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Key characteristics for buy-and-build strategies

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Abstract

This paper tries to broaden the current literature on buy-and-build literature by finding the key characteristics for a buy-and-build acquisition to take place. The occurrence of a buy-and-build acquisition relies on company, industry and financing characteristics. The analysis is based on a sample of 3,363 private equity deals and 739 buy-and-build deals from the United Kingdom. By comparing regular private equity acquisitions with buy-and-build acquisitions, this paper finds that low efficiency, profitability and size positively influence the occurrence of a buy-and-build strategy. We also find that the buy-and build strategy is more commonly used in a fragmented market without any dominant players. Lastly, this paper finds that ideal debt conditions, such as low interest rates, positively influence the amount of buy-and build deals being done.

Keywords: Private equity; Buy-and-build; key characteristics

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1 Introduction

Historically, private equity firms made money by buying troubled companies, filling them with debt, restructuring the companies (through layoffs for example) and then reselling the companies. Since the financial crisis, private equity firms have increasingly focused on specific strategies that enhance the value of their portfolio businesses. One of the more common strategies is the ‘buy-and-build’ strategy. This strategy comes down to obtaining a platform company with good management and infrastructure, and then building it out with so called ‘add-on’ acquisitions to achieve growth. The combined platform company and add-on acquisitions can be used to capture the advantages of economics of scale and to eliminate the small firm discount. Buy-and-build strategies incorporate more risk however, which can be mitigated by careful planning and proper management (such as risk management).

The buy-and-build strategy has been applied a lot more lately, increasing from 20% of all private equity backed deals in 2000 to 53% in 2012. The main reason for this increase in activity according to the report is that buy-and-build strategies generate a higher average internal rate of return (IRR) compared to regular private equity buyouts.¹

Not all companies are suitable buy-and-build candidates and a private equity firm has to evaluate multiple factors in order to determine whether the investment has to be made. Characteristics for good private equity takeover candidates typically are strong market position, stable (recurring) cash flows, low capital expenditures and favorable industry trends. However, not much is written about the characteristics of the company that is being bought to execute a buy-and-build strategy and how market- and financing characteristics influence the investment decision of the private equity firm. Considering the impact of buy-and-build strategies, this is surprising.

This paper attempts to supplement current literature by determining the key characteristics that influence a private equity firm to execute a buy-and-build strategy. This is done by comparing characteristics for ‘regular’ private equity acquisitions with buy-and-build acquisitions.

Firstly, this paper examines the current literature available on private equity buyouts by dividing it into three periods: the junk bond era, the post-junk bond era and the recession. In the junk bond era characteristics that mainly drive performance are management incentives (Jensen, 1989; Kaplan, 1989) and high financial leverage (Jensen, 1989; Smith, 1990). In the post-junk bond era the main value drivers are more related to organic company performance

¹ According to a report by the Boston Consulting Group (BCG) in cooperation with the HHL Leipzig Graduate School of Management. See: <https://www.bcgperspectives.com/content/articles/private-equity-power-of-buy-build/>.

(Nikoskelainen and Wright, 2005) such as sales growth (Boucly et al., 2011), gross margin and working capital improvement (Gaspar, 2012), asset turnover (Cressy et al., 2007), but also to private equity investors and their commitment to service debt (Cressy et al., 2007). During the recession, performance was driven by organic improvements even more due to the fact that targeted firms might experience bankruptcy or financial distress if leverage was too high (Rasmussen, 2008). Besides main drivers of performance already named in the post-junk bond era, new drivers of performance are used to measure performance such as net profit (Wang, 2011) and return on assets (Wilson et al., 2011).

Secondly, this paper examines the (limited amount) of literature available on buy-and-build performance and its value drivers for performance. Smit (2001) states that the high amount of leverage is one of the key drivers of performance since it creates tax shields and restricts management. Furthermore, he suggests that the firm can benefit from economies of scale/scope and that the increased size of the firm will result in more pricing power.

Schwetzler et al., 2016 find that multiple expansion is the main driver of the superior performance of private equity deals, especially that of buy-and-build strategies. Reduction of leverage, revenue growth and margin improvement are important value drivers as well, indirectly supporting the multiple expansion. Superior performance is also attributable to industry characteristics such as low growth, low margins and a highly fragmented market. They also find that buy-and-build- activity increases with the size of the platform company (Schwetzler et al., 2016).

Lastly, this paper links the performance drivers to corresponding characteristics (defined as conditions by Bansraj and Smit) for the buy-and-build strategy. The corresponding conditions used are industry, company and financing conditions. Bansraj and Smit (2017) find that a self-reinforcing process between these conditions will result in an ever-continuing acquisition circle. They also find that certain company, industry and financing characteristics influence the likelihood of a buy-and-build strategy being performed.

The findings in this paper confirm these assumptions using a database of 3,363 private equity- and 739 buy and build acquisitions from the United Kingdom between 2008 and 2014. Results show that companies with low profitability- and efficiency are more likely to be acquired by a private equity firm performing a buy-and-build strategy. Size also positively influences the likelihood of a company getting acquired by a private equity firm (that executes a buy-and-build strategy). Furthermore, this paper finds that the availability of exit opportunities and add-on acquisitions and less uncertainty in an industry increases the chance that a buy-and-build strategy will be performed. This is not the case for 'regular' private equity acquisitions. Finally,

results show that higher market valuations and low interest rates increase the amount of private equity- and buy-and-build acquisitions being done.

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2 Related literature

2.1 General performance drivers of PE backed companies

2.1.1 Junk bond era

A lot of the academic studies are done on private equity portfolio performance and are dated from the 1980s, in the so called junk bond era. In this era, LBOs created value through a combination of high financial leverage and powerful incentives. The increased management ownership provides incentives for management to improve operating performance and generate cash flows. The high amount of debt, as a result of the high financial leverage, also restricts management to use cash on bad investments. In addition, the participation of the private equity fund also improves the monitoring (Jensen, 1989).

These studies are primarily on public to private (P2P) buyouts and are mostly done in the US. Most studies analyze management buyouts (MBOs), while some focus on management buy-ins (MBIs) or LBOs. Most of these studies identify improvements in performance by measuring growth, profitability, operating performance and cash flow.

Kaplan (1989) finds increases in operating income and net cash flow three years after an MBO. The increase in net cash flow were mainly driven by the lower CAPEX and the increases in operating income (Kaplan, 1989).

Smith (1990) provides evidence that the operating cash flow per employee and per dollar of book value increase on average after an MBO due to better working capital management. She finds little evidence that these post-buyout performance improvements are driven by cutting expenses and suggest that organizational changes also play a role in the value creation by LBOs (Smith, 1990).

Muscarella and Vetsuypens (1990) find annual sales growth, operating income growth and firm size growth for LBOs and conclude that these efficiency and operating improvements are related to cost reductions after the LBO (Muscarella and Vetsuypens, 1990).

Smart and Waldfogel (1994) find that MBOs lead to large increases in the ratio of operating income to sales after the buyout and conclude that MBOs enhance operating performance (Smart and Waldfogel, 1994).

Wright et al. (1998) find that U.K. firms experiencing an MBO generated significantly higher increases in return in assets than comparable peers that did not experience an MBO over a period of two to five years after buyout (Wright et al., 1998).

Desbrières and Schatt (2002) find that the acquired firms in an MBO outperform similar companies in the same industry before and just after the buyout. However, the performance declines after the buyout (Desbrières and Schatt, 2002).

In conclusion can be said that evidence from the 'junk bond era' shows that that acquired firms in LBOs outperform their industry benchmarks. Operating performance is mostly increased due to through a combination of high financial leverage, cost reductions and powerful (management) incentives.

2.1.2 Post-junk bond era

Other studies have been covering the 2000s (until 2007), which can be seen as the second 'period' of private equity. In this era, private equity firms find other value drivers besides debt and incentives such as organic company performance.

Harris et al. (2005) find that plants involved in an MBO experienced significant increases in productivity after the buyouts, whereas the improvements could be attributed to operational changes (Harris et al., 2005).

Nikoskelainen and Wright (2007) find that operating improvements of private equity buyouts are related to organic changes rather than the divestments of assets or acquisitions (Nikoskelainen and Wright, 2007).

Renneboog et al. (2007) provide evidence that the main sources of shareholder wealth gains are undervaluation of the pre-transaction target firm, increased interest tax shields and incentive realignment (Renneboog et al., 2007).

Cressy et al. (2007) find that for three post-buyout years the operating profit of the private equity backed companies are greater than those of comparable non private equity backed companies. They conclude that overall, buyout performance is significantly improved by corporate governance mechanisms such as private equity investors and their commitment to service debt, as well as by the incentives from managerial equity ownership (Cressy et al., 2007).

Weir et al. (2008) find weak evidence that private equity IBO company performance is better than that of firms that remain public (Weir et al., 2008).

Boucly et al. (2011) find that in the three year following a LBO, the target becomes more profitable, issues more debt, increases its capital expenditures and grows faster than its peer group. 'Growth' is determined by taking employment and sales as measures (Boucly et al., 2011).

Gaspar (2012) finds that leveraged buyouts (LBOs) have significant higher operating returns of compared to a matched control group, due to an increase in gross margins, productivity and improvements in working capital. These results are not specific to a certain type of targets and are unchanged when the industry of the LBO is used as benchmark (Gaspar, 2012).

Acharya et al. (2012) find that private equity targeted companies show a statistically significant higher profitability. There is no difference between the performance of the targeted company and their peers pre-buyout. However, they find that private equity ownership has a positive influence on operating performance of portfolio companies. Post-buyout, private equity ownership causes the deal margin (EBITDA/Sales) to increase relative to the pre-buyout phase. It also causes the deals to outperform their sector peers on average in EV/EBITDA (Acharya et al., 2012).

However, not all literature supports the improved operating performance of LBOs. Guo et al. (2011) find that gains in operating performance are either comparable or slightly exceed benchmark firms (matched on industry and pre-buyout characteristics) (Guo et al., 2011).

Leslie and Oyer (2013) find weak or no evidence for greater profitability or operating efficiency of LBOs relative to public companies (Leslie and Oyer, 2013).

In conclusion can be said that most evidence from the second period of private equity shows that the operating performance of private equity portfolio companies exceed benchmark firm's performance however the effect is less strong compared to the first period. These studies mainly focus on private equity and buyouts under favorable economic conditions. Main value drivers are more related organic company performance such as sales growth, gross margin and working capital improvement but also to private equity investors and their commitment to service debt.

2.1.3 Recession

The most recent global recession brought new challenges to private equity buyouts. Targeted firms might experience bankruptcy or financial distress due to the high amount of leverage (Rasmussen, 2008). Most literature however, states that target firms will be doing fine under less favorable economic conditions since private equity firms tend to invest in companies that are financially healthy (See Kaplan and Strömberg, 2009). Private equity firms may also finance their portfolio companies at more favorable terms due to the (repeated) interactions with banks (Ivashina and Kovner, 2010).

Little research has been done on the performance of private equity backed firms in the recession. Wilson et al. (2012) find that private equity backed firms achieved superior economic and financial performance in the period before and during the global recession, relative to firms that

did not experience such transactions. Results show differences in productivity and in profitability. Revenue growth and employability growth for private equity backed firms was also higher during the recession period than during the period of economic upturn (Wilson et al., 2012).

Jelic and Wright (2011) find that post-buyout or post-exit performance of the companies is not better than their non-private equity backed counterparts (Jelic and Wright, 2011).

Wang (2011) finds that private equity buyout targets show higher operating cash flows but that the companies are not run more efficient. To evaluate the efficiency, he uses a three-year window and studies the effect of buyouts on the target's size, operating cash flows, their profits and investor's profit. While the buyout has a positive effect on the companies' operating cash flow, this seem to be achieved through expansion and not by running the company more efficient (Wang, 2011).

In summary, most literature on LBOs suggests that private equity backed companies outperform their benchmark firms. Important drivers that are mentioned in the junk bond era include optimized leverage structures, (Jensen, 1989 and Smith, 1990) managerial incentives (Jensen, 1989) and good investment decisions (Kaplan and Strömberg, 2009). After the junk bond era, value drivers are more related to company operating performance such as sales growth (Boucly et al., 2011) and gross margin (Gaspar, 2012). There is not enough evidence to state that in times of unfavorable economic conditions, private equity buyouts still outperform their benchmarks. However, if performance was increased in unfavorable economic conditions, this was mainly driven by organic performance due to the fact that targeted firms could not be leveraged too strongly.

2.2 Performance drivers of PE backed companies undergoing buy-and- build

The literature of the effect of buy-and build strategies on the performance (and performance drivers) of private equity portfolio companies is scarce. Smit (2001) defines the buy and build as an acquisition strategy in which an equity investor undertakes a 'platform' acquisition in a specific industry and then leverages core competencies and efficiencies onto 'add-on' acquisitions in a specific geographical region. These 'add-on' acquisitions are done to consolidate the targeted industry (and capturing the advantages of economics of scale) and to eliminate the small firm premium. The buy- and build strategy is long-term orientated and usually takes at least 5 years. A buy-and build strategy has multiple drivers that boost its value. First, the high amount of leverage used creates tax shields and the high amount of debt also restricts management to use cash on bad investments. Second, there are benefits from synergies

that also profit from the economies of scale or scope. The increased size of the firm is also likely to result in increased market power. These benefits make the buy-and build strategy potentially very valuable. The buy-and build strategy is best used in a fragmented market without any dominant players (Smit, 2001).

A report by the Boston Consulting Group (BCG) in cooperation with the HHL Leipzig Graduate School of Management states that operational improvement has become the main source of value creation in private equity, increasing from 18% in the 1980s to 48% in 2012. When asked for their most used strategy to create value, 90% of the private equity professionals answered that they execute buy-and-build strategies. The authors find that multiple expansion is the main driver in the superior performance of private equity deals, especially that of buy-and-build strategies. Reduction of leverage, revenue growth and margin improvement are important value drivers as well, indirectly supporting the multiple expansion. They also find that buy-and-build activity increases with the size of the platform company but that buy-and-build deals of smaller platforms outperform deals of medium- or large-sized platforms.² The authors state that the greatest multiple expansion takes place for companies that have a low enterprise value since their valuation multiples expand faster than large peers. Smaller companies also predominate in fragmented industries³, which provides opportunity for consolidation. Furthermore, buy-and-build deals that focus on the specific industry of the company platform generate a higher return on average than deals that diversify the platform. Buy-and-build deals that include one or two add-on acquisitions outperform deals where more than two add-on acquisitions are being done. Lastly, the authors find that superior performance of buy-and-build deals is mainly attributable to industries that share the same characteristics such as low growth, low margins and a highly fragmented market (Schwetzler et al., 2016).

2.3 Key characteristics for buy-and-build strategies

Bansraj and Smit (2017) find that for a buy-and-build strategy to be effective it requires certain company, industry and financing conditions. They suggest that a self-reinforcing process between these conditions will result in an ever-continuing acquisition circle. In this circle, the private equity firm acquires upcoming opportunities to be able to consolidate the fragmented market. Taking advantage of at least a part of the value created, gives the platform company a higher exit valuation, which then results in better acquisition options (Bansraj and Smit, 2017).

² Smaller platforms are defined as deals with an enterprise value <\$70m. Medium-sized platform are defined as deals with an enterprise value of \$70m - \$290m. Large platforms are defined as deals with an enterprise value of >\$290m. Return is defined as internal rate of return (IRR).

³ Defined as the Herfindahl-Hirschman Index which measures the size of the firms in relation to the industry.

2.3.1 Company characteristics

As described in the first part of this paper's literature review, there are a number of factors that drive performance of private equity backed companies. Private equity firms can acquire mature companies that have stable recurring cash flows but can also acquire companies that still have a lot of potential to grow and improve. In case of the buy-and-build strategy, private equity firms prefer to acquire a mature company that serves as platform after which add-on acquisitions can be done to grow the company. The probability of an acquisition is almost doubled after a private equity firm acquires a company (Hammer and Hinrichs, 2016). By doing add-on acquisitions, the private equity firm tries to capture value by making sure that the combined value of all acquired companies is higher than the standalone value. Companies that are acquired as add-on are usually less efficient than their competitors, granting the private equity firm the possibility to make them more efficient as one combined company/platform and to improve the operating performance of companies (Kaplan and Strömberg, 2009; Wilson et al., 2012). Therefore, this paper formulates the following hypothesis:

Hypothesis 1. Low company standalone performance and high potential operating performance will increase the likeness that a buy-and-build strategy will be performed.

The size of the platform company positively influences buy-and-build activity and the amount of add-on acquisitions that are being done (Schwetzler et al., 2016). Therefore, this paper formulates the following hypothesis:

Hypothesis 2. Size of the targeted companies will increase the likeness that a buy-and-build strategy will be performed.

2.3.2 Industry characteristics

There are a couple industry characteristics that influence the chance of a buy-and-build strategy being performed. Firstly, characteristics such as a fragmented industry and the amount of available companies are important factors. A fragmented market consists of several small- and medium sized companies and usually has no major players (Schwetzler et al., 2016). The private equity firm needs to be able to obtain a platform company and then make (several) add-on acquisitions to eventually achieve market power and obtain economies of scope/scale (Smit, 2001). Therefore, this paper formulates the following hypothesis:

Hypothesis 3. The more fragmented an industry is, with a few available platform companies and multiple add-on acquisitions, the more likely it is that a buy-and-build strategy will be performed.

Secondly, the acquiring private equity firm will also need exit opportunities to eventually make a return on investment. Is the private equity firm able to sell the firm at the same or higher entry multiple that they originally paid for the company? Therefore, this paper formulates the following hypothesis:

Hypothesis 4. The availability of exit opportunities increases the likelihood that a buy-and-build strategy will be performed.

Lastly, the industry uncertainty also plays a role in how well a buy-and-build strategy can be executed. The lower the uncertainty in the industry, the more likely it is that the buy-and-build strategy will be performed. However, this also makes market entry easier for other (strategic) competitors thus will also have a negative influence. Nonetheless, this paper formulates the following hypothesis:

Hypothesis 5. The lower the industry uncertainty, the more likely it is that a buy-and-build strategy will be performed.

2.3.2 Financing characteristics

Besides company and industrial characteristics, financial characteristics play an important role in the buy-and-build strategy. There is a negative correlation between the amount of private equity deals done and periods of low interest rates related to economic upturns (Axelson et al., 2013). Large amounts of financing are needed for a private equity firm to be able to do add-on acquisition. Therefore, add-on acquisitions are mostly done during periods of low interest rates. Not only is it easier to obtain debt financing, the private equity firm is also able to use more debt (instead of equity) to buy a company therefore increasing its IRR. As the platform company grows, its risk profile and cost of capital will decrease, giving it better access to debt financing. This will improve the company's possibilities to acquire, leading to a higher exit valuation, which results in the self-reinforcing process mentioned earlier (Bansraj and Smit, 2017). Therefore, this paper formulates the following hypothesis:

Hypothesis 6. Add-on acquisitions as part of a buy-and-build strategy, are more likely to occur when company valuations are high and debt conditions are good.

3 Data

3.1 Data collection

Data is gathered on all private equity and buy-and-build deals in the UK from 2008 to 2014 from Zephyr. Only majority stake⁴ deals that were done in the UK were gathered.⁵ The deals have to classify as institutional buyouts (IBO), management buyins (MBI) or management buyouts (MBO), or as acquisitions with financing that is classified as private equity or leveraged buyout. Since private equity ownership has its influence on returns (Schwetzler et al., 2016), previous private equity ownership is excluded from the data. This is done by only including deals in which the firm was acquired by a private equity firm for the first time. Every deal that does not have a NACE Rev. 2 code and BvD ID number of the target company is excluded as well. The NACE Rev. 2 code is used to match each deal to its industry and the BvD ID number is used to match deals with company financial data. The total deal sample that remains consists of 3,363 private equity deals (including buy-and-build deals).

For the buy-and-build deal data, the deal sample of Bansraj and Smit (2017) is used. This original sample of buy-and-build deals consists of 739 deals, of which 212 are platform acquisitions and 527 add-on acquisitions. (Bansraj and Smit, 2017) The restrictions applied on the private equity deal sample are also applied on the buy-and-buy deal sample.

After gathering the deal information, the BvD ID number is used to match the deal with the corresponding company financials from Orbis.⁶ Companies that did not report operating revenue for at least one of the years or reported operating revenue was zero) are excluded.⁷ After excluding the companies, a total of 523,735 firm year observations are gathered.

The company financials are then aggregated on NACE codes (4 digits) and years to create variables for industry characteristics resulting in 4,248 industry year observations. See Figures 1 and 2 for the distribution of industry observations.

[Insert Figures 1 & 2 here]

⁴ A deal is defined as majority stake when the acquiring company holds <50% of the company pre-transaction and >50% post-transaction.

⁵ For this paper, only European data is used due to the fact that because our sample selection requires data that is not (typically) disclosed for U.S. companies. This paper picks the UK private equity market for buy-and-build deals since it is the largest market in Europe and has disclosure requirements for public and private deals.

⁶ Orbis is a database of Bureau van Dijk that contains information on 220 million public and private companies from more than 200 countries.

⁷ If operating revenue was not reported or amounted zero, other relevant data required for the regressions was not reported either.

For the variables related to company characteristics, cost of goods sold and net profit have to be available in the year before the deal, otherwise the observations are excluded. Company year observations after the buyout year are dropped as well since these observations can be influenced by the private equity firm holding the company. After matching the observations with deal data, the total sample consists of 112 unique buy-and-build deals and 238 private equity deal matches.⁸ The total private equity deal sample (including buy-and-build deals) consists of 350 unique private equity acquisitions. See Figures 3 and 4 for the distribution of company (year) observations.

[Insert Figures 3 & 4 here]

To create variables for the financing characteristics, index values from the FTSE 350 Sector indices were gathered through Datastream.⁹ After that, the NACE Rev. 2 codes are manually matched to Industry Classification Benchmark (ICB) codes resulting in 572 (quarterly) buy-and-build observations and 1,142 private equity observations being matched.¹⁰ See Table 1 in the appendix for the matching of the ICB and NACE Rev. 2 codes. The variables for the debt market and macroeconomic conditions were obtained from Datastream. For the financing characteristics analysis, deal sample was extended to the period 1998 – 2015.¹¹

3.2 Data description

Table 2 shows the descriptive statistics of company characteristics. The table is split in non-buy-and-build companies, private equity acquired companies, platform companies and add-on acquisitions. This split is done to compare companies that are acquired by a private equity firm with buy-and-build companies. Since the company characteristics of platform companies and add-acquisitions differ much, the buy-and-build sample is divided as well.

Operating revenue is the highest for platform companies (compared to add-on acquisitions) which can be explained by the fact that a platform company is usually a mature company with stable recurring cash flows. Gross margin is a little higher for private equity acquisitions compared to non-buy-and-build companies, which suggests that private equity firms seek to buy companies that add value (Gaspar, 2012). Add-on companies also seem to be more

⁸ Pre-deal year.

⁹ Datastream is a financial (macroeconomic) platform that provides information on equities, indices, bonds, futures & options, commodities etc.

¹⁰ Industry code specifications were used to match the codes.

¹¹ 1997 was dropped out of the selection due to insufficient buy-and-build and private equity data from Zephyr. 2016 was dropped out of the selection due to the lag in information gathering with regards to private equity acquisitions.

profitable¹² than non-buy-and-build companies, private equity acquisitions and platform companies. However, non-buy-and-build companies outperform private equity acquisitions, platform- and add-on acquisitions on operating efficiency¹³. This supports the theory that private equity buyouts have potential for efficiency improvement (as found by Muscarella and Vetsuypens, 1990; Harris et al., 2005; Wilson et al., 2012) and suggests that hypothesis 1 is correct. However, when comparing private equity buyouts with the buy-and-build sample, it shows that only platform companies have more potential for efficiency improvement.

[Insert Table 2 here]

Tabel 3 shows the descriptive statistics of variables made for industry characteristics. The table is split again in statistics for non-buy-and-build industries, private equity industries and buy-and-build industries for comparison reasons.

The Herfindahl measures show that buy-and-build industries have a higher fragmentation than non-buy-and-build industries and private equity industries, suggesting that hypotheses 3 and 4 are correct. Buy-and-build industries also seem to have the lowest market volatility, which seems to support hypothesis 5. Furthermore, the table shows that the 10% largest firms take up ~76% of the total market share in buy-and-build industries and private equity industries, which is higher than the ~69% in non-build-and-build industries. However, the smallest 50 companies only take up ~3% in buy-and-build industries and private equity industries, compared to ~4% in non-buy-and-build industries. Lastly, the market size of private equity industries (and buy-and-build industries) seems to be higher than that of non-buy-and-build-industries.

[Insert Table 3 here]

Figures 5, 6, 7 and 8 are used to describe the statistics of financing characteristics. Figures 5 and 6 show the amount of private equity acquisitions and buy-and-build acquisitions that are done yearly in the UK on the y-axis where the second y-axis is used to show the index value of the industry. The industry used for this figure is the ‘Support Services industry’¹⁴, which seems to be the industry with the most private equity- and buy-and-build acquisitions.¹⁵ The graph shows that the amount of buy-and-build deals done is positively linked to the index movement,

¹² Defined as return on sales.

¹³ Defined as asset turnover.

¹⁴ ICB code of this industry is 2790.

¹⁵ The amount of private equity- and buy-and build acquisitions done in the Support Service industry over the period 1998 – 2015 are 419 and 209 respectively.

supporting the view that company valuation has an influence on the amount of buy-and-build (in specific add-on acquisitions) deals done.

[Insert Figures 5 & 6 here]

Figures 7 and 8 show the relation between the number of buy-and-build deals in the UK and variables for debt market conditions. From the graph it appears that there is a negative relation between the spread¹⁶ and the amount of buy-and-build deals done. Lower spreads indicate a lower default risk for high yield bonds, translating in lower interest on high-yield bonds and thus cheaper debt financing. Cheap debt financing might lead to an increased amount of buy-and-build deals done. Since the LIBOR rate is not very volatile, there is no clear relation visible with the amount of buy-and-build deals done.

[Insert Figures 7 & 8 here]

Both figures suggest that financing characteristics (debt conditions and high industry valuations) have an effect on the likelihood of a buy-and-build deal being done, supporting hypothesis 6. See Table 4 in the appendix for the definitions of all variables used in this paper.

¹⁶ Defined as the EU high yield interest rate minus the LIBOR.

4 Methodology

4.1 Company characteristics

Hypothesis 1 & 2 state that company characteristics such as size, (low) standalone company performance and high potential operating performance improvement will increase the likeness that a buy-and-build strategy will be performed. To test these hypotheses, the likelihood of a private equity- and buy-and-build acquisitions is regressed on company characteristics by using a similar linear probability model (LPM) that is also used by Bansraj & Smit (2017):

$$PE\ Target_{ct} = \alpha + \beta_1\ Company\ Characteristics_{it} + \beta_2\ Controls_{it} + \eta_t + \eta_i + U_{ct} \quad (1)$$

PE Target_{ct} is a dummy variable that amounts one (zero) if company c is (not) acquired by a private equity firm in year t.¹⁷The same regression is repeated only with *BB Target_{ct}* as a dummy variable that amounts one (zero) if company c is (not) acquired as part of a buy-and-build strategy in year t.

Company Characteristics consists of three company characteristics that stand for size, low standalone performance and operational improvement potential. Operational improvement has become the main source of value creation in private equity (Schwetzler et al., 2016). Operating improvements are not related to cost reductions (as found by Muscarella and Vetsuypens, 1990) but focus more on value drivers such as sales growth (Boucly et al., 2011), asset turnover (Cressy et al., 2007) and return on assets (Wilson et al., 2011). Therefore, this paper measures the potential for operational improvement as asset turnover. Asset turnover is commonly used as a metric for operating efficiency and is measured by dividing operating revenue by total assets. This paper expects that companies that have low (high) asset turnover and therefore low (high) standalone performance, have potential for operational improvement, thus are more (less) likely to be acquired by a private equity firm that performs a buy-and-build strategy.

In addition, this paper adds return on sales (based on return on assets) as measurement for operational improvement. Return on sales is commonly known as a firm's profitability and is measured by dividing operating profit by total sales. This paper expects that companies that have a low (high) return on sales and therefore low (high) standalone performance, have potential for operating improvement, thus are more (less) likely to be acquired by a private equity firm that performs a buy-and-build strategy.

¹⁷ One regression includes the buy-and-build acquisitions in the private equity deal sample and one regression excludes the buy-and-build acquisitions.

Size is commonly measured as sales growth (Kaplan, 1989; Muscarella and Vetsuypens, 1990) or total (fixed) assets growth (Weir et al., 2008; Boucly et al., 2011). This paper prefers total operating revenue growth over total (fixed) assets growth because there are certain companies that require a low (fixed) asset base but have significant revenue streams. Buy-and-build strategies focus more on rapidly gaining market share by consolidating the targeted industry (Smit, 2001) instead of increasing asset size. Size is therefore measured by the natural logarithm of total operating revenue. This paper expects that there is a positive (negative) relation between size and the likelihood that a firm is (not) acquired by a private equity firm that performs a buy-and-build strategy.

Controls consists of two other company characteristics that focus on operating performance as well: return on assets (Wilson et al., 2011) and gross margin (Gaspar, 2012). Return on assets is measured by dividing operating profit by total assets and gross margin is measured by dividing gross profit (sales minus cost of goods sold) by total sales. η_i and η_t stand for industry and time fixed effects.

4.2 Industry characteristics

Hypothesis 3, 4 and 5 state that industry characteristics such as a fragmented market, the availability of exit opportunities and low uncertainty will increase the likelihood that that a buy-and-build strategy will be performed. To test these hypotheses, the probability of private equity- and buy-and-build acquisitions in an industry is regressed on industry characteristics by using a similar linear probability model (LPM) that is also used by Bansraj & Smit (2017):

$$PE_i = \alpha + \beta_1 \text{Industry Characteristics}_{it} + \beta_2 \text{Controls}_{it} + \eta_t + U_t \quad (2)$$

PE_i is a dummy variable that amounts one (zero) if in industry i in the sample a (no) private equity acquisition is completed.¹⁸ The same regression is repeated only with BB_i as a dummy variable that amounts one (zero) if in industry i in the sample a (no) buy-and-build deal is completed. It is assumed that industry characteristics stay the same over a longer period of time.¹⁹

Industry Characteristics consists of two industry characteristics that stand for the amount of available companies and exit opportunities. The buy-and build strategy is best used in a fragmented market due to the availability of add-on acquisitions (Smit, 2001). This paper

¹⁸ Just as for company characteristics, one regression is run by excluding the industries in which a buy-and-build acquisition took place.

¹⁹ If a buy-and-build deal happens in a certain industry, the dummy amounts one for other years in that industry as well.

measures the fragmentation of the market by using the Herfindahl-Hirschman Index. In most industries the Herfindahl Index is influenced by the largest companies in the index. Therefore, this paper uses two variables that combines market shares of the top 10 biggest players (Herfindahl Top) and of the bottom 50 industry players (Herfindahl Bottom). Herfindahl Top is used to measure the availability of exit opportunities while Herfindahl Bottom is used to measure the available add-on acquisitions.²⁰ This paper expects that there is a positive (negative) relation between the Herfindahl indices and the likelihood that a firm is (not) acquired by a private equity firm that performs a buy-and-build strategy.

Controls consists of three industry characteristics: market volatility²¹, yearly growth in market sales and yearly growth in market size and η_t stands for year fixed effects.

4.3 Financing characteristics

Hypothesis 5 states that financing characteristics such as high company valuations and debt conditions will increase the likelihood that that a buy-and-build strategy will be performed. Favorable debt conditions will increase the amount of debt a private equity firm can use to acquire a company. It is also easier for a private equity firm to obtain debt financing. As the platform company grows, it will get better access to debt financing due to its lower risk profile and cost of capital, resulting in a higher (exit) valuation.

To test this hypothesis, the amount of private equity- and buy-and-build acquisitions in an industry is regressed on financing characteristics by using an similar ordinary least squares regression (OLS) that is also used by Bansraj & Smit (2017):

$$\text{Number of } PE_{it} \text{ Deals} = \alpha + \beta_1 \text{ Financing Characteristics}_{it} + \beta_2 \text{ Controls}_t + \eta_i + U_{it} \quad (3)$$

Number of PE_{it} takes the natural logarithm of the total number of (quarterly) private equity acquisitions in industry *i* in time *t*. The same regression is repeated with *Number of BB_{it}*, which takes the natural logarithm of the total number of (quarterly) buy-and-build acquisitions in industry *i* in time *t*.

Financing Characteristics consists of three financing characteristics that stand for the market valuation of companies and debt market conditions. The market valuation of companies is

²⁰ Both indices are inverted and added as their natural logarithm to measure the fragmentation of the market instead of the consolidation.

²¹ Which measures the uncertainty in the industry.

measured by using the FTSE 350 Sector Indices.²² This paper expects that there is a positive relation between the market valuation and the number of buy-and-build acquisitions done.

Debt market conditions are measured by using the LIBOR and Spread as variables (in line with Axelson et al., 2013).²³ This paper expects that there is a negative relation between the LIBOR and Spread and the number of buy-and-build acquisitions done.

Controls consists of three macro-economic characteristics: GDP growth²⁴, inflation²⁵ and exchange rate²⁶ and η_i stands for industry fixed effects.

²² The FTSE 350 index is a stock market index including the largest 350 companies based on market capitalization. The index consists of companies from the FTSE 100 and FTSE 250 indices. It contains 41 industry sector indices that group companies based on their ICB codes.

²³ Defined as the EU high yield interest rate minus the LIBOR.

²⁴ Defined as UK GDP growth.

²⁵ Defined as UK inflation.

²⁶ Defined as the exchange rate from GDP (£) to USD (\$).

5 Results

5.1 Company characteristics

Table 5 summarizes the results of the linear probability model. Firstly, the probability of all types of private equity acquisitions is used as dependent variable in the regression (1). Secondly, the probability of a buy-and-build acquisition is used in the regression (2). Thirdly, the probability of the private equity acquisitions minus the buy-and-build acquisitions is used as dependent variable (3). Lastly, the probability of a buy-and-build acquisition is split into platform acquisitions and add-on acquisitions (4 & 5).

The variable return on sales shows results that match the expectations of the paper. Companies that have a low return on sales and therefore low standalone performance, have potential for operating improvement, thus are more likely to be acquired by a private equity firm (that performs a buy-and-build strategy). This effect is significant and negative in all regressions except for add-on acquisitions. The variable asset turnover shows the same results and is negative in every regression, however is never significant. The results of the variable return on assets are unclear. Overall, the results show that the potential of operating improvement is an important company characteristic for private equity acquisitions. No conclusion can be drawn about the difference between ordinary private equity acquisitions and buy-and-build acquisitions. The measure for size, the natural logarithm of total operating revenue, is significant and positive in all five regressions. This confirms the assumption that size has a positive influence on a firm being acquired in a buy-and-build strategy.

[Insert Table 5 here]

5.2 Industry characteristics

Table 6 summarizes the results of the linear regression model. Firstly, the probability of a private equity acquisitions in a certain industry is used in the regression as dependent variable (1, 2 & 3). Secondly, the probability of a buy-and-build acquisition in a certain industry is used in the regression (4, 5 & 6). Lastly, the probability of the private equity acquisitions in a certain industry minus the buy-and-build acquisitions is used as dependent variable (7, 8 & 9). In all regressions, the Herfindahl indices are first added separately and then together.

When added separately, the variables Herfindahl Top and Herfindahl Bottom are both significant and positive for both private equity industries and buy-and-build industries. When the variables are added together, only Herfindahl Top is significant for private equity industries and buy-and-build industries. However, when excluding the buy-and-build industries from the

private equity sample the coefficients of Herfindahl Top and Herfindahl Bottom turn negative. When both variables are added, the coefficients for both Herfindahl indices are not significant anymore.

The results show that the availability of exit opportunities (Herfindahl Top) and add-on acquisitions (Herfindahl Bottom) have a positive influence on the likelihood of a buy-and-build acquisition being done in an industry. The results on the regression excluding the buy-and-build industries seems to suggest that this is not the case for private equity acquisitions (that are not buy-and-build related). This is surprising for the variable Herfindahl Top, since private equity firms require a good exit opportunity as well. This could be explained by the fact that too much industries were removed by excluding buy-and-build deals. Market volatility is significant and negative for all regressions, showing that less (more) buy-and-build acquisitions are done in an (less) volatile and thus more (less) risky industry.

[Insert Table 6 here]

5.3 Financing characteristics

Table 7 summarizes the results of the ordinary least squared regressions. In the first regressions, the dependent variable is the natural logarithm of the total number of quarterly private equity deals. Firstly the FTSE 350 sector indices is added separately (1). Secondly, both financing characteristics (LIBOR and Spread) are added (2). Lastly the financing controls are added (3 & 4). The same method is then repeated only with the natural logarithm of the total number of quarterly buy-and-build deals as dependent variable (5, 6, 7 & 8).

The results show that a higher market valuation increases the amount of private equity- and buy-and-build acquisitions. The coefficients are positive and significant for all regressions. Furthermore, the results show that expansive debt financing has a negative effect on the amount of private equity- and buy-and-build acquisitions.

[Insert Table 7 here]

6 Conclusion

This paper tries to supplement current literature by determining the key characteristics that influence a private equity firm to execute a buy-and-build strategy. This is done by comparing company, industry and financing characteristics for 'regular' private equity acquisitions with buy-and-build acquisitions.

For company characteristics, we find that companies that have a low profitability (measured as return on sales) and therefore low standalone performance, have potential for operating improvement, thus are more likely to be acquired by a private equity firm (that performs a buy-and-build strategy). Size, measured as the natural logarithm of total operating revenue, also increases the likelihood of a firm getting acquired in both a private equity- and buy-and-build acquisition.

In the case of industry characteristics, empirical evidence shows that the availability of exit opportunities and add-on acquisitions (measured by industry fragmentation) will increase the likelihood that that a buy-and-build strategy will be performed in an industry. The results on the regressions excluding the buy-and-build industries seems to suggest that this effect is reversed for private equity acquisitions (that are not buy-and-build related). This is surprising since most private equity firms require an exit opportunity. Furthermore, we find that that less buy-and-build acquisitions are done in a volatile and thus more risky industry (measured by a 3 year moving average of industry sales).

For debt characteristics, the results show that a higher market valuation, measured by the FTSE 350 Index values, increases the amount of private equity- and buy-and-build acquisitions being done. Expansive debt financing, measured by the LIBOR and the spread, has a negative influence on the amount of private equity- and buy-and-build acquisitions being done.

Further research on this subject could focus on dividing the private equity deals into more categories such as MBO, MBO and IBO and test what company, industry and financing characteristics are most ideal to perform these deal types. Since part of the literature review of this paper is about the performance of private equity firms during three different eras, further research could be done on the performance of companies that are acquired in a buy-and-build strategy. This paper can supplement research on buy-and-build company performance by providing suitable company characteristics for profitability and efficiency.

7 References

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Appendix

Table 1: ICB to NACE Rev. 2 matching table (1)

Table 1 provides the matching industries codes from ICB to NACE Rev. 2.

ICB code	ICB Industry Sector	Matching NACE Rev. 2 codes
0530	Oil & Gas Producers	0600, 0610, 1910, 1920
0570	Oil Equipment, Services & Distribution	0910, 0990
0580	Alternative Energy	-
1350	Chemicals	2011, 2012, 2013, 2014, 2016, 2017, 2020, 2030, 2040, 2052, 2059, 2060, 2210, 2219, 2220, 2222, 2223, 2229, 2561
1730	Forestry & Paper	1711, 1712, 1721, 1723, 1729
1750	Industry Metals & Mining	2410, 2420, 2434, 2440, 2441, 2442, 2445, 2452, 2454, 2500, 2510, 2511, 2512, 2529, 2550, 2593, 2594, 2599
1770	Mining	0510, 0800
2350	Construction & Materials	1623, 1624, 1629, 2311, 2313, 2319, 2331, 2340, 2350, 2362, 2370, 2399, 2521, 4110, 4120, 4211, 4221, 4222, 4299, 4300, 4312, 4320, 4321, 4322, 4333, 4334, 4339, 4391, 4399, 7110, 7111, 7112, 7120
2710	Aerospace & Defense	2540, 3040
2720	General Industrials	-
2730	Electronic & Electrical Equipment	2611, 2612, 2630, 2640, 2650, 2651, 2660, 2670, 2700, 2711, 2712, 2740, 2790, 3314,
2750	Industrial Engineering	2811, 2812, 2813, 2814, 2815, 2821, 2822, 2825, 2829, 2849, 2890, 2892, 2893, 2899, 3020, 3030, 3300, 3312, 3315, 3317
2770	Industrial Transportation	4941, 4942, 5000, 5010, 5020, 5210, 5220, 5221, 5222, 5223, 5229, 5320
2790	Support Services	3600, 3700, 3810, 3811, 3820, 3821, 3822, 3830, 3831, 3832, 3900, 4614, 4663, 4666, 4669, 4671, 4672, 4673, 4674, 4675, 4690, 6910, 6920, 7020, 7021, 7022, 7730, 7732, 7733, 7734, 7739, 7740, 7800, 7810, 7820, 7830, 8010, 8020, 8110, 8121, 8122, 8130, 8200, 8211, 8220, 8230, 8291, 8299, 8411, 8412, 8413
3350	Automobiles & Parts	2900, 2910, 2920, 2930, 2932, 3091, 4510, 4511, 4519, 4520, 4531, 4532, 4540, 7711, 7712,
3530	Beverages	1101, 1105, 1106, 1107
3570	Food Producers	0119, 0140, 0147, 0162, 0163, 0321, 1010, 1011, 1020, 1032, 1039, 1051, 1061, 1070, 1071, 1072, 1080, 1082, 1083, 1084, 1085, 1089, 1091, 1092
3720	Household Goods & Home Construction	2041, 2571, 2573, 2751, 2752, 3100, 3101, 3102, 3103, 3109, 3230, 3240, 3250, 3299, 7729,
3760	Personal Goods	1310, 1320, 1330, 1390, 1391, 1392, 1393, 1396, 1400, 1410, 1413, 1419, 1512, 1520, 2042, 3212, 3230,
3780	Tobacco	-
4530	Health Care Equipment & Services	8610, 8621, 8622, 8623, 8690, 8810, 8891,
4570	Pharmaceuticals & Biotechnology	2110, 2120, 7211, 7219, 7220,
5330	Food & Drug Retailers	4630, 4631, 4634, 4636, 4639

(continued)

Table 1: ICB to NACE Rev. 2 matching table (2)

ICB code	ICB Industry Sector	NACE Rev. 2 codes
5370	General Retailers	4618, 4622, 4641, 4642, 4643, 4644, 4645, 4647, 4649, 4651, 4652, 4661, 4670, 4700, 4710, 4711, 4719, 4720, 4725, 4729, 4730, 4743, 4752, 4754, 4759, 4761, 4764, 4765, 4771, 4772, 4773, 4775, 4776, 4777, 4778, 4779, 4781, 4791, 4799, 7500, 8520, 8531, 8541, 8551, 8559, 8560, 8710, 8720, 8730, 8790, 9412, 9499, 9524, 9601, 9602, 9603
5550	Media	1810, 1812, 1820, 5810, 5811, 5812, 5813, 5814, 5819, 5829, 5910, 5911, 5912, 5913, 5914, 5920, 6000, 6010, 6020, 7311, 7320, 7410, 7420, 7430, 7490
5750	Travel & Leisure	4910, 4931, 4932, 4939, 5110, 5122, 5500, 5510, 5520, 5530, 5600, 5610, 5621, 5629, 5630, 7910, 7911, 7912, 7990, 9000, 9004, 9102, 9200, 9300, 9312, 9313, 9319, 9321, 9329
6530	Fixed Line Telecommunications	6110
6570	Mobile Telecommunications	6120, 6130, 6190
7530	Electricity	3510, 3511, 3512, 3513, 3522, 3530
7570	Gas, Water & Multi-utilities	-
8530	Nonlife Insurance	6510, 6512, 6520, 6530
8570	Life Insurance	6511
8630	Real Estate Investment & Services	6810, 6820, 6830, 6831, 6832
8670	Real Estate Investment Trusts	-
8770	Financial Services	6419, 6420, 6430, 6491, 6492, 6499, 6611, 6612, 6619, 6620, 6622, 6629, 6630
8980	Equity Investment Instruments	-
9530	Software & Computer Services	6200, 6201, 6202, 6203, 6209, 6300, 6311, 6312, 6391, 6399, 9511
9570	Technology Hardware & Equipment	2610, 2620, 2731

Table 2: Descriptive statistics of company characteristics

Table 2 summarizes the descriptive statistics of the company characteristics. The table is split into four different company types. Type 1 summarizes the statistics of regular companies (not involved in a private equity or buy-and-build deal). Type 2 summarizes the statistics of companies involved in a private equity deal. Type 3 and Type 4 summarize the statistics of buy-and-build acquisitions, platform companies and add-on acquisitions respectively. All variables are winsorized (1% and 99%).

	Observations	Mean	Std. Dev.	Median	Min	Max
<i>Type 1: Regular</i>						
Operating Revenue (\$ mln)	523,385	26.25	71.87	0.22	0.00	446.62
Gross Margin (%)	507,648	0.41	0.32	0.37	0.00	1.00
Asset Turnover (%)	521,772	2.78	3.96	1.75	0.00	29.50
Return on Sales (%)	523,385	-0.04	0.82	0.03	-8.23	1.53
Return on Assets (%)	521,772	0.09	0.67	0.04	-3.85	3.60
<i>Type 2: Private equity</i>						
Operating Revenue (\$ mln)	350	84.23	11.62	33.56	0.14	446.62
Gross Margin (%)	339	0.42	0.22	0.39	0.00	1.00
Asset Turnover (%)	350	1.77	1.89	1.46	0.00	25.08
Return on Sales (%)	350	-0.01	0.65	0.05	-8.23	1.53
Return on Assets (%)	350	0.08	0.44	0.07	-3.10	3.60
<i>Type 3: Platforms</i>						
Operating Revenue (\$ mln)	40	94.61	125.03	40.21	0.64	466.62
Gross Margin (%)	38	0.41	0.18	0.37	0.06	0.84
Asset Turnover (%)	40	1.48	1.03	1.16	0.00	4.13
Return on Sales (%)	40	-0.12	0.78	0.04	-4.33	0.27
Return on Assets (%)	40	0.02	0.42	0.06	-2.31	0.62
<i>Type 4: Add-ons</i>						
Operating Revenue (\$ mln)	72	37.67	78.31	14.43	0.75	446.62
Gross Margin (%)	68	0.42	0.23	0.37	0.04	0.99
Asset Turnover (%)	72	2.27	2.14	1.94	0.09	14.58
Return on Sales (%)	72	0.05	0.21	0.05	-1.17	0.53
Return on Assets (%)	72	0.05	0.47	0.09	-3.10	0.56

Table 3: Descriptive statistics of industry characteristics

Table 3 summarizes the descriptive statistics of the industry characteristics. The table is split into three different kinds of industries. Type 1 summarizes the statistics of industries in which no private equity acquisition was done. Type 2 summarizes the statistics of industries in which a private equity acquisition was done. Type 3 and Type 4 summarize the statistics of buy-and-build acquisitions, platform companies and add-on acquisitions respectively. The variable Market Growth is winsorized (10% and 99%).

	Observations	Mean	Std. Dev.	Median	Min	Max
<i>Type 1: Regular Industries</i>						
Herfindahl Top	2,745	55.81	317.99	10.94	1.00	8984.30
Herfindahl Bottom	2,745	11.29	22.37	5.24	1.00	557.69
Market Volatility	1,965	2.43	16.51	0.15	0.00	341.52
Top 10 (%)	2,187	68.34	20.38	71.98	15.48	99.77
Bottom 50 (%)	2,696	3.65	5.46	1.40	0.00	44.51
Market Size (\$ mln)	2,745	12.09	57.35	0.96	0.00	885.03
Market Growth (%)	2,356	8.87	24.37	5.42	-24.26	56.04
<i>Type 2: Private Equity Industries</i>						
Herfindahl Top	1,503	162.68	376.72	55.45	1.00	6939.90
Herfindahl Bottom	1,503	24.94	34.95	13.14	1.00	513.62
Market Volatility	1,062	2.95	7.93	0.77	0.00	105.22
Top 10 (%)	1,469	76.25	17.22	80.97	16.45	99.76
Bottom 50 (%)	1,501	2.53	3.47	0.97	0.01	28.49
Market Size (\$ mln)	1,503	23.12	56.98	6.67	0.00	683.53
Market Growth (%)	1,281	7.97	21.02	5.60	-24.26	56.04
<i>Type 3: Buy-and-Build Industries</i>						
Herfindahl Top	1,344	170.40	392.07	60.59	1.00	6939.90
Herfindahl Bottom	1,344	25.91	33.43	14.05	1.00	341.97
Market Volatility	960	2.53	6.90	0.76	0.00	105.22
Top 10 (%)	1,320	76.07	17.02	80.40	16.45	99.60
Bottom 50 (%)	1,343	2.55	3.40	1.03	0.01	28.49
Market Size (\$ mln)	1,344	20.13	46.89	6.58	0.00	512.38
Market Growth (%)	1,152	8.20	21.01	5.62	-24.26	56.04

Table 4: Definitions of variables

Table 4 provides the variable descriptions for the all variables that are used in this paper.

Variable	Description
Asset Turnover	Measured by dividing operational revenue by total assets.
BB _i	Dummy variable that amounts one if in industry i a buy-and-build acquisition is completed.
BB Target _{ct}	Dummy variable that amounts one if company c is acquired as part of a buy-and-build strategy in year t.
Bottom 50	Combined market shares of bottom 50 players.
Exchange Rate	GBP (£) – USD (\$) exchange rate.
GDP Growth	Gross domestic product of the United Kingdom.
Gross Margin	Measured by dividing gross profit by total sales.
Herfindahl Bottom	Natural logarithm of the market shares of the top 10 biggest players combined.
Herfindahl Top	Natural logarithm of the market shares of the top 50 bottom players combined.
High Yield Index	Effective yield of BofA Merrill Lynch Euro High Yield Index.
Inflation	United Kingdom inflation.
LIBOR	London Interbank Offered Rate.
Market Growth	Measured by the yearly growth of total sales of industry i.
Market Size	Natural logarithm of the total sales of industry i.
Market Volatility	Measured by a 3 year (moving) average of the sales of industry i.
Number of BB _{it}	Natural logarithm of the total number of quarterly buy-and-build deals +1 in industry i in time t.
Number of PE _{it}	Natural logarithm of the total number of quarterly private equity deals +1 in industry i in time t.
Operating Revenue	Natural logarithm of sales generated from a company's primary business activities.
PE _i	Dummy variable that amounts one if in industry i a private equity acquisition is completed.
PE Target _{ct}	Dummy variable that amounts one if company c is acquired by a private equity firm in year t.
Return on Assets	Measured by dividing operating profit by total assets.
Return on Sales	Measured by dividing operating profit by total sales.
Spread	Measured by subtracting the LIBOR from High Yield.
Top 10	Combined market shares of top 10 players.

Table 5: Company characteristics

Table 5 summarizes the results of the linear probability model. Regression 1 uses a dummy as dependent variable that shows if a company was acquired by a private equity firm. Regression 2 does the same only for buy-and-build specific acquisitions. Regression 3 uses a dummy as dependent variable that shows if a company was acquired by a private equity firm but excludes the buy-and-build sample. Regression 4 and 5 make use of a dummy as dependent variable for platform acquisitions and add-on acquisitions respectively. T-statistics are listed below the coefficients. Year fixed effects and industry fixed effects are applied on all regressions. Significance levels are shown by ***, ** and * (1%, 5% and 10%).

	PE	BB	PE excl. BB	Platform	Add-on
	(1)	(2)	(3)	(4)	(5)
	LPM	LPM	LPM	LPM	LPM
Operating Revenue (ln)	0.000*** (18.90)	0.000*** (9.64)	0.000*** (16.30)	0.000*** (7.62)	0.000*** (6.34)
Gross Margin	-0.001*** (-5.09)	-0.000* (-1.84)	-0.000*** (-4.91)	-0.000 (-1.27)	-0.000 (-1.35)
Return on Sales	-0.000*** (-3.84)	-0.000* (-1.88)	-0.000*** (-3.37)	-0.000** (-2.13)	-0.000 (-0.76)
Return on Assets	0.000 (0.04)	-0.000 (-0.47)	0.000 (0.37)	0.000 (0.57)	-0.000 (-1.02)
Asset Turnover	-0.000 (-1.56)	-0.000 (-1.07)	-0.000 (-1.16)	-0.000 (-1.06)	-0.000 (-0.55)
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Observations	523,735	523,735	523,735	523,735	523,735
PE observations	350	112	238	40	72
R-Squared	0.009	0.0002	0.011	0.002	0.001
F-test	41.97	11.93	30.83	7.11	6.19

(continued)

Table 6: Industry characteristics (1)

Table 6 summarizes the results of the linear probability model. In regressions 1-3, a dummy as dependent variable is used that shows if a company was acquired by a private equity firm in a certain industry. Regressions 4-6 repeat the regression only for buy-and-build specific acquisitions. Regression 3 uses a dummy as dependent variable that shows if a company was acquired by a private equity firm in a certain industry but excludes the buy-and-build sample. T-statistics are listed below the coefficients. Year fixed effects are applied on all regressions. Significance levels are shown by ***, ** and * (1%, 5% and 10%).

<i>1-6. Private Equity industries and Buy-and-Build industries</i>						
	Private Equity Industry			Buy-and-Build Industry		
	(1) LPM	(2) LPM	(3) LPM	(4) LPM	(5) LPM	(6) LPM
Inv. Herfindahl Top (ln)	0.097*** (12.13)		0.090*** (7.71)	0.108*** (13.67)		0.095*** (8.27)
Inv. Herfindahl Bottom (ln)		0.084*** (9.29)	0.010 (0.79)		0.097*** (10.85)	0.019 (1.48)
Market Volatility	-0.003*** (-5.00)	-0.003*** (-4.96)	-0.003*** (-4.95)	-0.003*** (-5.19)	-0.003*** (-5.11)	-0.003*** (-5.11)
Top 10 (ln)	0.077* (1.82)	0.257*** (6.61)	0.087** (1.97)	0.055 (13.1)	0.254*** (6.61)	0.074* (1.70)
Bottom 50 (ln)	0.023*** (2.63)	0.044*** (5.21)	0.023*** (2.64)	0.020** (2.34)	0.043*** (5.10)	0.021** (2.36)
Market Growth (%)	-0.000 (-0.02)	-0.000 (-0.29)	-0.000 (-0.05)	0.000 (0.00)	-0.000 (-0.31)	-0.000 (-0.05)
Market Size (ln)	0.056*** (9.55)	0.074*** (13.60)	0.056 (9.58)	0.041*** (7.00)	0.060*** (11.13)	0.041*** (7.08)
Year FE	YES	YES	YES	YES	YES	YES
Observations	2,643	2,643	2,643	2,643	2,643	2,643
BB observations	1,503	1,503	1,503	1,344	1,344	1,344
R-Squared	0.205	0.187	0.205	0.194	0.174	0.195
F-Statistic	113.22	101.15	97.12	105.46	92.11	90.75

Table 6: Industry characteristics (2)

<i>7-9. Private equity industries excluding buy-and-build industries</i>			
	Private Equity Industry excl. Buy-and-Build		
	(7)	(8)	(9)
	LPM	LPM	LPM
Inv. Herfindahl Top (ln)	-0.011*** (-3.20)		-0.053 (-1.06)
Inv. Herfindahl Bottom (ln)		-0.013*** (-3.39)	-0.009 (-1.55)
Market Volatility	0.000 (0.29)	0.000 (0.23)	0.000 (0.22)
Top 10 (ln)	0.022 (1.21)	0.003 (0.18)	0.013 (0.69)
Bottom 50 (ln)	0.003 (0.74)	0.015 (0.41)	0.027 (0.72)
Market Growth (%)	-0.000 (-0.05)	0.000 (0.03)	-0.000 (-0.00)
Market Size (ln)	0.015*** (6.14)	0.014*** (6.11)	0.015*** (6.03)
Year FE	YES	YES	YES
Observations	2,643	2,643	2,643
BB observations	159	159	159
R-Squared	0.021	0.021	0.022
F-Statistic	9.29	9.50	8.31

Table 7: Financing characteristics (I)

Table 7 summarizes the results of the ordinary least squares regressions. In regressions 1-4, the dependent variable is the natural logarithm of the total number of quarterly private equity deals +1 in industry *i* in time *t*. Regressions 5-8 use the natural logarithm of the total number of quarterly private equity deals +1 in industry *i* in time *t* as dependent variable. T-statistics are listed below the coefficients. Industry (sector) fixed effects are applied on all regressions. Significance levels are shown by ***, ** and * (1%, 5% and 10%).

	ln (number of PE deals + 1)			
	(1)	(2)	(3)	(4)
	OLS	OLS	OLS	OLS
Index (ln)	0.096*** (5.62)	0.041** (2.22)	0.031*** (1.67)	0.026** (1.39)
LIBOR		-0.009** (-2.28)	-0.016*** (-3.55)	-0.014*** (-3.15)
Spread (High Yield - Libor)		-0.015*** (-7.28)	-0.010*** (-3.88)	-0.012*** (-4.69)
Exchange Rate			0.313*** (4.06)	0.291*** (3.74)
Inflation			0.007 (0.81)	0.003 (0.35)
GDP Growth				-3.190*** (-2.97)
Industry FE	Yes	Yes	Yes	Yes
Observations	2,588	2,588	2,588	2,555
R-Squared	0.015	0.001	0.005	0.007
F-Statistic	31.56	28.42	22.02	19.61

(continued)

Table 7: Financing characteristics (2)

	ln (amount of BB deals + 1)			
	(5)	(6)	(7)	(8)
	OLS	OLS	OLS	OLS
Index (ln)	0.124*** (8.39)	0.082*** (5.12)	0.078*** (4.82)	0.069*** (4.28)
LIBOR		-0.027*** (-8.28)	-0.030*** (-7.88)	-0.029*** (-7.84)
Spread (High Yield - Libor)		-0.007*** (-4.08)	-0.005** (-2.35)	-0.009*** (-3.86)
Exchange Rate			0.129* (1.94)	0.109 (1.62)
Inflation			0.005 (0.65)	-0.001 (-0.17)
GDP Growth				-4.554*** (-2.06)
Industry FE	Yes	Yes	Yes	Yes
Observations	2,588	2,588	2,588	2,555
R-Squared	0.007	0.001	0.002	0.005
F-Statistic	70.46	47.53	29.83	28.14

Figure 1: Industry distribution observations

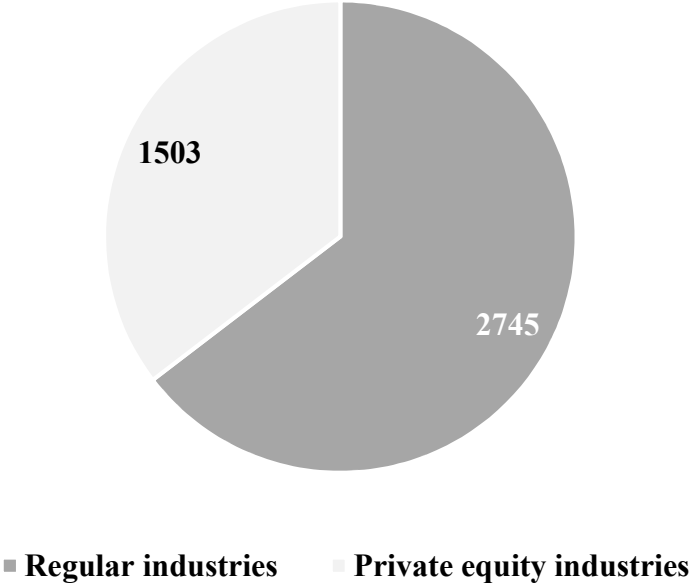


Figure 2: Private equity industry observations

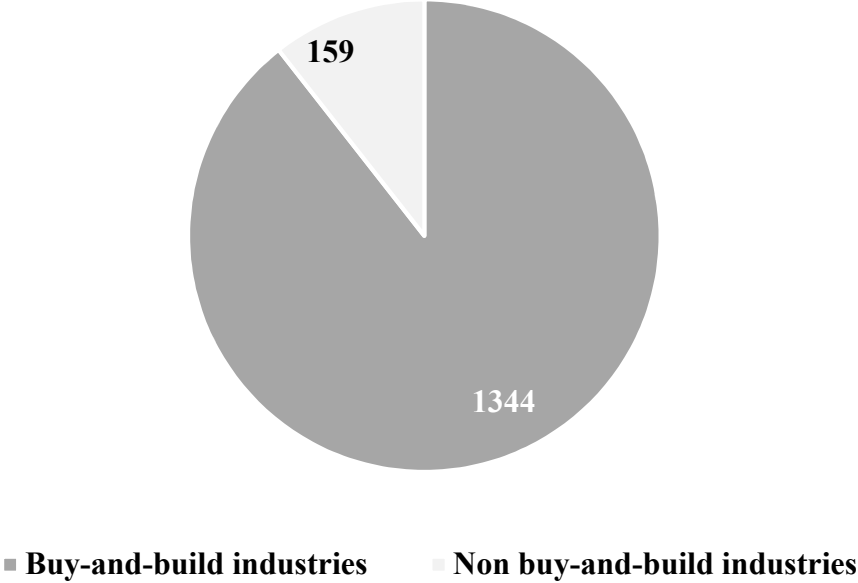


Figure 3: Total company deal sample

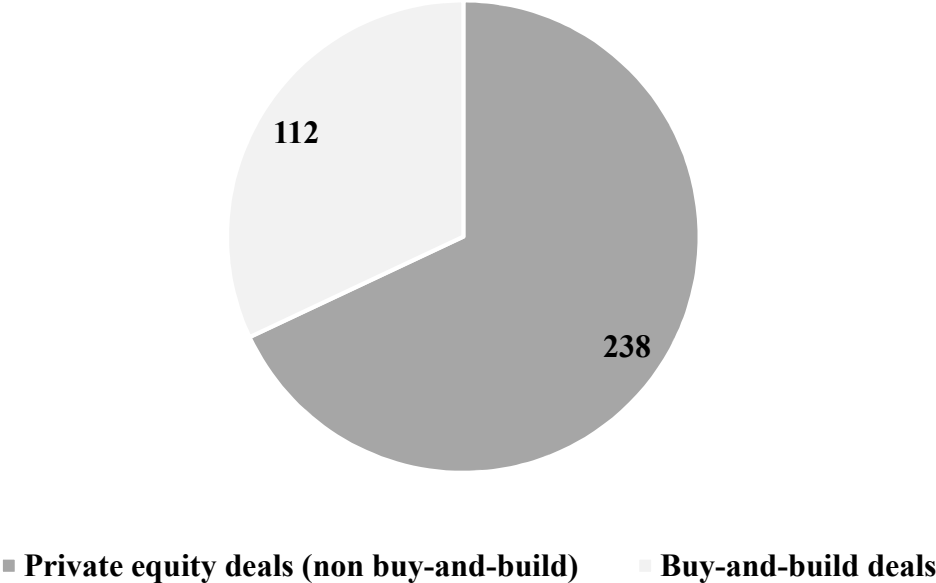


Figure 4: Buy-and-build deal sample

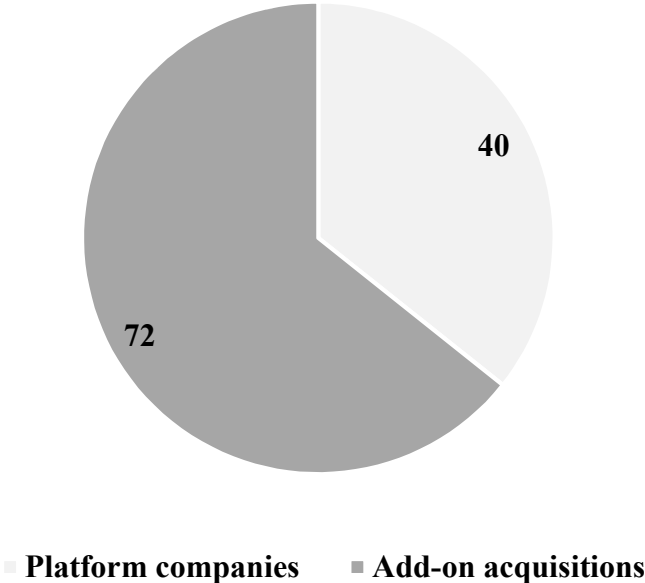


Figure 5: Amount of private equity deals (ICB = 2790) in the UK vs FTSE 350 Index

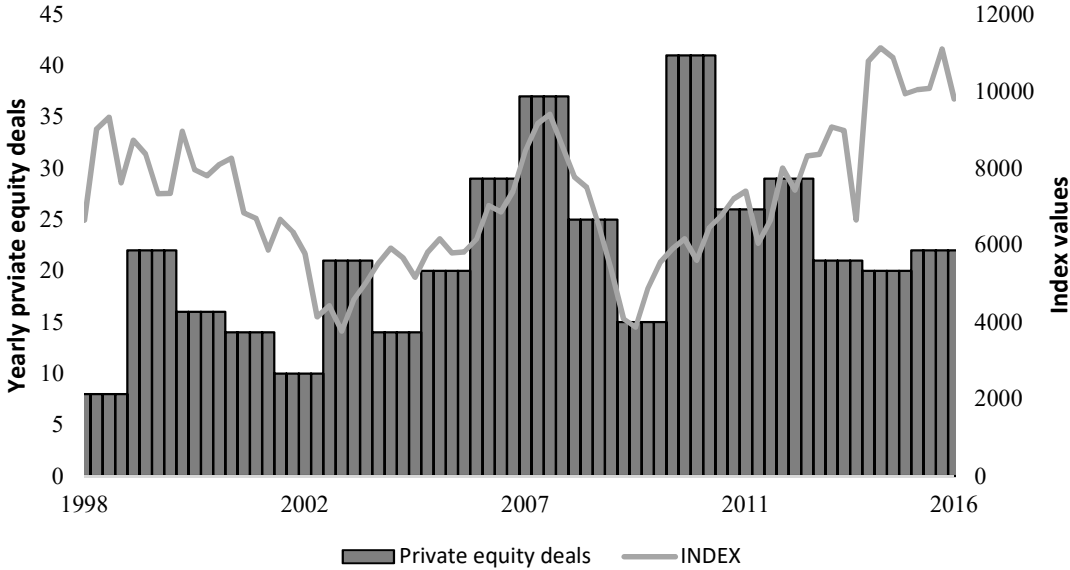


Figure 6: Amount of buy-and-build deals (ICB=2790) in the UK vs FTSE 350 Index

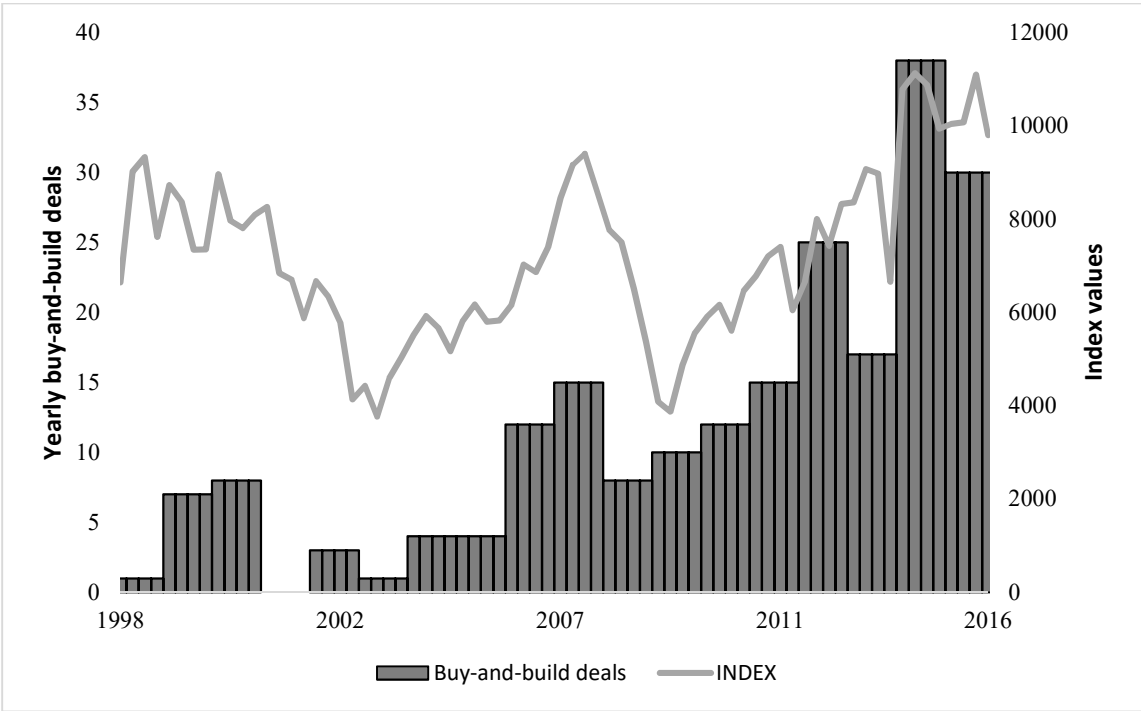


Figure 7: Amount of private equity deals vs debt market conditions

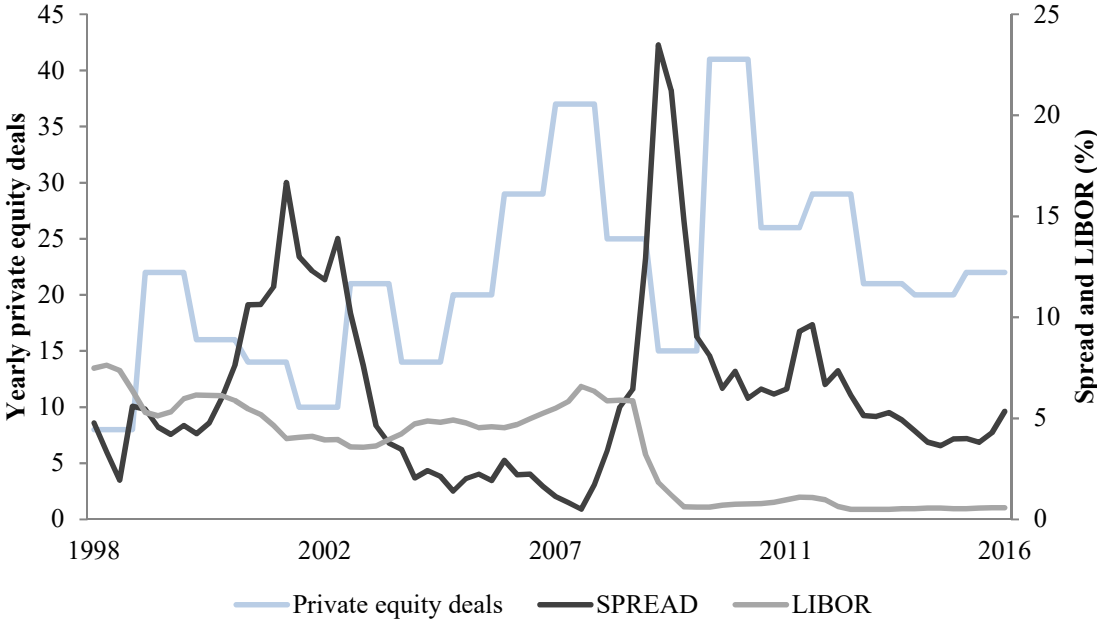


Figure 8: Amount of buy-and-build deals vs debt market conditions

