certain cash flow targets. Executives in private equity owned companies sometimes earn as much as 20 times the pay in a similar but public company (Jensen, 1989). In this way the managers' incentives are more in line with the owners, and thus in increasing the long run performance and stability of the company.

Secondly the governance pillar, a general partner aims to enhance the value of their portfolio company by improving the governance. As an active investor, he tries to efficiently monitor the company in its short- and long-term strategy by constantly advising its management.

Lastly, the operational pillar. The private equity firm tries to improve the operational process in its buyout by using cash and debt in more efficient ways. A higher debt means higher debt payments and thus less room for non-profitable investments, and consequently less room for wasting cash (Jensen, 1989). Higher debt payments also mean more tax advantages and thus increased cost savings.

According to Hammer et al (2017), the traditional value creating models of private equity firms have changed in the last decade. They added a combination of buying low / selling high and paying back the total debt in a levered company during the holding period to the value creating levers for private equity.

2.2 Value creation in PE and related literature on the PE business model

According to the study done by Brigl et al. (2016), PE firms want to create value mainly through multiple expansion, deleveraging and through operational improvements. *Multiple expansion* implies a form of arbitrage where a company buys another company at a low multiple and sells it in a later stadium at a higher multiple. This is achieved through creating more value in the firm in between buying and exiting. Multiples are measures that show some aspects of a company's financial state, for example the P/E and EV/EBITDA multiples. The P/E multiple shows the ratio in price of a company to its earnings, a high-priced company compared to its earnings then implies a high P/E multiple. Brigl (2016) stated that the total value added in private equity deals increased from 31% in 1980 to 40% in 2012 through multiple expansion.

The EV/EBITDA multiple however, implies the ratio between the enterprise value of a company to its Earnings Before Income Tax, Debt and Amortization (EBITDA). Multiple expansion then occurs if in between buying and selling the company, the multiple has increased (Rietveld, 2017).

According to Achleitner et al. (2010), private equity has three ways by which they achieve multiple expansion and thus create value. Namely 1. through their expected market timing skills, 2. through their ability to improve the prognoses for the company in the future and 3. by their negotiating skills in a deal. Private equity firms are thus expected to have superior skills compared to other types of firms, and are therefore able to create value in the companies they own (Kaplan & Schoar, 2005; Acharya et al. 2013).

Deleveraging on the other hand implies lowering the initially high debt levels after a private equity firm acquired the company. This is realized through forming stable and high cash flows in the acquired company to pay off more and more debt. This form of value creation has become less important in the last decades and its contribution decreased from 51% in 1980 to 13% in 2012.

Operational improvements include improving on efficiency, economies of scale and reducing operational expenses. The value that this process adds has almost tripled in size since the 1980's, 18% versus 48% in 2012 (Brigl et al. 2016). Indicating that this process has taken over the contribution of deleveraging, and thus has become very popular under GP's.

Many different studies in the past have investigated the performance of a buyout company after being acquired by a private equity firm. Kaplan (1989) found an increase in operating returns of LBO's in the 80's. Ljunqvist and Richardson (2003) noted that private equity funds generate excess returns of five to eight percent per year compared to the public equity markets. Higson & Stucke (2012) in their study on the U.S. concluded that PE funds significantly outperformed the S&P500 in almost each year since 1980. Whereas Kaplan and Schoar (2005) found that, weighted by committed capital, in the years

of 1980 to 1997 buyout funds did not outperform the S&P500. However, according to Higson and Stucke (2012) the dataset used by Kaplan and Schoar (2005) was "incomplete" which may have resulted in a biased performance outcome, and therefore the opposite result.

The study of Wilson et al. (2012) on performance in U.K. buyouts noted superior overall performance before and after the financial crisis, also noting revenue and employment growth in the PE-owned firms during this time. Harris et al. (2017) also found an overall outperformance in the returns of buyouts above the public markets when ownership was in PE's hands.

Jensen (1989) showed that in the first three years after a private equity firm acquired a certain company average operating income, cash flows and company value all increased substantially. Other research done by Badunenko et al. (2010) found that a PE fund backing a company has a negative short-term relationship between the number of years as a shareholder and firm performance, measured by the return on assets (ROA). This relationship becomes positive if the PE fund is shareholder for the longer term, namely for an uninterrupted period of six years.

Acharya et al. (2013) found that ownership of large mature private equity firms increased the operational profitability of portfolio companies. An increase of .4% per year above the median in deal margins (EBITDA/SALES) and an increase of 16% above the median in deal multiples (EBITDA/Enterprise Value) were noted. These increases were all due to private equity ownership. Wilson et al. (2012) noted an increase of three to five percent increases in profitability in the U.K. On the other hand, Nordström (2015) found that profitability, after being acquired, first declines and after the PE firm has exited increases again, due to efficiency improvements during their ownership. PE is thus expected to increase welfare for the economy on the long run. These previously found results by Kaplan (1989); Badunenko (2010) and Wilson (2012) have been confirmed in the study done by Chesini and Giaretta (2013), who also found an increase in performance after being backed by a PE-firm.

In the last decade however, the competition and liquidity in the private equity buyout market increased and the market itself matured (Braun, Jenkinson, & Stoff, 2017). According to Kaplan (1997) corporate governance functioning in the U.S. had also been improving substantially. As a result of this trend there was less room for private equity firms to improve the governance functioning in their buyouts. Therefore, private equity had to find other forms of value creation.

One new value creation method that surfaced was the buy and build strategy (B&B) also called the inorganic growth strategy, which is nowadays the main method of choice for private equity firms (Brigl et al., 2016). According to a study conducted by Bain & Company (2019) they represented 28% of total deals in 2004 whereas this increased to almost half of the total deals in the market in 2018 (MacArthur, 2019).

The buy and build strategy consists of a general partner or private equity firm starting a serial acquisition strategy by firstly acquiring a strong platform company in a certain industry. Thereafter the firm acquires other smaller companies in the same industry, called 'add-on acquisitions', and combines them all into one entity (Smit, 2001). This is done to achieve the general partners goal for industry

consolidation, and in the end to earn on its investments by exiting the investment within a timeframe of five years. This exit is done through selling the company in a normal trade sale, to another strategic buyer (secondary buyout) or through an initial public offering ((Smit, 2001); (Borell and Heger, 2013)).

The aim is to gain on synergies, leverage effects and other add-on potentials, therefore the performance of a buy and build strategy has many different drivers. Brigl et al. (2016) state that in buy and build strategies multiple expansion and improving the operational process are the main drivers of value creation. They also found that buy-and-build strategies perform better when the strategy is performed in similar industries, the more fragmented a market is and the slower the growth in the market is. According to Nikoskelainen and Wright (2007) buy and build strategies are key to increase deal performance.

2.3 Drivers

As explained before, a buy and build strategy begins with a general partner acquiring a respected company that has a lot of future growth opportunities as the so-called 'platform'. The platform company is the key component in this strategy (Bansraj & Smit, 2017). It should have some kind of core characteristic or efficiency that its competition does not have, that could be leveraged onto new, often smaller, add-on acquisitions. Through integrating the operations and gaining on synergies of the add-on acquisitions and the platform, the large firm gains additional value and gains more market power.

Bansraj and Smit (2017) argue that a buy and build strategy works best if some predefined conditions are met and that these conditions can be divided into three main pillars. The pillars are financing, industry and company conditions. In line with their convincing paper and the belief that their findings seem to be correct, this paper will use the same performance pillars in order to formulate an answer to the research question of this master thesis.

2.3.1 Financing

The acquisitions in a B&B are mostly financed with a high level of debt to gain on the financial leverage effects, just as in an LBO. This is done to gain on increased tax benefits and to make sure managers will act in the interest of the company to improve efficiency and cash flow management (Bansraj and Smit, 2017). High leverage namely implies increased risk of default, and therefore needs efficient management. Because of these higher benefits and improved efficiency, it is expected that following a buy and build strategy would increase value in its buyouts.

However, Axelson et al. (2013) with their paper on international buyouts in 1980 until 2008 found a negative relation between fund performance and deal leverage. Buyouts are expected to have high levels of debt; therefore this finding would indicate that a buy and build strategy would not be beneficial for the firms participating.

To be able to perform a large buy and build strategy, a general partner needs to have access to a good source of financing to pay for the deal. An improving external debt market means lower interest

rates and lower interest spreads and thus means lower financing costs for the general partner. Therefore, general partners in case of improving debt market conditions gain access to increasing amounts of leverage, and possibly more room for add-on acquisitions (Bansraj and Smit, 2017; Axelson et al., 2013). Favorable debt markets are thus expected to be positively related to firm performance.

During the buy and build strategy the platform logically accumulates to a larger size with each transaction occurring. The cost of capital then may change for the GP as it gains on synergies, through multiple expansion and/or through larger serial acquisitions. This change could even imply additional room for debt to further extend the serial acquisition strategy. Whilst maturing of the platform occurs, synergies within the add-ons and the platform could also improve internal debt financing and increase the debt capacity of the platform. This due to increased productivity and lower risk of default (Bansraj and Smit, 2017; Nikoskelainen and Wright, 2007).

Increased firm size lowers financing costs through less risk of default. Lower interest rates and lower interest spreads make room for more financing and thus more leverage. This results not only in more room for total investments, but also in more room to increase the scale and number of add-on acquisitions (Axelson et al., 2013). A higher rate of acquisitions would however negatively influence the performance (Laamanen and Keil, 2008). Overall, the question thus rises how lower financing costs would influence performance.

2.3.2 Industry

Smit (2001) argues that an industry without any dominant company, a fragmented industry, could benefit from consolidation. He states that one of the key drivers in a buy and build strategy is the firms size in a fragmented industry, as the strategy aims to form a market leader through gaining on economies of scale and/or scope.

A fragmented industry in which the platform company is located indicates positive value for a buy and build strategy as Bansraj and Smit (2017) have shown. Because of this fragmentation, there are many different add-on companies in the specific industry that the platform company could acquire. Brigl et al. (2016) found that the more fragmented a market is, the better a buy and build strategy works. So if the platform company is situated in a fragmented industry, the expectation is that extra value through the buy and build strategy can be created.

2.3.3 Company

Nikoskelainen and Wright (2007) found that acquisitions during the holding period increase the enterprise value of the platform, and that these add-ons are mainly used for increasing scale. Acquisitions being done logically show that the market is consolidating, which according to Bansraj and Smit (2017) suggests that value is being created for the platform. They also noted that targets having significant size are favorable and, if acquired, this enlarges the financial base of the platform substantially and contributes to the size premium of the Fama & French model. Tuch and O'Sullivan

(2007) with their research on serial acquisitions also found acquisitions of larger targets to relate to superior performance. Therefore, having a significant firm size would increase the performance in a platform company.

Kaplan and Schoar (2005) found cross sectional performance to have a positive relationship with fund size and with the general partner's previous experience. Size of the platform company is as has been explained in the previous section, expected to be an important factor in a buy and build strategy. Brigl et al. (2016) also found an increased performance if the general partner has substantial previous experience in conducting a buy and build strategy. A possible reason for this increased performance could simply be that increased experience means more understanding of the buy and build process. Laamanen and Keil (2008) and Kengelbach et al. (2012) found a similar relation between acquisition experience and performance in their studies on serial acquisitions. According to Kengelbach et al. (2012) this relation exists because acquirers gain proficiency in specific types of deals after completing them, due to the specialized learning hypothesis. In line with these findings, the expectation is made that more acquisition experience leads to a better performing buy-and-build strategy. This effect is expected to be increased if a GP has previous buy and build experience.

According to Nikoskelainen and Wright (2007) larger buyouts perform better and provide higher returns. They expect that this is a result of lower default risk in larger sized companies. Large companies namely often have more than one business unit, and higher buffers, and are therefore better able to withstand bad market circumstances. Laamanen and Keil (2008) with their analysis on serial acquirers in the United States found acquirer size to positively relate to firm performance. On the other hand, *Brigl et al.* (2016) found striking evidence that small-sized platforms outperformed the medium- and large-sized platforms in buy and build strategies. As platform companies logically are buyouts contradicting results are reported in earlier research on the link between firm performance and the size of a buyout. Therefore, additional research should be performed to find out why this contradiction exists.

In the study done by Davis et al. (2014) on 3200 target firms in the US they found that after a PE buyout occurs, total factor productivity in this company increases compared to similar controls. They stated that this productivity increase is solely due to the influence of the PE buyout. Their paper also indicates that total operating margins are lowered due to the influence of a PE buyout. So as a consequence, it is expected that a PE firm would increase the productivity in a standalone deal, but would a buy and build strategy then increase the productivity even further? Following this strategy has become seemingly more chosen and researchers should dive into whether this does increase the performance even further.

3. Research question and hypotheses

All in all, most evidence in the previous chapter points to a positive influence on buyout firm performance due to private equity pursuing a buy and build strategy. The evidence is not conclusive though, therefore this paper has chosen to try to add to the literature by providing more insight into this fairly new strategy. The goal of this study is to find out if a buy and build strategy works, and what factors influence the performance of the strategy. Critically reviewing the scarce literature on this strategy has led to the following predictions.

It is expected that buyout firm performance will increase due to a private equity firm starting a buy and build strategy, as most literature points in this direction. The goal for a general partner with this strategy is to create more value in their buyouts and the expectation is to see a higher effect in their platform companies. Hypothesis one (H1) is therefore formulated as follows.

H1: PE deals which are part of a buy-and-build strategy outperform PE deals which are not; the outperformance is largest in platform deals (compared to follow-on and non buy-and-build deals)

In addition to this hypothesis this paper will also give an extra insight on whether a buy and build strategy adds value to firms. This is done by comparing standard standalone private equity platform buyouts with buyouts in a buy and build strategy. The expectation is that a buy and build strategy creates more value than a standalone deal. This has led to the next hypothesis, hypothesis 2 (H2).

H2: Platform companies in a buy and build strategy outperform standalone private equity owned companies.

The complex issue in testing such a hypothesis is that measuring firm performance is arbitrary and has always been a challenge for researchers. Many different financial ratios and financial metrics have been used in the previous literature on firm performance. As there is no standard ratio or metric to use, the hypotheses in this thesis will be tested on multiple different performance measures. In the next section these measures will be explained.

4. Data and Methodology

The methodology section will explain and justify all choices that have been made to formulate answers on the research question and test the two hypotheses in this thesis. First, the data collection process will be discussed. Then, the different performance measures and the other variables used will be thoroughly explained together with the descriptive statistics. The section ends with a description of the methods that will be used to analyse the data and a description of the proposed framework to empirically answer the research questions.

4.1 Data sources

This research focuses on buy and build deals in Europe during the period 2010 to 2016. In order to construct the sample, three different databases from Bureau van Dijk are combined. These are Zephyr, Orbis and Amadeus. Zephyr and Orbis provide extensive worldwide public and private data on takeover deals and company financials respectively. Amadeus provides information regarding public and private company financials in Europe. In the last years Zephyr and Orbis have gained popularity under researchers (Borell and Heger (2013). Therefore this paper has chosen to make use of them too.

4.2 Methodology

First, all information on deals classified as buy and build deals by Zephyr are selected. This way Acquiror- and Target ID numbers, and thus Platform- and add-on-ID's of companies were distinguishable. Secondly, a pre-deal stake of less than 50% and a post-deal stake of over 50% was used as a restriction to assure that a General partner gained a majority stake with the deal. Deals in which the platform companies were the target have been used to identify the General Partner that initiated the buy and build strategy. These deals were also used to find exit dates and thus the end of a buy and build strategy, as the general partner capitalizes on his investment and thus the strategy by reselling the platform company.

Deals that had missing data on subtypes, company ID numbers or Industry ID codes (NAICS REV.2 codes) were dropped as this information is required in order to obtain firm and deal specific data. This resulted in a sample of 708 platform companies and 1595 add-on companies. Addon deals of which the previous owner was also classified as private equity have been dropped as these are expected to have already been influenced substantially by their previous owner. Not dropping these could have then led to biased results. The company ID numbers were then used to gather information on company specific financials from Orbis and Amadeus. NACE Rev. 2 industry codes were grouped together, the specific groups can be found in table A.3. in the appendix. Financials have been gathered from 2010 to 2017 to leave room for the buy and build strategy to influence the company financials after the deal started (in 2016).

Firms that did not have complete information on the financials of interest were deleted resulting in a final sample of 61 platform companies and 49 add-on companies. These firms all have seven years

of observations resulting in a panel dataset of 880 firm-year observations. The summary statistics for the main variables of interest can be found in the appendix under A.2. The platform companies have a lower *NPM*, *ROA* and *ROE* compared to the add-on companies. Although, they are on average larger in size. The values for the summary statistics of the control firms in this thesis are similar to the platforms' values, their average *NPM* (.093) is substantially higher than the platforms' (.037). Add-on companies have an average firm age of 25 and are on average the oldest compared to the rest of the sample.

To test the performance of a buy and build strategy two different steps are taken. The first step investigates the change in different performance measures for both platform and add-on companies involved in a buy and build strategy. It tests the differences between both companies and includes many covariates that might also influence firm performance.

The second step in this thesis is to investigate whether the platform companies in a buy and build strategy outperform similar sized standalone private equity deals. This is tested again with the seven different performance measures, as described previously. With this method the difference between a private equity firm performing a buy and build strategy and a normal standalone deal can be tested. To be able to meaningfully test the difference, a correct control firm has to be matched to each platform company. The matching strategy will now be explained.

4.2.1 Matching process

First, all private equity deals in Zephyr for the period of 2010 to 2016 in Europe were gathered with the same restrictions as for the buy and build firm sample. Deals that classified as buy and build deals were dropped, just like firms that had previous private equity ownership. This results in a control sample of 1421 unique firms. The financials of these firms are then gathered from Orbis and aggregated with the Zephyr deal data. Firms that have missing data in their different performance measures were dropped, resulting in a control sample of 497 companies with complete data to match with the B&B sample. This is expected to be large enough to be of great matching power.

The matching algorithm is related to the algorithm used by Jay Ritter in his seminal paper on IPO under-pricing (1990), in which he compares American IPO's with American Non-IPO's. The algorithm that is used to match the platform companies starts by matching each platform to all control firms in the sample sharing the same 2digit NAICS REV.2 code and acquiring year. The control firm having the closest Total Assets value to the respective value of the platform company was then chosen. This way of matching is expected to make sure the most similar control firm is chosen, so that other influences than the buy and build strategy are limited or even removed. After each correct match, the corresponding matched firm was deleted from the control sample to prevent double matching, and possibly biased results. This resulted in a matched control sample of 61 firms, that were matched on size, acquiring year and industry to the platform companies.

4.2.2 Descriptive statistics

As mentioned earlier, measuring firm performance has always been a challenge for researchers, as some argue that different measures do not all give the same robust results. Several empirical research in the past has been using accounting measures to proxy for financial performance. This is done as firms often make their financial statements public, and thus there is plenty of available information to calculate financial ratio's with.

King et al. (2004) and Athanasoglou et al. (2006) for example, look at financial ratio's like Return on Assets (ROA) and Return on Equity (ROE) to proxy for firm performance. Whereas Delen, Kuzey and Uyar (2013) add Net profit margins (NPM), EBIT growth and EBITDA growth in their research. Research outcome is highly influenced by performance measures used. For instance Chui et al. (2001) found inconsistent outcomes in measuring performance using ROA and ROE. Tuch and O'Sullivan (2007) also found mixed results using accounting measures in their review on empirical research. Therefore, as King et al. (2004) said, multiple accounting measures should be included in further research on firm performance. This would give a completer documentation when implementing different measures, and would shed more light on interpreting the different results of using multiple measures. In this thesis it is therefore concluded that to get robust results, the different hypotheses have to be tested for multiple measures of firm performance.

Firm performance is logically linked to firm profitability, and thus to firm efficiency and productivity. A good measure for productivity in a firm is the ratio of operating revenue to the number of employees in the firm (ORPE). Next to this, higher performance is also linked to revenue growth and thus for increasing revenue, for which the operating revenue (OR) is a correct measure. Therefore, the measures that are used to proxy for financial performance in this thesis are the NPM, ROA, ROE, EBIT, EBITDA, OR and the ORPE. The latter four measures have all been aggregated to logarithms in order to normalize the data series.

To test whether a buy and build strategy influences firm performance the dummy variable *BUYBUILD* has been made. If the value of the variable is equal to "1" it indicates the start of a private equity firm influencing its buyout company in a buy and build strategy.

It is expected that a buyout firm is not immediately influenced by the private equity firm as it could take time to really control a firm and change (improve) its strategy. Therefore, the assumption is made that a private equity firm can only start to influence their buyouts in the year after buying them. The same is expected of a standalone private equity deal, that is used for the control sample.

To find out whether the effects are enlarged if the performance is even more influenced when the buyout is a platform company, an extra interaction term was added (*PLATFORMBUYBUILD*). This variable indicates that the company is a platform company and that the private equity firm took over control of the company.

The variable *BUYBUILD* is the key variable in testing the hypotheses on private equity firms influencing performance in this thesis. However, many other firm and industry factors have been found

to influence firm performance and as such have to be controlled for. Therefore, several other covariates to control for these factors were also created or added and will now be explained.

Previous research has shown that performance is dependent on size as larger companies tend to perform better than smaller firms (Axelson et al. (2013), Bansraj and Smit (2017)). To account for the size of the firms in the sample a variable *size* was added. The value that this represents is proxied with the logarithm of total assets for each company. This is a commonly used proxy for measuring firm size in the literature, for example in Dang and Li (2015) who found this proxy to be the most accurate. Dummy variable *small* is created to account for the firms in the smallest 10^{th} percentile in firm sizes, to be able to test whether smaller sized firms perform better.

The dummy variable *Experienced* represents PE firms who have performed a successful buyout at least 5 times since their start. Dummy variable *BNBexp* has been created to indicate that a PE firm has performed a buy and build strategy at least once before. According to Brigl et al. (2016) having buy and build experience as a general partner increases firm performance.

It is expected that favorable debt markets influence the performance of a buyout firm. As Axelson et al. (2013) state that the leverage and buyout pricing depend highly on the credit market conditions, there thus has to be controlled for influence of the market conditions. To control for this, variable *YLD* has been added. In line with the paper by Axelson et al. (2013) debt market conditions can be measured using the credit risk premium on leveraged loans. They calculated this premium as the yield spread difference between the Merrill Lynch High-Yield index minus the U.S. LIBOR. This thesis follows their approach as it is believed that their approach was correct. A low value implies favorable debt market conditions.

Several interaction terms were also added to the regressions to test whether certain factors in a buy and build strategy further influence the performance of the buyouts. Respectively small platforms, experienced general partners, platform company age, fragmented markets and longer holding periods are expected to increase the performance in a buy and build strategy. The interaction terms are defined in table 1, together with the variables that have not yet been discussed.

Table 1. Variables used in the regressions including definitions

Variable	Definition
Platform	Dummy variable that is equal to 1 if the company is a platform company
FRAGM	Dummy variable that is equal to 1 if the HHI index is in the lowest 25th percentile
HHI	Defined as the Herfindahl-Hirschman industry index. Calculated as the 50 largest firms' market shares squared and summed together
Longholder	Dummy variable that is equal to 1 if the holding period is over 5 years
Establfirm	Dummy variable that is equal to 1 if the firm is in the oldest 25th percentile of firms
Small	Dummy variable that is equal to 1 if the firm is in the smallest 25th percentile of firms
HP	Variable indicating the Holding Period in years

Interaction terms	
Variable	**Definition**
SPI	Dummy variable that is equal to 1 if it is a platform company that is influenced in a buy and build strategy and in the smallest 25th percentile in size
OLDP	Dummy variable that is equal to 1 if it is a platform company that is influenced in a buy and build strategy and in the oldest 25th percentile of firms
LONGP	Dummy variable that is equal to 1 if it is a Platform company that is influenced in a buy and build strategy, and has a holding period of over 5 years
FPI	Dummy variable that is equal to 1 if it is a Platform company that is influenced in a buy and build strategy and present in very fragmented market
PEP	Dummy variable that is equal to 1 if it is a Platform company that is influenced in a buy and build strategy, and the general partner has previous buyout experience
BEP	Dummy variable that is equal to 1 if it is a Platform company that is influenced in a buy and build strategy, and the general partner has previous buy and build experience

4.2.3 Data analysis

This thesis contains data on different characteristics for multiple time periods and for many different companies. We are therefore performing a panel study for which a simple OLS regression is appropriate. The simple OLS regression model takes the following form:

$$Y_{it} = \alpha + \beta_k X_{k,it} + \mu_{it}$$

In this regression model Y_{it} is the dependent variable, $X_{k,it}$ stands for the independent variables and β shows the estimated slope coefficient. The part of the variance in the dependent variable that cannot be explained by the independent variables is captured in the error term, the "μ". k shows the indicator for the independent variable and i and t are indicators for the specific company and time respectively.

For the OLS regression that is performed in this thesis the dependent variable (Y_{it}) in the regression represents the performance measure used. The independent variables ($X_{k,it}$) are the company specific factors that are expected to influence the performance. Each regression is repeated on a different performance measure, not only to find out the influence of a buy and build strategy on that specific performance measure, but also as a robustness check.

To test the first hypothesis, two sets of regressions are formed and the results can be found in tables 2 and 3. The sample for these regressions includes all add-ons and platform companies. First a set of base regressions is done including a limited number of control variables. Thereafter all of the covariates and the interaction term *PLATFORMBUYBUILD* are added to see whether the results change.

To test the second hypothesis, four sets of regressions are formed and the results can be found in tables 4, 5, 6 and 7. The first regressions are very basic, thereafter an interaction term *PLATFORMBUYBUILD* is added to test whether the platforms do indeed outperform their matched set of controls. In table 6 the rest of the covariates are added, and in table 7 all of the covariates including all the interaction terms are added. This is done to see possible other factors influencing the performance of the buy and build strategy. As performance can differ between industries and over years (due to different economic conditions), all regressions have been controlled for industry and year fixed effects.

5. Results

The results section will explain and show all of the outcomes of the regressions that were done to answer the research question of this thesis as formulated in chapter 3. It starts with a justification of the choices made for the specific regressions. Following this, the results of the regressions on the first hypothesis will be depicted; PE firms improve the performance of their buyouts with a buy and build strategy. Thereafter the results to test the second hypothesis that platforms in a buy and build strategy outperform standalone private equity deals will be analysed. Additionally, the scientific adjustments made to make the results more valid will be justified.

First of all, some assumptions had to be made to be able to perform valid regressions. The correlation matrix in table A.1. in the Appendix shows that the variable *size* correlates over 70% with the variables *OR*, *EBIT* and *EBITDA*. This shows that size is a strong indicator of *EBIT(DA)* and *OR*. A possible solution for this correlation could be to change the variables to a percentage of the total revenue, so to change the *EBIT(DA)* value to an *EBIT(DA)* margin. This solution resulted in correlations of 45% (EBIT margin) and 55% (EBITDA margin). This decrease was not as substantial as was expected and therefore the solution did not give the expected results. The choice was therefore made to leave the variable size out of the regressions concerning these correlated performance measures. As the variable *size* is crucial for determining whether firm size influences firm performance it was used in the other performance measures.

To address the issue of heteroskedasticity and correlation between different observations per individual firm the regressions were all performed using clustered standard errors. In this way the validity of the estimates in the regression are improved, as the correlation between groups of observations is taken care of.

To prevent outliers biasing the results the main variables of interest have been winsorized at a 1% level. This means that the outliers in the tails are all aggregated to the value of the 1st and 99th percentile. These variables were the seven performance measures, *size* and *firmage.* The number of observations (N) across the regressions varies slightly as some performance measures had missing values.

5.1 Results on buyouts

Table 2 reports the outcomes of the first set of regressions on the platform and add-on companies in the sample. As the dependent variable the seven different performance measures have been used. It was assumed that a private equity firm starts to control their buyout one year after acquiring them. The variable *BUYBUILD* is then equal to 1 if the private equity firm has acquired the firm one year ago, and is now using the buy and build strategy in their buyout. Other factors that could possibly influence the firm performance are added in the regressions to see whether they do influence the performance.

Table 2: OLS regression results for buyouts

Table 2 below shows the regression results of the performance of a buyout company that follows a buy and build strategy. Regressions 1 to 7 are all repeated but with a different performance measure, the same independent variables and vary only on their dependent variable. P values in parentheses.

	Performance measures						
	1	2	3	4	5	6	7
Dependent variables	NPM	ROA	ROE	EBIT	EBITDA	OR	ORPE
BUYBUILD	-0.022	0.099	3.675	-0.021	-0.039	-0.062	-0.004
	(0.561)	(0.929)	(0.475)	(0.822)	(0.604)	(0.535)	(0.929)
platform	-0.002	-1.131	-2.023	1.258***	1.116***	1.340***	-0.311
	(0.954)	(0.597)	(0.770)	(0.000)	(0.002)	(0.000)	(0.139)
size	0.003	-2.370***	-4.340**				0.152***
	(0.740)	(0.000)	(0.015)				(0.001)
_cons	0.018	33.607***	55.899***	6.751***	7.346***	9.155***	3.955***
	(0.877)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
N	841	880	880	761	822	880	747
Adj. R-Squared	0.014	0.180	0.126	0.171	0.164	0.237	0.390
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* p<0.1, ** p<.05, *** p<.01

Surprisingly the results for all seven performance measures indicate that the performance in the buyouts are not significantly changed after the general partner takes over control. However, in regressions 4, 5 and 6 the significant coefficients show that firm performance is improved when the acquired firm is a platform company. A logical explanation for this finding could be that a platform company is occasionally of larger size than add-on companies, and therefore their EBIT, EBITDA and OR are higher.

The variable *size* shows that firm performance is truly influenced by the size of a firm. For the measures *ROA* and *ROE* there is a negative very significant relationship noted, a logical finding as size is related to the scalar of *ROA* and *ROE*; namely the assets or equity respectively. In regression 7 the positive coefficient implies that a larger firm increases the measure for profitability; the *ORPE*. This finding implies that a 1% increase in the size of a firm results in a 0.152% increase in the profitability. Larger firms thus perform better (in absolute terms). The constants were significant for all regressions

but regression 1 indicating that the performance measures do not start at zero if all independent variables are equal to zero.

So, from the first set of regressions on all of the different measures, we do not find any evidence that indicates that a general partner performing a buy and build strategy increases the firm performance in their buyouts. For firm size however, evidence shows that size influences firm performance. The results show that for measures *EBIT* and *EBITDA* platform companies do seem to have a higher performance than add-on companies. In table 3 the results of the second set of regressions are shown. Insignificant values are left out of the table except for main variables of interest, *firmage* has shown to have no significant influence on firm performance.

Table 3: OLS regression results for buyouts including all factors

Table 3 below shows the regression results of the performance of a buyout company that follows a buy and build strategy. Regressions 1 to 7 are all repeated but with a different performance measure, the same independent variables and vary only on their dependent variable.

	Regressions						
Variables	1 NPM	2 ROA	3 ROE	4 EBIT	5 EBITDA	6 OR	7 ORPE
BUYBUILD	-0.047 (0.172)	-0.474 (0.710)	-1.263 (0.825)	-0.083 (0.398)	-0.118 (0.147)	-0.158* (0.075)	-0.030 (0.513)
platform	-0.031 (0.689)	-0.093 (0.968)	0.959 (0.932)	1.146*** (0.002)	1.058*** (0.008)	1.327*** (0.000)	-0.619*** (0.004)
PLATFORMBUYBUILD	0.023 (0.800)	-0.171 (0.910)	5.987 (0.275)	0.124 (0.314)	0.178 (0.153)	0.262 (0.164)	0.070 (0.167)
Size	0.000 (0.988)	-2.665*** (0.000)	-6.789*** (0.001)				0.133*** (0.009)
Small	-0.006 (0.904)	-1.560 (0.445)	-17.369 (0.122)	-0.694*** (0.000)	-0.972*** (0.000)	-0.526*** (0.000)	-0.046 (0.505)
yld	-0.148 (0.254)	0.630 (0.839)	-2.203 (0.879)	-0.537 (0.115)	-0.278 (0.325)	-0.842** (0.015)	-0.116 (0.527)
HP	0.006 (0.556)	1.033*** (0.000)	3.644*** (0.002)	0.127*** (0.007)	0.122** (0.031)	0.076 (0.100)	0.040 (0.221)
Experienced	0.028 (0.576)	-1.360 (0.531)	-3.646 (0.741)	0.195 (0.485)	0.219 (0.454)	-0.041 (0.866)	0.456** (0.014)
_cons	-0.389 (0.332)	32.169*** (0.003)	58.509 (0.178)	4.557*** (0.000)	5.836*** (0.000)	6.243*** (0.000)	3.809*** (0.000)
N	841	880	880	761	822	880	747
Adj. R-Squared	0.012	0.217	0.160	0.295	0.299	0.315	0.413
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* p<0.1, ** p<.05, *** p<.01

An extra interaction variable named *PLATFORMBUYBUILD* has been added to indicate that a buy and build strategy is taking place, and that the company in which this takes place is a platform company. Other variables added to the regression are control variables that control for other factors possibly influencing firm performance. The regressions are controlled for firm, year and industry fixed effects.

The results indicate that initiating a buy and build strategy significantly lowers firm's Operational Revenue. With a less significant p-value of close to 17% and 14% respectively Net Profit Margin and *EBITDA* both also indicate a lowered performance if the strategy is performed. The result seems logical as PE uses the cashflows in their platforms to fund their add-on acquisitions, and thus are less focussed on the profit and cashflow levels according to MacArthur et al. (2019). Platform companies are shown to have an increased performance in regressions 4 and 5 compared to add-on companies. Being a platform company lowers the productivity as is shown in the last regression, the *size* negatively reacts to the *ORPE*.

Size again seems to influence the *ROA* and *ROE* negatively whereas the relationship with *ORPE* is again positive. Other explanatory factors for the firm performance indicate that *Small* firms have lower *EBIT*, *EBITDA* and *OR*. Yieldspread negatively relates to *EBIT* and *OR* as performance measures. An increased holding period increases the *ROA*, *ROE*, *EBIT*, and *EBITDA* and only mildly negatively indicates to increase *OR* (p-value=10%). Being an experienced GP in buyouts is only found to increase the productivity, *ORPE*. A GP having performed at least 5 buyouts before increases *ORPE* and thus performance with 0.46%. Buyout firm age does not seem to influence firm performance in the performed regressions.

The results found in table 2 do seem to be in line with results from table 3. The constants have similar values. The important finding that was not found in the results shown in table 2 was the variable of interest. Namely that the firm performance is improving in *OR* when a buy and build strategy is performed. Adding explanatory and control variables has improved the adjusted Rsquared of the results, and except for the *NPM*, seem to have a high enough value. Overall one regression thus shows an improved performance in the platform and add-on companies if the buy and build strategy is performed.

5.2 Results on performing the strategy versus a standalone deal

The results for the second approach to investigate whether a buy and build strategy improves firm performance will now be handled. The sample that was used in these regressions is the platform companies and their matched set of control firms. The variable *BUYBUILD* now indicates that a GP has taken over control of either the platform company, or the control firm. Table 4 indicates the results for the regressions with the performance measures as the dependent variable and the variables of interest as the independent variables. The variable platform did not depict a significant influence in this regression and was therefore left out of the table.

Table 4: OLS regression results for platforms and controls

Table 4 below shows the regression results of the performance of a buyout company that follows a buy and build strategy. Regressions 1 to 7 are all repeated but with a different performance measure, the same independent variables and vary only on their dependent variable. The variable platform was left of the results as this was found to be insignificant.

	Regressions						
Variables	1 NPM	2 ROA	3 ROE	4 EBIT	5 EBITDA	6 OR	7 ORPE
BUYBUILD	0.015 (0.662)	0.057 (0.955)	-1.871 (0.734)	-0.041 (0.691)	0.021 (0.780)	0.035 (0.666)	0.051 (0.209)
size	0.009 (0.484)	-2.610*** (0.001)	-1.678 (0.343)				0.093** (0.046)
_cons	-0.030 (0.845)	36.039*** (0.000)	19.414 (0.365)	7.911*** (0.000)	8.469*** (0.000)	10.538*** (0.000)	4.641*** (0.000)
N	951	976	976	803	894	974	857
Adj. R-Squared	0.037	0.077	0.089	0.103	0.110	0.096	0.313
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* p<0.1, ** p<.05, *** p<.01

Surprisingly, the main variable of interest does not indicate a significant influence when only these variables are being regressed. *BUYBUILD* appears to not change the performance in the firms where a GP has taken over control, whereas this was expected. *Size* on the other hand does seem to increase the firm performance when using *ORPE* as a measure. And size negatively influences the performance if measured by *ROA*. Again, the dependent variables for all but *NPM* and *ROE* start at values above zero if the independent variables are equal to zero, indicated by the constant.

In table 5 the interaction variable *PLATFORMBUYBUILD* has been added to be able to separate the influence of a buy and build strategy with a standalone deal. This from now on will be the main variable of interest as this is the variable that will formulate an answer to the research question of this thesis.

Table 5: OLS regression results for platforms and controls including interaction term

Table 5 below shows the regression results of the performance of a buyout company that follows a buy and build strategy. Regressions 1 to 7 are all repeated but with a different performance measure, the same independent variables and vary only on their dependent variable.

	Regressions						
Variables	1 NPM	2 ROA	3 ROE	4 EBIT	5 EBITDA	6 OR	7 ORPE
BUYBUILD	0.016 (0.645)	0.282 (0.779)	-3.963 (0.496)	-0.085 (0.457)	-0.005 (0.949)	-0.045 (0.510)	0.025 (0.584)
platform	-0.045 (0.378)	0.576 (0.743)	-0.829 (0.904)	0.137 (0.609)	0.054 (0.847)	0.045 (0.850)	-0.242 (0.119)
PLATFORMBUYBUILD	-0.002 (0.979)	-0.853 (0.550)	7.946 (0.156)	0.177 (0.191)	0.105 (0.407)	0.305* (0.086)	0.103* (0.067)
size	0.009 (0.472)	-2.548*** (0.001)	-2.110 (0.219)				0.078 (0.107)
_cons	-0.031 (0.829)	35.101*** (0.000)	26.571 (0.202)	7.968*** (0.000)	8.501*** (0.000)	10.636*** (0.000)	4.838*** (0.000)
N	951	976	976	803	894	974	857
Adj. R-Squared	0.038	0.075	0.005	0.110	0.113	0.105	0.315
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* p<0.1, ** p<.05, *** p<.01

The results are in line with the results in table 4, although the influence of size on *ORPE* has become mildly insignificant (p-value=10.7%). The results on *PLATFORMBUYBUILD* however indicate that there is increased firm performance in following a buy and build strategy. *OR* and *ORPE* both are significantly increased with respectively 0.305% and 0.103% if the strategy is performed. The *ROE* is just short of being significant (p-value=15.6%) and shows an increased performance (of 8%!) if it is a platform company and is controlled by a GP. The constant changed only mildly between tables 4 and 5. These results thus indicate that a buy and build strategy improves firm performance.

In the next regressions the other explanatory and control variables that influence firm performance are added. The results for these regressions can be found in table 6.

Table 6: OLS regression results for platforms and controls including some covariates

Table 6 below shows the regression results of the performance of a buyout company that follows a buy and build strategy. Regressions 1 to 7 are all repeated but with a different performance measure, the same independent variables and vary only on their dependent variable.

	Regressions						
Variables	1 NPM	2 ROA	3 ROE	4 EBIT	5 EBITDA	6 OR	7 ORPE
BUYBUILD	0.009 (0.806)	-0.007 (0.994)	-5.951 (0.311)	-0.104 (0.364)	-0.020 (0.806)	-0.058 (0.396)	0.026 (0.579)
platform	-0.059 (0.342)	0.532 (0.790)	-3.417 (0.668)	-0.132 (0.651)	-0.268 (0.444)	-0.223 (0.398)	-0.399** (0.025)
PLATFORMBUYBUILD	-0.005 (0.951)	-1.047 (0.472)	6.608 (0.251)	0.165 (0.223)	0.094 (0.457)	0.296* (0.098)	0.104* (0.067)
size	0.007 (0.590)	-2.597*** (0.001)	-2.520 (0.137)				0.076 (0.122)
HP	0.005 (0.630)	0.809** (0.012)	2.998*** (0.006)	0.097** (0.031)	0.115** (0.025)	0.096** (0.011)	-0.023 (0.478)
experienced	-0.003 (0.943)	-2.913 (0.119)	-5.808 (0.471)	0.057 (0.843)	0.075 (0.815)	0.027 (0.916)	0.408** (0.041)
BNBexp	0.066 (0.322)	2.816 (0.252)	12.940 (0.430)	0.670 (0.123)	0.850* (0.064)	0.811** (0.041)	-0.035 (0.855)
_cons	-0.029 (0.839)	32.625*** (0.001)	19.094 (0.371)	7.569*** (0.000)	8.019*** (0.000)	10.234*** (0.000)	4.913*** (0.000)
N	951	976	976	803	894	974	857
Adj. R-Squared	0.035	0.101	0.109	0.146	0.152	0.156	0.330
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* p<0.1, ** p<.05, *** p<.01

The results indicate that being a platform company lowers the *ORPE* and increasing firm size lowers the *ROA* again. Following a buy and build strategy increases the firm performance based on measures *OR* and *ORPE*, however, the effect on the *ROE* has become less significant. The constants show similar values as in table 5.

The holding period has been found to influence the firm performance in almost all regressions if we look at table 6. An increasing holding period increases the *ROA, ROE, EBIT, EBITDA* and the *OR*, which was to be expected as this means more time to change the strategy in the portfolio firm.

Surprisingly, GP experience in performing buyouts and GP experience in buy and build strategies did not seem to influence the performance in all but two occasions. Buyout experience indicated an increased *ORPE*, and buy and build experience indicated an increased *OR* and increased *EBITDA*. Firm performance is thus in some cases expected to be higher if the general partner has previous experience in buyouts and the strategy.

Table 7 on the next page summarizes the results for the final regression to try to answer the research question in this thesis, and uses the sample of platform companies and their respective control firms. The regression contains added interaction variables that were constructed to test if other factors drive the performance of a firm in a buy and build strategy. These interaction variables have been explained in the previous chapter. Control variables that are expected to influence the firm performance have also been added in the regression.

The explanatory variables that were also used to find the results in table 6 will now be addressed. The main variable of interest, *PLATFORMBUYBUILD* tells us that the firm performance is only influenced if measured by *ORPE*. A platform company following a buy and build strategy will have an average increased *ORPE* of 0.084%. Using other measures as proxies for firm performance were found to be highly insignificant.

The variable *FPI* was constructed to check whether firms in a buy and build strategy and a fragmented market would perform better. The outcome is that for two measures this seems to be contradicting, namely for the *NPM* and for the *OR*. Thus, this indicates that a buy and build strategy increased platform company performance in more fragmented markets, if we proxy the performance using the *OR* as a measure. If we use the *NPM* as a proxy, this would imply lower performance.

The variable *SPI* indicates the firm is a platform company, in the 25% smallest of all firms and in a buy and build strategy. This coefficient is found to be significant if performance is measured with *EBIT*. Therefore, the results indicate that in the case of using this proxy as a measure for firm performance, being a small sized platform in a buy and build strategy improves performance even more compared to standalone deals.

OLDP indicates a firm is in the oldest 25% of the firms, is a platform company and takes place in a buy and build strategy. The results indicate a significant negative coefficient for the measures NPM and *ORPE*. Being such a firm would imply a 0.316% or 0.134% lower performance respectively. Holding a platform company longer than 5 years in a buy and build strategy significantly increases the performance of a firm measured by *OR* and *ORPE* as shown by the variable *LONGP*.

Size lowered the values of *ROA* and *ROE* again. Whereas *firmage* surprisingly only significantly increased the performance if measured in *ROA*. Being in the lowest 10^{th} percentile of firms indicates that returns in terms of *EBIT*, *EBITDA* and *OR* are all decreased.

Table 7: OLS regression results for platforms and controls including all covariates

Table 7 below shows the regression results of the performance of a buyout company that follows a buy and build strategy. Regressions 1 to 7 are all repeated but with a different performance measure, the same independent variables and vary only on their dependent variable. Variables BEP HHI FRAGM are left out of the results as they were found to be insignificant.

	Regressions						
Variables	1	2	3	4	5	6	7
	NPM	ROA	ROE	EBIT	EBITDA	OR	ORPE
BUYBUILD	0.033	0.034	-10.784	-0.130	-0.024	-0.179**	-0.003
	(0.532)	(0.975)	(0.100)	(0.371)	(0.792)	(0.025)	(0.954)
platform	-0.070	1.105	1.221	0.203	0.120	-0.064	-0.413**
	(0.357)	(0.598)	(0.897)	(0.483)	(0.736)	(0.809)	(0.021)
PLATFORMBUYBUILD	0.049	-0.804	0.635	0.071	0.024	0.151	0.084*
	(0.696)	(0.565)	(0.914)	(0.597)	(0.872)	(0.433)	(0.091)
FPI	-0.149*	-0.276	-4.368	-0.012	-0.001	0.337*	0.142
	(0.067)	(0.901)	(0.733)	(0.959)	(0.997)	(0.060)	(0.212)
SPI	-0.053	-0.355	1.943	0.382*	0.145	0.270	-0.080
	(0.467)	(0.901)	(0.841)	(0.053)	(0.467)	(0.108)	(0.357)
OLDP	-0.316*	0.132	4.444	0.184	0.127	-0.648	-0.134*
	(0.087)	(0.945)	(0.685)	(0.277)	(0.375)	(0.234)	(0.096)
LONGP	0.039	-0.041	10.801	-0.119	-0.107	0.377**	0.102*
	(0.725)	(0.980)	(0.204)	(0.416)	(0.425)	(0.038)	(0.075)
size	0.009	-2.687***	-4.396**				0.040
	(0.557)	(0.003)	(0.015)				(0.473)
firmage	0.003	0.147*	0.553	0.012	0.009	0.001	-0.004
	(0.108)	(0.063)	(0.177)	(0.263)	(0.351)	(0.936)	(0.563)
small	0.006	-1.372	-13.437	-0.871***	-1.013***	-0.612***	-0.112
	(0.925)	(0.533)	(0.219)	(0.000)	(0.000)	(0.000)	(0.150)
yld	-0.067	-1.526	-10.694	-0.840**	-0.746**	-0.859***	-0.079
	(0.562)	(0.645)	(0.551)	(0.021)	(0.011)	(0.001)	(0.673)
HP	0.014	0.983**	3.000*	0.096	0.110*	0.063	-0.007
	(0.172)	(0.036)	(0.079)	(0.122)	(0.087)	(0.214)	(0.885)
BNBexp	0.064	2.965	4.667	0.499	0.696*	0.602	-0.053
	(0.344)	(0.313)	(0.744)	(0.195)	(0.087)	(0.138)	(0.791)
longholder	-0.087*	-1.608	-2.742	-0.095	-0.093	0.141	-0.129
	(0.083)	(0.547)	(0.784)	(0.801)	(0.782)	(0.664)	(0.595)
establfirm	-0.053	-1.705	-15.615	-0.152	-0.074	0.423	0.049
	(0.251)	(0.384)	(0.168)	(0.551)	(0.728)	(0.143)	(0.567)
experienced	0.012	-3.524**	-6.854	-0.037	-0.030	-0.059	0.428**
	(0.812)	(0.046)	(0.415)	(0.894)	(0.924)	(0.820)	(0.044)
_cons	-0.872	38.492	-121.230	8.029**	10.641***	14.212***	6.762***
	(0.334)	(0.198)	(0.158)	(0.043)	(0.004)	(0.000)	(0.008)
N	841	880	880	761	822	880	747
Adj. R-Squared	0.046	0.101	0.114	0.208	0.220	0.197	0.353
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

p-values in parentheses
* p<0.1, ** p<.05, *** p<.01

The measure for the debt market conditions, *YLD*, indicates that an increased spread returns a lower performance in *EBIT*, *EBITDA* and *OR*. If the holding period of a firm increases, measured as years in which the private equity firm is controlling the buyout, the performance of *ROA* increases with approximately 1%. For the *ROE* this is even tripled to 3.1%. The *EBITDA* then also increases by 0.11%.

The variable for fragmented markets, HHI, showed no evidence that this factor influences firm performance. For GP's that have previous experience in doing a buy and build strategy, performance is increased based on *EBITDA*. Furthermore, dummy variables that accounted for firms being in the oldest 25th percentile and firms that held their company over 5 years showed no significant results that indicates they influence firm performance. A general partner having previous experience in buyouts does seem to influence performance. For *ROA* the value is decreased if this is the case, and for *ORPE* this value is increased.

Overall the adjusted Rsquared values seem to increase after adding additional covariates and interaction terms, the values are quite high compared to related papers as for example the paper by Borell and Heger (2013). An adjusted Rsquared value shows the percentage of variation in the performance that can be explained by the independent variables in the regression, and indicates how well the independent variables fit the regression line. When including all dependent variables in this thesis in table 7, using the *NPM* as dependent variable the highest adjusted Rsquared was 4.6%, and the highest value for the ORPE measure was 35.3%. The factors that were added in the different tables have only mildly improved the adjusted Rsquared.

The main results, their implications and the overall evaluation of the methods taken will be further discussed in the next section.

6. Discussion

In this section first the main results of the thesis will be interpreted and discussed. Then, the limitations of the approach that was taken to formulate answers to the research question and hypotheses will be addressed. The section ends with an overview of the implications of this research.

6.1 Interpretation and discussion of the findings

This thesis aims to answer the question if a buy and build strategy increases performance, and if it adds value to the buyouts in the strategy by increasing firm performance. To test this, European platform companies in the strategy were tested against a control sample of standalone European private equity deals and buyouts in the strategy itself have been tested. To estimate the effect of a buy and build strategy, several multiple OLS regression were performed. As firm performance has always challenged researchers as to how to measure this performance, seven different measures have been used to provide robust results.

The outcomes for these different measures have shown mixed results. Some evidence shows that the strategy does increase performance, whilst other measures have shown no effect or even a decrease in performance. The main findings on the relation between firm performance and a buy and build strategy are as follows. Operational revenue per employee is positively influenced by following a buy and build strategy. Operational revenue seems to be significantly increased if a buy and build strategy is occurring, however when including more covariates that are expected to influence firm performance this effect becomes insignificant. No evidence was found to indicate that a buy and build strategy influences add-on and platform companies in different ways.

The first hypothesis was phrased as:

H1: PE deals which are part of a buy-and-build strategy outperform PE deals which are not; the outperformance is largest in platform deals (compared to follow-on and non buy-and-build deals)

Results from tables 2 and 3 have shown no evidence that a private equity firm influences the performance of their buyouts, and thus to support this hypothesis. The first hypothesis therefore cannot be accepted. The expectation that a private equity firm creates value in their buyouts by performing a buy and build strategy was based on many theories, some of them being from *Bansraj and Smit* (2017) and Harris et al. (2017). Both concluded that buyout performance is improved after a buy and build strategy is performed, and that this effect is expected to be the largest in a platform company.

Nikoskelainen and Wright (2007) have also shown increased performance after a private equity firm takes over control of a buyout, therefore the expectation was made that a buy and build strategy would positively influence the performance of their buyouts.

In this thesis no evidence is found to support their claims, which could be because of the small and different sample used in this thesis. Another reason for not finding the same results, and a possible error in this thesis, is that I have used performance measures that turned out to possibly be not the best

measures for performance in a buy and build strategy. It is possible that the general partners in a buy and build strategy do not aim to improve these measures but just aim to increase their multiples, which was not possible to test in this thesis. Another measure that is expected to be an important target to improve by private equity firms according to Nikoskelainen and Wright (2007) is the internal rate of return (IRR). The IRR indicates the return on an investment from the starting point of an investment until the exit. They state that this metric is the most commonly used measure of return on an investment for private equity firms, and thus using this as a performance measure would have added to the validity of the results. However, as deal values were missing regularly, calculation of IRR's were impossible to make in this thesis.

The results in table 3 indicate that the return on assets and the return on equity both significantly decrease the larger the size of a buyout firm. Increasing size is expected to increase returns for various reasons including economies of scale and scope. Also, the increase in size is expected to lead to more market power and thus higher returns. Literature on this topic has not provided a definitive answer. Stierwald (2009) found a marginal positive relation between both, whereas Becker et al. (2010) found a very significant positive relation. An explanation for the findings in light of the buy and build strategy could be that to get higher returns, a general partner first heavily invests in the firm and this could take some years to influence firm performance. So, on the short term there would be a negative relationship, and then on the long run a positive relationship. This finding of a negative relation between size and firm performance is not easy to understand, and further research should try to shed more light on this topic.

The second hypothesis was phrased as:

H2: Platform companies in a buy and build strategy outperform standalone private equity owned companies on their firm performance.

The results in tables 4, 5, 6 and 7 have shown some evidence that supports this hypothesis and some evidence that does not support this hypothesis. The difference in the results is due to using various measures to proxy for financial performance, and due to adding certain covariates that are expected to influence the performance. Tables 5 and 6 differ in that the relation between operational revenue and a buy and build strategy has become insignificant, this occurred due to including the interaction term and additional covariates. This finding is indicating that there might not be a causal relationship between increased firm performance, if measured by the *OR*, and following a buy and build strategy after all.

Another reason for not finding evidence that a buy and build strategy influences firm performance could be that the chosen path in this thesis does not look into the difference in entry and exit performance as the data in order to do this was missing. The research was done to check whether the performance has been increased during that the buy and build strategy took place. No evidence was found to support this claim except for the operational revenue performance measure. One possible

explanation is that private equity firms invest heavily in the beginning years of the strategy and that the reaps of these investments only surface after several years went by.

It is a wide known fact that private equity firms focus most on *EBIT* and *EBITDA* improvements as these are important cash flow measures for them. They use these cash flow measures to predict future cash flows and thus try to increase their multiples during a holding period. Surprisingly, evidence for this claim in this thesis has only been found for the *EBIT* variable in small platforms following a buy and build strategy. This is in line with the findings by Brigl et al. (2016) that small platforms outperformed the larger and midsized ones in a buy and build strategy.

In line with the findings by Borell and Heger (2013) that improved efficiency drives the improved performance if a buy and build strategy is performed, this paper also found that the strategy increases productivity/efficiency (*ORPE*) and thus firm performance. In line with the paper of Davis et al. (2014), who found factor productivity to be increased in buyouts after being acquired by a private equity firm, this thesis found similar results. The paper by Faleye and Mkrtchyan (2019) found evidence that an acquisitive strategy like a buy and build strategy lowers firm performance as it lowers employee efficiency and productivity. This thesis has found opposite evidence.

What is interesting is that evidence was found that firm performance and firm performance in a buy and build strategy are improved the longer the holding period of a buyout is. This was expected as this leaves more room and time for a general partner to adjust and improve the strategy of their buyouts. The evidence for having a longer than normal holding period, over 5 years, and being in a buy and build strategy indicated an even higher increase in operational revenue and productivity per employee. Some evidence thus points in the direction that under certain circumstances, a buy and build strategy does improve firm performance.

Another interesting finding is the finding that *ORPE* is significantly decreased if a platform company is controlled in a buy and build strategy and the firm is of significant age (+28 years old). According to Brouwer et al. (2005) there exists no relationship between productivity and firm age except for the first years after a firm is created. Further research could dive into this relationship, and relate it to the context of a buy and build strategy.

Firm performance has always been a hard topic to research, as there are many variables influencing the performance. Some of the performance measures that were used are correlated with each other as can be seen in appendix A.1. *EBIT(DA)* and *OR*; *ROA* and *ROE* all correlate over 80% with each other. Due to this correlation these variables could indicate similar results. Adding another factor that is uncorrelated with the others such as the aforementioned IRR measure, would have increased the scope of the research as this could indicate new results that the other variables have not shown. This potentially could have provided a whole new insight on the relationship between performance and the buy and build strategy.

This research has tried to use as much covariates as possible in the short time span of the research project, but was not able to use all of them. As there are many other factors influencing firm performance

that were not included in this thesis, follow up research should try to cover all these factors to present a more extensive overview of the studied relationship. An example is the previously named economic environment that a firm is in.

As there are so many factors influencing firm performance, perhaps a buy and build strategy has such a small influence on the performance that the additional influence because of the strategy is not significant. An example of another factor that could possibly influence the performance of a buy and build strategy is for example the current economic situation. In times where there is a recession, it could be much harder for a GP to successfully influence the strategy of their buyouts, and also harder to find or make acquisitions. Figure 1. indicated a large decrease in deal volume after the financial crisis of 2007. Adding a covariate to account for these effects could have captured the excess variation and diminished the rest of the significance in the previous results. Another result of using more covariates is that the adjusted Rsquared could have been further increased, increasing the explanatory power of the results. In the next section this will be further explained.

6.2 Limitations of the methodology and further research recommendations

There are some limitations to the research in this master thesis, as will be discussed here, and suggestions for further research will be proposed. This master thesis uses European firms to test the hypotheses with and after dropping firms that had too much missing data, which seemed scientifically justified, this resulted in a small sample. The sample in the end only contained 61 platform companies, and this small sample size could be too small to make a general conclusion on the relationship between performance and the buy and build strategy. A solution for this problem could be to test the hypotheses on a sample of companies from the United Kingdom as their company data is much more available. In this way a larger sample is expected to be reached.

Due to the choice for the database Orbis that only reports data on the last 10 years, this master thesis was subject to certain time restrictions. If the sample had been on American buy and build strategies, this could have been prevented, as there are other databases that go back further than these 10 years for American firms. Extending the dataset to for example 15 years could give a more detailed view of the aftermath of a buy and build strategy, as in this thesis some start and exit dates of the strategy fell outside of the dataset. A strategy starting in 2009 could therefore not be added to the sample, again decreasing the sample size. Also, the performance effects during a strategy that started in 2016 could not be researched as the financial data after 2017 is missing. The post-exit effect of a buy and build strategy and using an increased dataset, as proposed, is something further research should look into.

Another possible limitation of this research is the fact that there is no obligation for private equity firms to provide their data to the online databases that were used. It is expected that only healthy and well performing firms would disclose their financials, bad performing firms would not want to make this public. This in turn could lead to a type of survivorship bias in which only the top performing PE's provide data. This may give raise to the idea that there would indeed be outperformance as is in line

with the hypotheses. If only well performing PE's would disclose their buyouts' financials and thus only the well performing ones, outperformance of standalone deals is to be expected. A possible explanation for not finding this result might be that also the control firms only provide their data if they are well performing, thus making it less likely to outperform them. Another explanation simply could be that a GP's aim in a buy and build strategy is not to increase firm performance during the strategy but that it aims to increase value through other value creating levers such as deleveraging.

In constructing the main variable of interest, BUYBUILD, the decision was made that a private equity firm could only start to control their buyout in a buy and build strategy in the year after acquiring them. This has been done as it is expected that influencing the strategy and making decisions for the buyout firm cannot be done immediately. This could however, take more than a year to have effect. Long term contracts of employees that the GP wants to replace, long term real estate- or supplier contracts or for example the economic conditions could all be reason why a GP takes longer to fully control its buyouts (Smit, 2004). If stating that this would take one year was incorrect, the variable BUYBUILD then did not correctly indicate the start of a buy and build strategy and has not given valid results. To tackle this problem variables *LONGP* and *HP* were added, as they record the effect of a buy and build strategy that spans over multiple years. As mentioned, evidence was found that a longer holding period increases performance and holding a platform company for over five years even further increases the performance.

The choice was made to test the two hypotheses in this thesis against multiple different performance measures to account for the fact that there is no consensus on a go-to performance measure. The aim was to receive robust results by doing this. However, the evidence showed mixed results for the different measures. So, on the one hand this approach has led to extensive research on various different performance measures, but by doing this, no general effect of a buy and build strategy on performance has been found.

As explained in the literature review, private equity firms try to enhance firm value in three main ways; Deleveraging, multiple expansion and via operational improvements. Data on enterprise values, and deal values were often not disclosed. Therefore, it was nearly impossible to calculate entry and exit multiples and thus the value creation of a buy and build strategy due to multiple expansion. As debt levels were often also not disclosed, the value creation due to deleveraging was also impossible to calculate. Therefore, the only option was to research the value creation due to operational improvements, the firm performance, only. Further research should try to tackle this problem of missing data and further look into these different levers and their relation to a buy and build strategy. In this way the value creating levers of private equity could be further researched in the unexplored context of buy and build strategies, something that was impossible to do because of the missing data of the European firms in the sample used in this thesis.

In this paper it was chosen to drop all acquisitions in which the previous owner was another private equity firm, the so-called secondary buyout. The reason for doing this was that it was expected

that the company would then already have been influenced substantially by the previous owner, limiting the influence that a buy and build strategy could have. As a consequence, even more firms had to be dropped from the sample and the sample became even smaller. For a completer understanding of the private equity process and to see whether secondary buyouts could still increase value of a buy and build strategy, further research should be done on this topic.

This thesis has only looked into a few covariates influencing firm performance, most values for the adjusted Rsquared were in the range of 10 to 25%. This means that the largest part of the variance in the firm performance has not been explained by the buy and build strategy and the covariates used. Further research should try to increase the number of covariates used to receive a higher certainty of the explanatory factor that the buy and build strategy has on firm performance.

Furthermore, another approach in modelling the relationship between firm performance and the buy and build strategy than the approach taken in this thesis could be useful. A difference-in-difference approach for example takes another approach by comparing the average changes over time between a treated and a control group. In this case a platform company and its matched standalone deal respectively. Using a simple OLS model is not a weakness of this paper, it could however be useful to model the relation with different methods.

6.3 Implications

The findings of this master thesis can be useful for private equity firms deciding on implementing the buy and build strategy or not. As the evidence indicated when, under certain circumstances, a buy and build strategy performs better, for example in case of a small sized platform, they could target these types of companies to improve their strategy. The insignificant findings of this paper may also contribute to the understanding of what exactly drives a buy and build strategy, and what not. Perhaps the strategy is just not as successful for increasing firm performance as has always been expected, because the private equity firms simply do not target this value creating lever. Further researchers should try to use the limitations of this thesis in order to improve their approach in modelling the relationship between buy and build strategies and firm performance.

7. Conclusion

In conclusion, this thesis has tried to find an answer to the question whether a private equity company performing a buy and build strategy increases performance in their buyouts. This was investigated using a set of seven different performance measures to increase the validity of the results. A matching algorithm was created to find perfect control firms for the platform companies to find out whether platform companies in a buy and build strategy outperform standalone private equity deals.

Some evidence has been found that there is a significant improvement in the performance of a buyout after being involved in the strategy. However, most results showed insignificant results on this relationship. Evidence was found that supports the view of platform companies outperforming standalone deals; however, these results were not robust to using different performance measures. Covariates were added to find out other factors of the firm performance. Of these, firm size, yield spreads, holding periods and previous buyout experience have all shown to be influencing the performance. Results indicated that a buy and build strategy spanning over five years does increase performance substantially and outperforms standalone deals.

Overall, the findings contribute to an improved understanding of the buy and build strategy and its performance drivers. There is not enough evidence found to -within the limits of a master thesis- support the hypotheses that the buy and build strategy does increase performance in their buyouts. This may be due to the fact that this research, for different reasons, had to be performed on a very small sample (due to high levels of unavailable data, and within a short time frame, which may form a possible bias for results). The choice for a European firm sample in which there is no disclosure requirement of financials also limited the sample.

Another explanation is that a private equity firm simply does not aim at increasing performance during the buy and build strategy. But that it aims at gaining value by increasing multiples, or looks at deleveraging; something that could not be investigated in this thesis. Further research should therefore look into the relationship between firm performance and buy and build strategies using a sample that has more available data and an increased timeframe. Taking another approach to model the relationship than using a simple OLS model could also usefully add to literature, for example by looking at internal rates of return of the buy and build strategies. These recommendations could then hopefully more extensively answer the question that was central in this thesis; does a buy and build strategy influence the performance of their buyouts?

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Source figure 1: Refinitiv, FT: https://www.ft.com/content/49950dba-e98a-11e8-885c-e64da4c0f981

Appendix

A.1. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ROA	1.000											
(2) ROE	0.540	1.000										
(3) platform	-0.011	0.051	1.000									
(4) BUYBUILD	-0.064	-0.007	-0.053	1.000								
(5) HP	0.047	0.166	0.294	0.392	1.000							
(6) EBITDA	0.143	0.210	-0.004	0.060	0.117	1.000						
(7) OR	-0.041	0.132	0.084	0.162	0.248	0.794	1.000					
(8) ORPE	0.093	0.145	-0.137	-0.000	-0.026	0.281	0.153	1.000				
(9) EBIT	0.302	0.318	0.021	0.028	0.145	0.925	0.707	0.306	1.000			
(10) size	-0.212	-0.040	-0.015	0.092	0.089	0.844	0.779	0.283	0.745	1.000		
(11) small	0.182	0.056	0.397	-0.147	-0.093	-0.383	-0.374	-0.178	-0.323	-0.507	1.000	
(12) NPM	0.154	0.075	-0.042	0.002	-0.040	0.134	-0.048	0.220	0.201	0.125	-0.070	1.000

A.2. Summary statistics

Summary statistics platform companies						
	N	Mean	St.Dev	Median	min	max
NPM	59	.037	.277	.033	-1.058	1.058
ROA	61	7.212	8.705	4.795	-6.063	30.291
ROE	61	23.517	43.343	16.149	-53.601	183.114
EBIT	59	8.126	1.225	8.169	5.599	10.48
EBITDA	61	8.462	1.454	8.578	2.496	10.959
OR	61	10.763	1.04	10.786	8.149	13.326
ORPE	59	5.438	.988	5.443	3.358	7.923
Size	61	10.927	1.313	11.012	8.389	13.655
Firmage	61	20.7	14.945	17.5	4.5	75.25

Summary statistics control firms						
	N	Mean	St.Dev	Median	min	max
NPM	61	.093	.169	.067	-.405	.766
ROA	61	7.596	10.223	4.972	-8.674	51.553
ROE	61	19.855	37.141	13.504	-62.297	166.693
EBIT	60	7.886	1.615	8.007	4.111	11.072
EBITDA	61	8.349	1.547	8.315	4.319	11.352
OR	61	10.537	1.331	10.763	6.962	13.63
ORPE	60	5.671	.969	5.549	3.687	8.518
Size	61	10.752	1.334	10.768	7.71	13.514
Firmage	61	19.8	8.742	18.5	5.5	60.5

Summary statistics add-on companies						
	N	Mean	St.Dev	Median	min	max
NPM	47	.045	.101	.047	-.29	.266
ROA	49	11.48	10.701	8.321	-4.486	40.577
ROE	49	26.273	32.237	19.604	-38.646	145.15
EBIT	49	6.829	1.727	6.286	3.367	11.362
EBITDA	49	7.253	1.778	6.625	3.932	11.546
OR	49	9.3	1.792	8.886	6.159	13.63
ORPE	47	5.25	1.127	5.075	3.045	8.518
Size	49	9.398	1.813	9.317	6.67	13.893
Firmage	49	25.2	19.009	18.5	4.5	75.625

A.3. NACE Rev. 2 codes

Broad structure of NACE Rev. 2 codes	
Industry title	**Divisions**
Agriculture, forestry and fishing	01-03
Mining and quarrying	05-09
Manufacturing	10-33
Electricitiy, gas, steam and air conditioning supply	35
Water supply; sewerage, waste management and remediation activities	36-39
Construction	41-43
Wholesale and retail trade	45-47
Transportation and storage	49-53
Accommodation and food service activities	55-56
Information and communication	58-63
Financial and insurance activities	64-66
Real estate activities	68
Professional, scientific andtechnical activities	69-75
Administrative and support service activities	77-82
Public administration and defence	84
Education	85
Human health and social work activities	86-88
Arts, entertainment and recreation	90-93
Other service activities	94-96
Activities of households as employers	97-98
Activities of extraterritorial organisations and bodies	99