Explaining holding periods and exit routes of buy-and-build strategies in private equity

An empirical analysis of the United Kingdom

Master Thesis MSc Financial Economics

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Date: January 24, 2020
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ABSTRACT

This thesis aims to explain the determinants of holding periods of buy-and-build strategies and examines whether buy-and-build strategies have an impact on the route of exit. By using a sample of 150 UK-based buy-and-build cases with exits from 2007 until 2018, this study finds that longer holding periods are explained by the number of add-ons and the execution of industry diversifying add-ons. Evidence is provided that private equity firms with prior buy-and-build experience are likely to face lower holding periods in subsequent buy-and-builds. Comparing the buy-and-build cases to 290 UK-based standalone private equity cases, longer holding periods tend to be related with financial exits. However, controlling for financial performance of the portfolio company lead this result to become insignificant. Although findings indicate that buy-and-builds tend to decrease the likelihood of a public listing relative to a trade sale, the evidence is not found to be robust. Therefore, no conclusive evidence can be provided for the relationship between buy-and-build strategies and the route of exit.

Keywords: Private equity; Buy-and-build strategies; Holding period; Exit routes

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1. **Introduction**

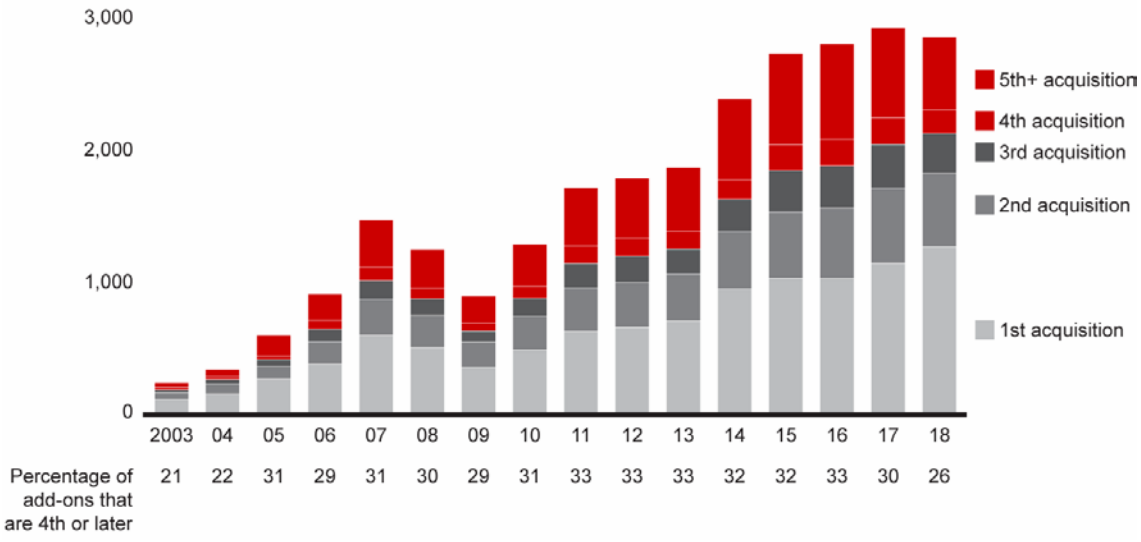
Private equity gained significant influence in the market of corporate control from the start of the 1980s when leveraged buyouts appeared as an influential phenomenon. Relying on a substantial amount of external debt financing, private equity firms started to acquire, preferably undervalued, companies. Due to their expertise in restructuring the target firms and applying several value creation techniques, private equity firms were able to sell their investments with substantial profits (Jensen, 1986; Cressy et al., 2007). Governance and financial engineering were the critical value creation mechanisms in the traditional private equity business model (Kaplan and Strömberg, 2009). Due to established relationships with banks, private equity firms had access to debt at a lower cost than strategic buyers (Ivashina and Kovner, 2011). In combination with favourable debt markets, private equity companies were able to highly leverage the acquired companies and gain a valuable tax shield (Kaplan, 1989). Shareholder value was further enhanced by incentivising managers to have "skin in the game", and the highly leveraged capital structures disciplined managers to use their cash flows efficiently (Jensen, 1986; Kaplan and Stromberg, 2009). Moreover, buying low, i.e. in "cold markets", and selling high, i.e. in "hot markets", lead to realisation of returns without need for operational improvements, known as multiple arbitrage (Axelson et al., 2013). Jensen (1986) hypothesised that through these value-creating levers, private equity would become superior over public corporations. According to recent literature, private equity is well-able to create excess return within short-time periods and there is academic consensus that private equity consistently outperforms public markets in terms of financial returns (Kaplan and Schoar, 2005; Higson and Stucke, 2012; Harris et al., 2014). Private equity has therefore become an attractive asset class for investors.

However, some of these traditional value-creating mechanisms have come under pressure in recent years. An increasing number of buyout funds and active M&A markets intensified competition for assets. For that reason, the ability of private equity firms to generate excess returns has become more challenging (Axelson et al., 2013). Additionally, many firms advanced their governance standards and improvements are therefore more difficult to achieve nowadays (Kaplan, 1997; Hammer et al., 2017). Being less able to rely on some of the traditional value creating levers, value creation enhancement through operational improvements on portfolio firm level gained importance. In the late 1990s, private equity firms faced increased competition from strategic buyers, i.e., industry incumbents wishing to consolidate an industry or firms trying to enter an industry through acquisitions. Increased

competition, in combination with commoditising traditional value creation levers led private equity firms to develop a new hybrid strategy: the buy-and-build strategy.

The buy-and-build strategy is a specific type of sequential acquisition strategy where a private equity investor initially acquires a company as a "platform" acquisition in a preferably fragmented industry. Through this platform, the private equity firm can build scale and scope by acquiring subsequent "add-on" acquisitions (Bansraj et al., 2019). Figure 1 shows the growing number of add-on acquisitions in the global private equity industry, illustrating the recent rise of buy-and-build strategies. Buy-and-builds often create value through financial engineering, multiple arbitrage, and synergetic benefits between the platform and add-ons, e.g. economies of scale and scope, tax gains, allocation of resources between firms. Moreover, as the build-up matures, grows, and potentially expands geographically, more attractive exit opportunities become available (Smit, 2001; Borell and Heger, 2013; Bansraj, 2017). Several studies indicated that buy-and-builds outperform standalone private equity deals in terms of margins and multiples (Acharya et al., 2013), and deal returns (Nikoskelainen and Wright, 2007; Valkama et al., 2013).

Figure 1: Total global add-on deals, by sequence for platform companies

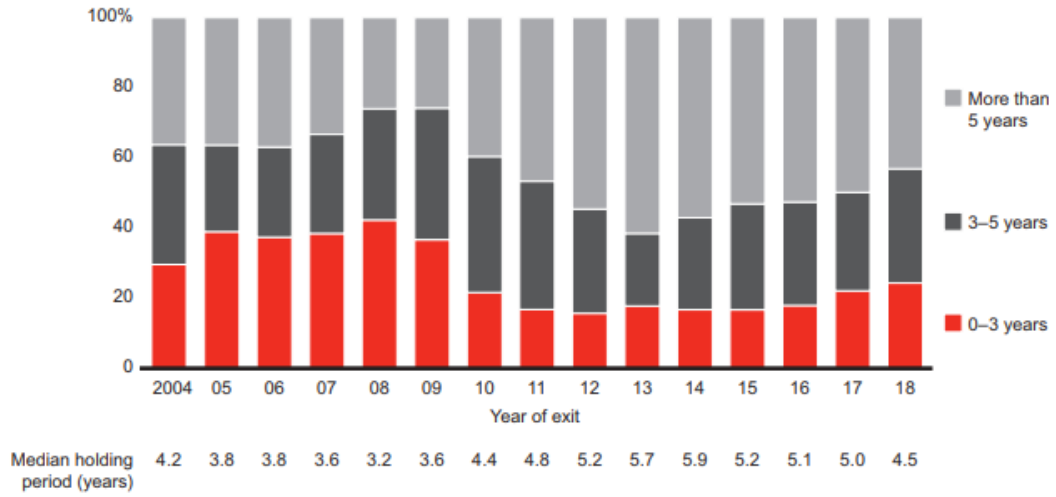


Source: Bain Private Equity Report (2019); Pitchbook Data, Inc.

As observed in figure 2, analogous to the recent emergence of buy-and-build strategies, holding periods in private equity have increased substantially. Hammer (2016) links the observable increase of holding periods over time to the emergence of buy-and-build strategies and finds that buy-and-builds increase holding periods by 20 percent. As argued, buy-and-build

strategies involve the acquisitions of (multiple) add-ons. Add-ons come with additional monitoring and integration costs, distract focus from organic growth and cause the portfolio firm to grow in size and complexity (Cumming and Johan, 2011; Hammer, 2016). These factors are likely to lead to longer holding periods of private equity investments. More extended holding periods are found to complicate the ability to generate sufficient returns, tie up committed capital, and negatively affect the ability to raise subsequent funds (Valkama et al., 2013; Jenkinson and Sousa, 2015; Hammer, 2016; Loos and Schwetzler, 2017). Hence, private equity investors generally prefer shorter holding periods. Although its high return generating potential, Hammer (2016) argues that the consequent illiquidity is a "dark side" of buy-and-build strategies.

Figure 2 : Distribution of global buyout-backed investment exit (by holding period)



Source: Bain Private Equity Report (2019); Preqin

By examining specific factors explaining holding periods of buy-and-build strategies, this study supplements to the so-far empirical scarcity of buy-and-build strategies and holding periods in private equity. Moreover, the changing private equity landscape provides questions about the impact of longer holding periods and the use of buy-and-build strategies on the route of exit. Therefore, the main research question is stated as follows:

What explains the holding periods of buy-and-build strategies and do buy-and-build strategies influence the route of exit?

First, this study focuses on the role of add-on characteristics to explain holding periods of private equity investments. For illustration, one of the buy-and-build strategies analysed in this study is the roll-out of Enermech, an energy and infrastructure services provider. Lime Rock Management, a British private equity firm, acquired Enermech in 2008. Using Enermech as a platform for consolidation, Lime Rock Management executed 12 add-on acquisitions in the energy and infrastructure industry. With these add-on acquisitions, Enermech expanded geographically and gained a foothold in new industries. After ten years of ownership, Lime Rock Management sold Enermech to Carlyle, one of the largest private equity firms in the world. Despite its successful roll-out, the holding period of this investment is twice as high as median holding periods showed in figure 2. Previous literature argues that the number of add-ons and its complexity, i.e., industry diversifying and cross-border add-ons, contribute to explain longer holding periods (Servaes and Zenner, 1996; Cumming and Dai, 2011; Humphery-Jenner, 201; Hammer, 2016).

Given the past success of buy-and-build strategies, private equity firms may wish to mimic historical performance in subsequent buy-and-builds. To illustrate, Sovereign Capital Partners acquired Linnaeus Group, a veterinary services company, in 2014. During the ownership of Sovereign Capital Partners, Linnaeus Group executed 21 add-on acquisitions in the British veterinary services industry. Their obtained leading position in this market resulted in the trade sale of Linnaeus to Mars Pet Services in 2018. Despite a large number of add-ons, the total holding period of the investment was less than four years. Sovereign Capital Partners positions itself as a buy-and-build specialist in the private equity industry and has executed numerous buy-and-builds in the past decade. Prior experience of private equity firms in a specific type of deal, i.e., buy-and-build, could lead to learning benefits (Aktas et al., 2013; Kengelbach, 2012). Experience thereby enhances the ability of private equity firms to execute a buy-and-build quickly, and hence, acts as a mitigating factor for longer holding periods.

Besides private equity firm experience, relevant experience on portfolio firm level will also be considered as an influencing factor on holding periods of buy-and-build strategies. M&A experience of the portfolio firm, previous private equity ownership, and continuing an already started acquisition sequence are expected to reduce holding periods.

Following the holding period, exiting the investment allows private equity firms to realise returns on their investments. In general, a successful exit route can take three forms: an IPO, trade sale, or financial buyout. Given the recent rise of buy-and-build strategies, this study examines the relationship between buy-and-build strategies and the route of exit.

This study uses a sample of 150 UK-based buy-and-build cases to examine the factors explaining holding periods of buy-and-builds. Using the holding period as a continuous variable, an OLS regression model has been applied to examine these determinants. For additional analysis, holding periods are categorised into short, medium, and long holding periods, allowing to apply a multinomial logistic regression model. Furthermore, by adding a control sample of 290 standalone private equity cases, this study compares the buy-and-build cases to "regular" cases and examines whether longer holding periods and the use of buy-and-build strategies impact the route of exit. For this, a multinomial logistic regression model has been applied. The findings can be summarised as follows.

Empirical evidence of this study suggests that the number of add-ons positively influences holding periods. Although the number of add-ons significantly increases holding period, the marginal positive effect of additional add-ons loses significance after executing more than four add-ons, indicating diminishing marginal prolongation. Moreover, it is shown that executing multiple add-on acquisitions, i.e. more than one, increases the likelihood of holding periods longer than 7 years.

Conclusive evidence is provided for the prolonging effect of industry diversifying add-ons on holding periods. In fact, the categorical approach tells that industry diversifying add-ons increase the likelihood of a long holding (> 7 years). No conclusive inferences can be drawn upon the influence of cross-border add-ons on holding period. Nevertheless, this study is able to provide evidence that private equity firms with prior buy-and-build experience are likely to have lower holding periods in subsequent deals. Prior buy-and-build experience seem to increase the likelihood of a short holding (< 3 years). Findings do not allow to detect evidence for the relationship between portfolio firm experience and holding periods. No evidence is found that M&A activity prior to buyout, previous private equity ownership of the portfolio firm, nor continuing an already initiated buy-and-build influence holding periods.

By comparing the set of buy-and-build cases to standalone private equity cases, no conclusive findings can be stated regarding the routes of exit. Although longer holding periods tend to increase the likelihood of a financial buyout, these findings are not robust when controlling for the portfolio firm's profitability. No evidence is found that a buy-and-build increase the likelihood of exiting to a financial buyer. Contrary to previous literature, buy-and-builds tend to decrease the likelihood of a public listing. However, checking for robustness and considering the limited number of observations leads this evidence to be found negligible.

This study adds to the existing literature in financial economics and private equity in a few regards. First, using a unique dataset of 150 UK-based buy-and-build cases, the findings

improve understanding of longer holding periods of buy-and-build strategies. Thereby adding to the debate of short versus long-term nature of private equity and the role of buy-and-build strategies (Kaplan, 1991; Hammer, 2016). Furthermore, this study adds to the role of learning benefits of sequential acquisition strategies (Aktas et al., 2013) and the role of experience in specific strategies on learning benefits, i.e., the specialised learning hypothesis (Kengelbach et al., 2012; Brigl et al., 2016). Last, this study adds to empirical analysis of exit routes in private equity (Jenkinson and Sousa, 2015; Hammer et al., 2017).

Besides its academic contribution, the findings have relevant insights for practitioners in private equity. Private equity firms should base their financial models to longer time horizons when executing buy-and-build strategies and in particular, when a large number of add-ons or industry diversifying add-ons are involved. Prior buy-and-build experience is expected to decrease holding periods in subsequent buyouts. Given the recent popularity of buy-and-build strategies, limited partners can expect an illiquid asset base for more than 4 to 5 years.

The remainder of this study is structured as follows. Section 2 will discuss the theoretical background regarding private equity, buy-and-build strategies, holding periods, and exit strategies. Based on relevant literature, section 3 states the research questions and corresponding hypotheses 3. Section 4 will discuss the data section, variables, and descriptive statistics. Section 5 presents the methodology of this study. The empirical results and discussion are found in section 6. Following a brief discussion on the limitations and suggestions for further research in section 7, section 8 concludes.

2. Theoretical Background

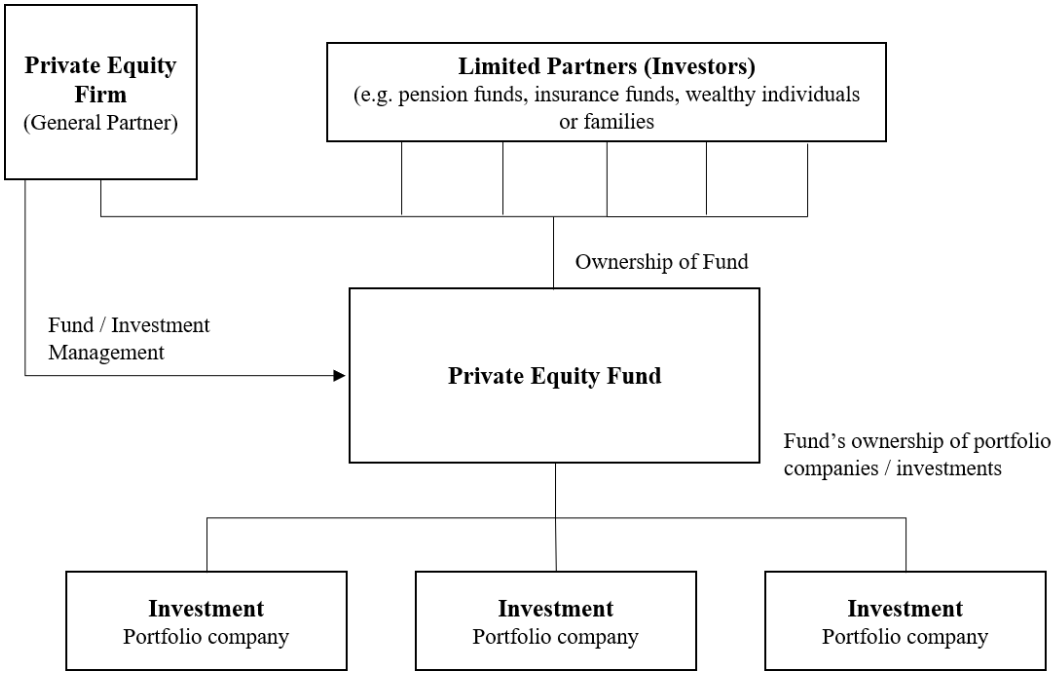
2.1 Private Equity

Private equity is mainly about creating returns by generating capital gains through selling an investment when it is made more valuable. In general, the idea is to acquire a, preferably under-priced, private company (or take a public company private), add value to the business through active management and eventually sell the business to realise the value created during the holding period. The holding period is the time from the initial investment until the sale of the invested company (Gilligan and Wright, 2014). Before introducing value creation mechanisms during holding period, it is useful to start with a brief description of the organisation of private equity funds.

The private equity fund is established by the management company, i.e. the general partners (GPs). The GPs manage the private equity fund and take all decisions regarding investment and divestments. The investors in the fund, known as limited partners (LPs),

commit to transfer capital to the private equity fund when the GPs find an investment opportunity. Typical investors include institutional investors such as insurance companies and pension funds, but also wealthy individuals or families. In general, private equity funds are closed-end funds where LPs have no active role in the decision-making processes regarding investments or divestments. Neither do LPs have specific information upfront what particular investment the GPs will make after closing the fund. Private equity funds are therefore known as "blind-pool" vehicles. The limited partnership, i.e., the fund, generally has a lifetime of around seven to ten years and is characterised by two distinct periods. The first period – five to six years – is known to be the investment period, in which all investments take place. During lifetime, the fund usually manages several portfolio firms, i.e., its investments. The remaining fund's lifetime is known as the divestment or harvesting period, where the GPs aim to sell the portfolio companies with substantial profit is known as the divestment or harvesting period. (Arcot et al., 2015; Kaplan and Strömberg, 2009).

Figure 3: Private equity fund structure



The compensation of GPs is directly tied to the performance of the fund, i.e., the financial returns. Besides being investor in the fund itself (typically 1 to 10 percent of the committed capital), GPs get compensated in terms of management fees and carried interest. Management fees are usually an annual percentage of the committed capital, and as soon as investments are realised, a percentage of the employed capital. Management fees cover most

of the running expenses of the private equity firm. After the limited partners received their preferential or minimum return, typically around 8 to 10 percent) - carried interest is distributed among the partners and sometimes other investment professionals of the firm. The carried interest is typically around 20 percent of the gains generated by the firm. The remaining 80 percent is distributed towards the LPs. This distribution of returns is widely known as the 80-20 rule. Additionally, some GPs also charge deal and monitoring fees to the companies in which they invest (Moon, 2006; Kaplan and Strömberg et al., 2009).

Existing literature within private equity often distinguishes between leveraged buyouts (LBOs) and venture capital investments (VC). Leveraged buyouts are highly leveraged majority investments in mature private companies with stable cash flows. By restructuring the company and applying several value-enhancing engineering techniques, the company is eventually sold again. The specialised investment firms involved in these types of acquisitions are known as private equity firms. In LBOs, private equity firms acquire a stake in an already private company or take a public company private. Venture capital, on the other hand, usually involves full equity stakes minority investments in start-up companies with high growth opportunities. (Gilligan and Wright, 2008; Wood and Wright, 2010). Venture capital acquires start-up companies that do not generate positive cash flows yet and are therefore too risky for a leveraged capital structure. The remainder of this study will focus on leveraged buyouts within private equity.

2.2 Value Creation in Private Equity

From an academic point of view, Jensen (1986) was one of the first to write about value creation potential in private equity, and more specifically, in leveraged buyouts. Leveraged buyouts first appeared as an important phenomenon in the 1980s. Private equity firms combine concentrated ownership stakes, powerful incentives for the private equity firm professionals, and a lean and efficient organization with minimal overhead costs. In order to realise this, private equity firms apply performance-based managerial compensation, highly leveraged capital structures, and active corporate governance to its portfolio companies. Jensen (1986) argued that the private equity structure is superior over the structure of public corporations, which have dispersed shareholders, low leverage, and weak corporate governance. He therefore predicted that LBOs would become the most implemented transaction structure in the future.

During the 1980s, the market of junk bonds grew from USD 10 billion in 1979 to USD 189 billion in 1989. This junk bond bubble was characterised by cheap debt, which is

particularly interesting for private equity firms considering their highly leveraged capital structures. Within this period of cheap debt, financial engineering became a vital value-creating mechanism in private equity. Moreover, Ivashina and Kovner (2011) argue that in terms of external debt financing, most private equity firms have a competitive advantage over strategic buyers. Private equity firms are believed to have stronger relationships with banks and are better able to understand the complicated transactions, leading private equity firms to access debt at relatively low cost. Besides financial engineering, private equity firms traditionally relied on governance engineering and multiple arbitrage (Kaplan, 1989; Kaplan and Stromberg, 2009; Gompers, Kaplan, and Mukharlyamov, 2016).

Financial engineering occurs through the financial leverage effect. Private equity investments are financed with a large amount of external debt, creating a valuable tax shield of debt. Besides, Jensen (1986, 1989) describes the free cash flow theory to be a major source of value creation through financial engineering. The highly leveraged capital structure disciplines managers to use their cash flows efficiently. The commitment to future debt obligations, i.e., repayments of debt and interest payments, leave no room for inefficient allocation of cash flows. Hence, by aligning the incentives of management with the private equity owner, agency costs are reduced, creating shareholder value. Despite its compelling theoretical reasoning, the theory of disciplining management by a highly leveraged capital structure is marked ambiguously from an empirical perspective. Work of Lehn and Poulsen (1989) and Kaplan (1989) find support for this theory, whereas Opler and Titman (1993) and Renneboog et al. (2007) do not find evidence.

Kaplan and Strömberg (2009) argue that private equity firms suggest the management to have significant investments in the portfolio firm, i.e. ‘skin in the game’. This allows management have exposure towards up- and downside return potential and aligns incentives of the private equity firm and management. Kaplan and Strömberg (2009), predicted that a private equity firm closely monitors the performance of management and is not reluctant to replace management if it underperforms. Gertner and Kaplan (1996) argue that private equity firms more frequently meet with management and that their portfolio firms tend to operate with smaller boards. These governance engineering mechanisms proved to be an excellent source of value-creation.

Another traditional source of value creation is multiple arbitrage. Private equity firms can generate highly positive returns, without operational improvements, by selling the company for a higher valuation multiple compared to the valuation multiple at which it acquired the company (Axelson et al., 2013). This situation might exist when private equity

firms acquire a company in a "cold" market, with relatively low market valuations, and sell the firm in a "hot" market, with relatively high market valuations.

Attractive returns from the 1980s led institutional investors to commit capital to private equity increasingly, causing the number of funds in the market to exceed the available investment opportunities. An active M&A market and an overrun of private equity funds led the competition for deals to intensify. Acquisition premiums paid by winning parties in bidding contests escalated[1], leading to the fluctuation of returns (Braun et al., 2017). Economic turmoil at the beginning of the 1990s caused the junk bond market to crash and many LBOs to end up in defaults or bankruptcies. By the early 1990s, LBOs nearly vanished, and the private equity industry in the United States dried up. Nevertheless, the private equity industry recovered in the mid-1990s, but traditional sources of value creation, such as financial engineering, became less valuable. Axelson et al. (2013) discuss that access to cheap financing proves to be more volatile and, if available, less present as a distinct source of value creation. Moreover, as many firms advanced their governance standards in recent decades, governance improvements are more difficult to achieve nowadays (Kaplan, 1997). Private equity firms therefore needed to shift focus to other sources of value creation and became more reliant on operational performance.

Operational engineering refers to the industry and operating expertise that is applied to private equity investments. Kaplan (1990) finds that, following an LBO transaction, the operational improvements are the result of increasing operating income, decreasing capital expenditures and increasing net cash flows. Lichtenberg and Spiegel (1990) and Smith (1990) find comparable results in studying operational performance of portfolio companies. More recent studies find that employment, asset and sales growth rates of portfolio firms exceed those of non-private equity owned firms (Boucly et al., 2011). Bernstein et al. (2010) find that industries with private equity involvement grow faster in terms of production, value-added and employment as firms without private equity involvement. Complementary, the study of Acharya et al. (2013) provides evidence that in a private equity transaction, sales and operating margin improvements lead to higher abnormal performance. While the vast majority of the studies agree that operational engineering has become an increasingly important source of value creation, the study of Guo et al. (2011) finds that multiple arbitrage and realised tax

[1] Research shows that when bidders are uncertain about the value of an investment, the highest bidder frequently overestimates its value and overbids (Foreman and Murnighan, 1996). This is referred to as the winner's curse (Kagel, 1995).

benefits from increased leverage are each as economically important as operating gains in explaining realised returns.

Returning to Jensen's (1986) hypothesis, arguing that private equity would be superior over public corporations, a vast amount of literature argues that private equity firms are indeed outperforming other asset classes. According to relevant literature, the private equity industry is well-able to create excess return within short-time periods (Higson and Stucke, 2012; Ang et al., 2013; Robinson and Sensoy, 2013). Kaplan and Schoar (2005) have examined the returns net of management fees, i.e. the 'pure' net return inclusive all fees, expenses, and taxes, and provide evidence that private equity firms outperform public markets on average. Higson and Stucke (2012) present conclusive evidence that US buyout funds have significantly outperformed the S&P 500 in all vintage years from 1980 until 2009. Harris et al. (2014) find that private equity performance consistently outperformed public markets in terms of returns. They found that private equity outperforms the S&P 500 with an average of 20 to 27 percent over a fund's life, and more than 3 percent annually. Private equity has therefore become an increasingly exciting asset class for investors.

While argued that private equity firms are outperforming other asset classes in terms of financial returns, critics argue that this comes at the cost of long-term firm and societal value. Critics point out that due to restructuring by private equity firms, leveraged buyouts often come at the costs of employee's sufferings jobs and wage cuts. The recent work of Davis et al. (2014) examines buyout level employment growth from a job creation and destruction angle. Findings indicate that private equity buyouts have a higher job reallocation pace and only one percent net job losses. Moreover, Nathusius and Achleitner (2009) execute a meta-analysis on job destruction of private equity and are not able to find conclusive evidence. As academics are not in consensus about the job destructing nature of private equity, this criticism is regarded as unfounded.

In studying the impact of private equity on wages, Amess et al. (2008) are not able to find a significant relationship. Whereas critics often argue that private equity ownership comes at the cost of resource allocation to employees, the opposite holds. Bacon et al. (2004) and Bruining et al. (2007) find conclusive evidence that employee training and involvement have increased after the buyout.

The other stream of criticism is related to the short-term orientation of private equity, thereby deteriorating long-term firm value. Recent work of Lerner et al. (2011) examine investments in innovation as measured by patenting activity as a form of long-run activity. They find that firms involved in a leveraged buyout have patents that are more cited, have no

shifts in the fundamental nature of research, and become more concentrated in crucial areas of the companies' innovative portfolio. In line with this, Amess (2016) finds that private equity buyouts undergo increasing quality-adjusted patent stock in the three years post-buyout. Henceforth, the short-termism of private equity turns out to be less destructive than expected and, in fact, shows that private equity does not sacrifice long-term performance for short-term financial profits.

2.3 Emergence of a new strategy: buy-and-build strategy

The key players in the market of corporate control, i.e., the takeover market, are strategic and financial buyers (Bansraj et al., 2019). Strategic buyers generally acquire companies to realise long-term operational synergies through integration. Financial buyers, e.g., private equity firms, traditionally look for preferably undervalued targets with high cash-generating potential. Applying the previously discussed engineering techniques, private equity firms aim to eventually sell the company for a higher multiple when exit opportunities become sufficiently appealing (Kaplan and Strömberg, 2009). In the late 1990s, private equity firms faced increased competition from strategic buyers: industry incumbents trying to consolidate the industry or new entrants trying to enter the target's industry. The increased competition, in combination with commoditising traditional value creation levers such as governance and financial engineering led the private equity firms to develop new hybrid strategies: buy-and-build strategies (Bansraj et al., 2019). Bansraj et al. (2019) define a buy-and-build strategy as buying the "platform" assets and building scale and scope through subsequent acquisitions as a primary source of business growth. In accordance, Hammer et al. (2017) define the buy-and-build strategy, also referred to as an inorganic growth strategy, as a strategy where the portfolio firm – acquired in the initial buyout – serves as a platform for subsequent add-on acquisitions. Since the platform, as well as add-on acquisitions, are financed with a large fraction of external debt, buy-and-builds are also known as leveraged build-ups (Borell and Heger, 2013).

Using a global sample, Hammer et al. (2017) find that the number of buy-and-build exits in percentage of all private equity exits rose from 25 percent in 2003 to 39 percent in 2012, showing the significant rise of buy-and-build strategies in private equity. Hammer et al. (2017) find that the probability of subsequent acquisitions is particularly high if the private equity firm is experienced and has reputational capital. According to Smit (2001), the platform should indeed contain exceptional characteristics such as a reputation for high quality. Portfolio firms tend to benefit from the well-developed deal flow, the network, and access to financing

of an experienced private equity firm with a valuable track record. Borell and Heger (2013) argue that private equity investors select more profitable firms as a platform for buy-and-build transactions. Large and profitable firms provide the private equity firm with a scalable platform for consolidation. Bansraj and Smit (2017) support this statement, by finding that the size of the portfolio firm is positively related to the probability of following an inorganic growth strategy. Hammer et al. (2017) find that portfolio firms in a moderately fragmented industry are most likely to execute add-on acquisitions. Moderately, since there is opportunity for consolidation, and the platform is of sufficient size to build scale and scope. Bansraj and Smit (2017) also deem the degree of fragmentation of high importance, since it provides more available platform and follow-on acquisitions as well as readily available exit opportunities. Moreover, investing in fragmented industries allow the private equity firm to avoid antitrust concerns (Brown et al., 2004). Previous M&A experience of the portfolio firm is regarded as beneficial for the execution of a buy-and-build because it could reduce transaction costs of subsequent add-ons and speeds up the acquisition process (Hammer et al., 2017).

According to Smit (2001), a buy-and-build strategy can create value in multiple ways. Similar to a traditional LBO, the financial leverage effect creates value. Platform companies are benefiting from the financial leverage effect as the follow-on acquisitions are generally financed with substantial levels of debt. The highly leveraged capital structure strengthens managerial incentives to improve operating efficiency and cash flow management. Second, an inorganic growth strategy can unlock synergistic benefits. Borell and Heger (2013) argue that since the platform and subsequent add-ons can benefit from knowledge and technology transfers, gain access to new markets for their products and use technology and resource spill-over for their production processes. Beyond these strategic advantages, reduction in costs - through economies of scale and scope - and tax benefits - use of tax losses form net operating losses; use of free debt capacity -, are also considered as synergistic benefits of the build-up (Ross et al., 2002). Borell and Heger (2013) find that in a buy-and-build, investors bring together platforms with lower capacity utilisation and lower returns, and add-ons with higher utilisations and higher returns to allocate resource and capacity more efficiently. Hence, stimulating total firm's performance. Besides, multiple arbitrage is contributing to the value creation in buy-and-builds. Larger companies generally have higher valuation multiple compared to smaller companies. By acquiring smaller companies as add-ons with a lower valuation multiple than the eventual exit valuation multiple of the build-up, the value of the whole company is greater than the sum of its parts. Bansraj and Smit (2017) argue that as the

platform company builds up, potentially expanding geographically, the private equity investor is also likely to have more attractive exit opportunities.

Despite its relevance, only a few studies have focused on the return potential of buy-and-build strategies. Acharya et al. (2013) find outperformance of deals which include add-ons in terms of margin and multiple improvements. Nikoskelainen and Wright (2007) find that acquisition activity during holding period increases the likelihood of positive deal returns. Valkama et al. (2013), conclude that inorganic growth during holding period outperforms cases with only organic growth in terms of financial returns.

2.4 Holding Periods

Traditionally, the typical holding period of private equity investments, i.e., the time between entry and exit of the investment, is known to be four to five years (Strömberg, 2007; Jenkinson and Sousa, 2015; DeGeorge et al., 2016; Bansraj et al., 2019). However, as argued by Mäkiho and Torstila (2017) and Hammer (2017) holding periods have gone up significantly from 2004. Mäkiaho and Torstila (2017) find that before the 2007-2008 financial crisis, the average holding period was 4.7 years. After the financial crisis, the average holding period increased to 5.8 years. Hammer (2016, 2018) finds that holding periods are up with 60 percent, from an average of 3.3 years in 2003 to 5.3 years in 2012. Despite the fact that relevant industry reports place emphasis on this trend (Bain 2018; Bain 2019; Preqin 2015), increasing holding periods have not been a regular part of discussion in literature.

Holding periods are regarded as highly important for private equity investors. The private equity fund is known as a fixed life-time fund, often around ten years. Hammer et al. (2017) argue that holding periods lasting longer than four years are perceived to erode private equity fund returns. When a private equity fund is near to its contractual life, and investments are not realised yet, the GPs face pressure to realise its investments. High pressured sellers often agree with lower multiples and valuations, resulting in lower returns. Longer holding periods make it therefore more difficult to generate sufficient financial returns and tie up committed capital, both of concern for the GPs and LPs. Given the way GPs are incentivised - they earn carried interest over the hurdle rate expressed in the fund's internal rate of return (IRR) - the timing of the exit is highly valuable for GPs. A quick exit, i.e., a short holding period, will boost returns and gives certainty that these returns are in fact realised (Hammer, 2016; Jenkinson and Sousa, 2015). Valkama et al. (2013) concluded that longer holding periods negatively correlate with the equity IRR (-0.44 at a 1 percent significance level). Besides,

longer holding periods are known to negatively affect future fundraising (Cumming et al., 2005; Hammer, 2016; Loos & Schwetzler, 2017). A private equity firm generally raises a new fund every three to five years. Reputational capital and track record are of crucial importance for fundraising (Kaplan and Schoar, 2005; Axelson, Strömberg, and Weisbach, 2009; Phalippou, 2008). Potential LPs for new funds are not only looking at past performance but also focus on the investment track record of recent funds. Unrealised investments or disappointing returns could therefore negatively affect future fundraising.

Holding periods can be influenced in many regards. First, holding periods are highly subject to opportunities in the market at a certain point in time. Ljungqvist and Richardson (2008) argue that cheap debt results in higher competition between private equity firms, therefore resulting in more attractive exit potential. In addition, Gompers et al. (2015) find that active M&A and IPO markets explain as much in the choice of exit as fundamentals such as operational performance. Hence, these factors increase the ability of the private equity firm to exit the investment at their preferred timing and price. Giot et al. (2014) link holding periods to the experience of private equity firms. Their study argues that younger private equity cannot deploy capital as quickly and have longer holding periods compared to more experienced private equity firms. Possible reasons are a lack of experience in deal sourcing and value creation during holding periods. Moreover, the nature of the private equity firm might influence holding periods. Arcot et al. (2015) argue that some private equity firms focus on longer time horizons, for example, when affiliated to institutions such as pension funds and banks.

As highlighted in previous sections, operational engineering became increasingly important as a source of value creation. Gompers et al. (2015) argue that the timing of exit is subject to the state of the pre-determined operational plan. Value can be created through organic growth, but also through inorganic growth, e.g. buy-and-build strategies. Buy-and-build strategies involve (multiple) add-on acquisition, incurring additional time-consuming processes, monitoring costs, and distract focus from organic growth. Hammer (2016, 2018) finds that buy-and-build strategies increase holding periods by around 20 percent.

2.5 Exit routes

Following the holding period, the exit allows the private equity firm to realise return on its investment. In general, an exit can be achieved in three different forms: an initial public offering, a trade sale, and a financial buyout.

Existing research highlighted initial public offerings (IPOs) as the most preferred exit route. An IPO refers to offering shares of a private corporation to the public market by issuing new stocks. According to Cao and Lerner (2009), Nikoskelainen and Wright (2007), and Gompers and Lerner (2004), IPOs are the most attractive exit routes for private equity firms in terms of financial returns. Furthermore, for younger private equity firms, IPOs could serve as an attractive marketing device for raising subsequent funds (Jenkinson and Sousa, 2015). However, IPOs have decreased in popularity and the majority of private equity exits are trade or secondary exits. Kaplan and Stromberg (2009), who have studied a large number of LBOs between 1970 and 2007 find that the popularity of IPOs radically decreased over the years, from 28 percent in 1970 - 1984 to 1 percent in 2006 - 2007.

In a study of 17,781 worldwide leveraged buyout transactions from 1970 to 1984, Kaplan and Stromberg (2009) find that the most common exit route is a strategic sale with 38 percent of exits. The term trade sale applies to any kind of strategic or industrial investor, such as competitors, suppliers, or customers. Trade sales might be particularly interesting when targets offer a large synergetic potential for the acquirer. Traditionally, trade sales do not represent the most attractive exit channel, as IPOs often results in higher returns. However, as Peterman and Lai (2009) argue, if an IPO is not an option, for example during a financial crisis with low investor confidence, a trade sale might be preferable. In poor economic circumstances, the proceeds of a trade sale could be higher compared to a public listing. Also, strategic investors usually include revenue or cost synergies in their valuations, and hence, including premiums for their investments. Another advantage of the trade sale over IPOs is that at trade sale allows to sell 100 percent immediately, which with an IPO exit is often not possible due to a lock-up period[2] (Pindur, 2007).

In a secondary buyout, the private equity firm sells the portfolio to another private equity firm, instead of bringing it public or selling to a strategic party. This route has increased tremendously over time. Kaplan and Strömberg find that secondary buyouts were responsible for 24 percent of the exits in the period 1970 to 2007. For their sample of 1,022 European private equity exits from 2000-2014, Jenkinson and Sousa (2015) find that financial buyouts were responsible for 43 percent or the exits, demonstrating the increased popularity of secondary buyouts. Within Europe, secondary buyouts became the most common exit route over the years. The increased popularity of financial buyouts can be explained by the rising

[2] The lock-up provision is a contractual condition that prevents insiders from selling the stock immediately after public listing, usually a period from 90 to 180 days.

number of funds and growing heterogeneity in terms of specialisation, size, and stage of investments. The recent wave of secondary buyouts may have occurred because the portfolio companies grew, matured, became active in different industries, and were sold to a private equity company being larger or specialised in a particular industry (Jenkinson and Sousa, 2015).

Exit routes are highly dependent on market conditions. Private equity firms try to realise the best possible exit, but capital and credit market conditions lead to different windows of opportunity. Equity market conditions play an influential role in explaining the window of opportunities at the time of exit. The number of IPOs in the market often occurs in waves. These "hot" IPO markets are periods of high public market valuations and lead to attractive exit opportunities (Jenksinson and Sousa, 2015). On the other hand, periods with low public market valuations, i.e., "cold" IPO markets, but with cheap debt and few covenants are stimulating the market for secondary buyouts (Shivdasani and Wang, 2011).

Jenkinson and Sousa (2015) find evidence that public listings serve the purpose of an early exit route. They argue that exiting through an IPO in the first years of the fund is an attractive marketing device for future fundraising. However, when IPOs cannot be realised within a short period, it is more likely that the company will be sold to a financial or strategic buyer.

When the fund comes near to the end of its lifetime and investments are not realised yet, the GPs face exit pressure and wants to realise its investments as quickly as possible. Exit pressure might therefore lead to a different window of opportunity. Cumming and Macintosh (2003) have argued that when the fund approaches its maturity and GPs face exit pressure, it may be that portfolio companies are not yet ready for an IPO or trade sale. Although traditionally regarded as the least attractive exit route, secondary buyouts have attractive characteristics for the selling party. The sale of the company is often organised by auction, driving up prices with multiple potential bidders. The final purchaser pays the full price at exit, and the selling party is certain about what returns will be achieved, in comparison to an IPO. Moreover, selling to another private equity firm often leads to a quicker selling process, which is attractive when GPs face exit pressure and quickly want to realise their investments. Jenkinson and Sousa (2015) argue that private equity firms are highly driven to sell portfolio firms with high returns, the lowest risk and the shortest delay in receiving the proceeds of the sale. Secondary buyouts are likely to achieve these goals.

Additionally, the choice of exit strongly depends on the portfolio company, in which some are more suited towards a particular exit route. Pagano et al. (1998) demonstrate that

larger companies are likely to exit through an IPO. This is supported by Cumming and Macintosh (2003) and Sudarsanam (2005), arguing that firms should reach a certain threshold level in terms of size in order to exit publicly. Larger firms are better able to bear the fixed costs and are more visible for public investors. Bienz and Leute (2008) argue that highly profitable companies, requiring less monitoring are more likely to exit through a public listing. Large but less profitable companies are more likely to be sold to a strategic buyer.

Accordingly, Sudarsanam (2005), argues that a strategic sale is more likely to be used as an exit for smaller portfolio firms with relatively lower margins, having more monitoring needs. Jenkinson and Sousa (2015) find that smaller companies showing strong growth are more likely to exit to a strategic buyer. The attractiveness of a secondary buyout increases for companies with better margins. Due to the highly leveraged structure of private equity owned companies, the company should generate sufficient cash flows and have healthy margins to carry the debt and interest obligations involved in a subsequent LBO (Jenkinson and Sousa, 2015).

3. Research question and hypotheses

3.1 Research question

Analogous to increases in holding period, buy-and-build strategies have gained significant importance in the past decades. Hammer (2016) was the first to link buy-and-build strategies to the noticeable increase in holding periods over time. Buy-and-build strategies are known to increase holding periods for several reasons. First, Hammer (2016) explains that pre-deal processes are likely to result in time-consuming processes. (1) Obtaining information about possible targets, (2) due diligence processes, (3) communication with lawyers, advisors and other institutional bodies, (4) negotiations, and (5) deal-financing are all contributing to additional time and costs related the execution of add-on acquisitions. Due to additional integration issues and monitoring issues, add-ons do not immediately reflect its synergetic benefits and value creation potential. Private equity firms are therefore more likely to hold the asset longer to realise its full value creation potential (Smit, 2001; Kaplan and Strömberg, 2009). Cumming and Johan (2011) argue that inorganic growth distracts focus from organic growth, leading to opportunity costs. In addition, when firms grow in size and complexity, longer holding periods are needed for the portfolio firm to grow in value. Based on this theoretical foundation, buy-and-build strategies are known to increase holding periods of private equity investments. Hammer (2016) explains that the increased illiquidity inherent to buy-and-build acquisitions is a “dark side” of the praised strategy.

This study aims to find determinants explaining the holding periods of buy-and-build strategies. In addition, the changing private equity landscape and the emergence of buy-and-build strategies might have implications for the exit. Portfolio firms engaged in a buy-and-build sequence are known for longer holding periods, have different value creation levers and firm characteristics compared to non-buy-and-build firms, leading to potential differences in the route of exit. The main research question is therefore stated as follows:

What explains the holding period of buy-and-build strategies and do buy-and-build strategies influence the route of exit?

3.2 Add-on characteristics and holding periods

When involved in a buy-and-build sequence, portfolio firms grow larger in size and complexity. Integration of add-ons takes time and synergetic benefits do not immediately reflect its value. Additionally, growing sin size and complexity incurs monitoring complexities. However, each buy-and-build sequence has different characteristics in terms of quantity and complexity of add-on acquisitions.

Hammer (2016) argues that additional add-on acquisitions come with additional negotiation and enforcement costs. Every additional acquisition takes effort and time from the private equity investors. As discussed in the previous section, pre-deal processes coming with additional add-ons are time-consuming and costly. Moreover, add-ons need to be integrated and as the firm grows in size and complexity, monitoring becomes more complex. The portfolio company is therefore less able to focus on core business during a transaction. Cumming and Dai (2011) and Humphery and Jenner (2013) refer to this as the limited attention hypothesis. Despite abundant M&A experience of the private equity firms, being sophisticated financial intermediaries, these transaction and opportunity costs are likely to incur additional costs and time (Cao et al., 2015), leading to longer holding periods. Following these arguments, it is expected that the holding period of private equity investments is influenced by, amongst other, the quantity of add-on acquisitions. Hence, the following hypothesis can be constructed:

H1a: The number of add-ons positively influences the holding period

A vast amount of existing literature suggest that cross-border and industry diversifying acquisitions are more time-consuming and costly than domestic and industry consolidating

acquisitions. By operating in an unfamiliar context, pre-deal information asymmetry arises between the target and the acquirer. Moreover, acquirers might be confronted with higher transaction costs, since negotiations take longer and fees to advisors accumulate for a longer period of time (Capron and Shen, 2007; Servaes and Zenner, 1996).

As discussed by Hammer et al. (2016), there are several theoretical arguments why cross-border acquisitions extend holding periods. First, when add-on targets are not in geographic proximity of the platform company, the pre-deal information asymmetry is likely to be higher and the production of information is more difficult (Malloy, 2005; Butler, 2008; Lau and Yu, 2010). Additionally, legal regimes and accounting standards are likely to be different within an international contexts (Erel et al., 2012; Rossi and Volpin, 2004). These pre-transaction complexities are likely to lead to longer due diligence processes when doing add-on acquisitions Besides the pre-transaction process, complexities of executing cross-border add-ons are reflected in integration and monitoring of the add-ons. As argued by Ahern et al. (2015), differences between countries may incur higher coordination costs, hence slowing down the integration process. In addition, these cultural differences and geographic proximity complicate monitoring of the add-ons. Henceforth, it takes longer before the value of the add-ons is reflected in the portfolio firm's value, resulting in potential extension of the holding periods. This results in the following hypothesis:

H1b: Cross-border add-ons are positively related to holding period

Servaes and Zenner (1996) argue that industry diversifying acquisitions lead to increased buyout duration. Operating in unfamiliar contexts leads to higher pre-deal information asymmetry issues for unrelated acquisitions. The following uncertainty regarding the quality of the add-on results in higher pre-deal transaction costs and could lead to adverse selection (Akerlof, 1970). Additionally, industry diversifying acquisitions often lack management attention, make monitoring more difficult and require more resource allocation (Humphery-Jenner, 2013). Hence, the following hypothesis can be stated:

H1c: Industry diversifying add-ons are positively related to holding period

Following the theoretical arguments above, being involved in both industry diversifying- and cross-border add-ons might result in an even stronger positive effect on holding periods. Therefore, the following hypotheses can be presented:

H1d: Executing both cross-border and industry diversifying add-ons results in a stronger positive effect compared to the standalone effects

3.3 Private equity firm experience and holding periods

As discussed in the previous sections, buy-and-build strategies have gained importance in the private equity industry in the past decades. Research focused on the return potential of buy-and-build strategies is merely positive (Nikoskelainen and Wright, 2007; Acharya et al., 2013; Valkama et al., 2013). This past success of buy-and-build strategies has not remained unnoticed and buy-and-build strategies have therefore gained popularity.

Following the prime performance of past buy-and-build strategies, private equity firms could wish to mimic past performance in subsequent cases. Aktas et al. (2013) find that acquirers that undertake multiple acquisitions become more skilful about the acquisition process, allowing to secure benefits in later deals. Brigl et al. (2016), find that if a general partner has prior buy-and-build experience, performance of following sequential acquisition strategies is improved. In their study of learning benefits of serial acquirers, Kengelbach et al. (2012) find a positive relation between acquisition experience and performance of buy-and-build strategies. They argue that learning through experience does not necessarily depend on the quantity of acquisitions, but by repetitiveness of specific deals, serial acquirers can gain proficiency in these types of deals. This is known as the specialised learning hypothesis.

Following the related literature, it can be argued that private equity firms with experience in specific deals, e.g. buy-and-builds, potentially benefit from learning experiences, resulting in a smoother process in subsequent buy-and-builds. Learning benefits might lead to quicker acquisition processes and hence, decrease holding periods. Therefore, the following hypothesis can be constructed:

H2: Prior buy-and-build experience on the private equity firm level has a negative effect on lower holding periods

3.4 Portfolio firm experience and holding periods

Whereas experience of the private equity firm is expected to impact holding periods, experience and history of the portfolio firm is also deemed to be important. Prior acquisition experience could lead to lower holding periods for two main reasons. First, as Aktas et al. (2013) point out, acquirers that undertake multiple acquisitions may become more skilful about

the acquisition processes and secure larger benefits in follow-on deals. Learning benefits obtained in previous acquisitions are beneficial for integration of follow-on acquisitions, increasing the ability to integrate more quickly. Second, Servaes and Zenner (1996) argue that experience in the acquisition process leads to lower transaction costs. Hence, subsequent acquisitions are expected to be less time-consuming. Both arguments provide rationale that firms having previous acquisition experience have lower holding periods. Therefore, the following hypothesis can be constructed:

H3a: Prior M&A experience on the portfolio firm level has a negative effect on holding periods

In addition, the vendor source could explain variation in holding periods. Bansraj and Smit (2017) argue that transactions in which the previous owner was a private equity owner potentially affects future company performance. Jelic and Wright (2011) argue that in financial buyouts, little room for efficiency improvement exists as the previous private equity owner already introduced systems to enhance efficiency. Moreover, private equity owners often require the portfolio firms to report regularly and carefully. With reporting being up to date, less information asymmetry is present for the subsequent buyer. Given these arguments, it is expected that portfolio firms have lower holding periods under subsequent private equity ownership. This can be translated into the following hypothesis:

H3b: Portfolio firms involved in a secondary buyout are expected to have lower holding periods

While both M&A experience and previous private equity ownership are expected to decrease holding periods, the combined effect might be even stronger. In fact, the combination can occur in the event the portfolio firm continues an inorganic growth strategy under new private equity ownership. The subsequent private equity owner exploits the left-over potential and continues the buy-and-build strategy, known as the continuation hypothesis (Hammer et al., 2017). The subsequent private equity owner is able to continue the portfolio company's ongoing strategy with an already sizeable platform for consolidation, and consisting of managers which are likely to be experienced in acquisition processes. Moreover, firms under previous private equity ownership are likely to up-to-date (financial) reporting standards, as often required by the private equity owners. To add, there is little room for efficiency improvements. Hence, the private equity firm can have increased focus on inorganic growth.

These conditions could be beneficial for a quicker sequential acquisition process. Hence, the following hypothesis is stated:

H3c: Portfolio firms with previous M&A experience and involved in a secondary buyout, i.e. continuing a buy-and-build, are expected to have lower holding periods

3.5 Exit routes

While exits are highly subject to market characteristics, the limited lifetime structure of a private equity fund leads private equity investors to have preferences for exit routes based on the holding period of their investments. Jenkinson and Sousa (2015) find evidence that public listings are used as an early exit route. They argue that exiting through an IPO in the first years of the fund is an attractive marketing device for future fundraising. However, when IPOs cannot be realised within a short period of time, it is more likely that the company will be sold to a financial or strategic buyer. When the fund comes near to the end of its lifetime and investments are not realised yet, the GPs face exit pressure and wants to realise its investments as quick as possible. Exit pressure might therefore lead to a different window of opportunity. Cumming and Macintosh (2003) have argued that when the fund approaches its maturity and GPs face exit pressure, portfolio companies may not yet be ready for an IPO or trade sale. Although traditionally regarded as the least attractive exit route, secondary buyouts have attractive characteristics for the selling party. The sale of the company is often organised by an auction, driving up prices with multiple potential bidders. The final purchaser pays the full price at exit, and the selling party is certain about what returns will be achieved, in comparison to an IPO. Moreover, selling to another private equity firm often leads to a quicker selling process, which is attractive when GPs face exit pressure and quickly want to realise their investments (Jenkinson and Sousa, 2015). Valkama et al. (2013) argue clear differences between holding periods and exit routes: short holding periods are likely to results in IPOs, whereas long holdings are likely to result in financial buyouts. Therefore, the following hypothesis is stated:

H4a: Longer holding periods increase the likelihood of a financial buyout

As argued, the route of exit is dependent on market characteristics and potential exit pressure faced by private equity firms. Nevertheless, most private equity investment are backed by a pre-determined operation plan and a clear exit strategy (Gompers et al., 2015; Klier et al.,

2009). Based on the portfolio company's characteristics, private equity firms construct a pre-determined operational plan, e.g. organic growth versus inorganic growth. Individual portfolio company characteristics and the operational plan are likely to impact the route of exit. For example, it is argued that larger firms are better able to bear high fixed costs of an IPO and are better visible for investors (Brau et al., 2003; Pagano et al., 1998). Nikoskelainen and Wright (2007) indeed find that larger portfolio companies are more likely to exit through a public listing. Given that buy-and-build strategies are growing in size due to the execution of add-on acquisitions, buy-and-builds are likely to increase the likelihood of an IPO (Hammer et al., 2017). However, Bienz and Leite (2008) argue that the choice of exit depends on the monitoring needs of the portfolio firm. They state that the IPOs are associated with less monitoring needs due to their dispersed ownership structure. Firms with high monitoring need often benefit from large shareholders, fostering decision-making processes. Due to potential ongoing integration processes and value of the add-ons not readily been exposed in terms of profitability, buy-and-builds may require additional monitoring. These additional monitoring needs might therefore decrease the likelihood of an IPO.

In fact, as observed and extensively discussed, buy-and-build strategies are found to increase holding periods, which is likely to decrease the likelihood of an IPO (Valkama et al., 2013; Jenkinson and Sousa, 2015). As hypothesised, longer holding periods increase the likelihood of a financial buyout. Moreover, the record number of buyout funds in the market lead private equity firms to develop differentiating capabilities and to specialize in terms of size and industry (Ghai et al., 2014). According to Jenkinson and Sousa (2015), having more heterogeneity among potential financial buyers increases the likelihood of a financial buyout. When a platform grows larger or becomes active in different industries through follow-on acquisitions, this could increase attractiveness of a financial buyout. Hammer et al. (2017) also find that financial buyouts are correlating with add-on acquisitions and his reasoning builds upon two hypotheses. First, add-on acquisitions increase the probability of a financial buyout when the buy-and-build is finished and the subsequent owner can focus on other value creation measures. This is referred to as the complementary skill hypothesis. Second, Hammer et al. (2017) mention the "continuation hypothesis", implying that the subsequent private equity owner can exploit the left-over potential for acquisition and continues the buy-and-build strategy. Given the presented argumentation, the following hypothesis can be constructed:

H4b: Companies which have gone through a buy-and-build sequence are more likely to exit through a financial buyout

4. Data

One of the major challenges of empirical research in private equity is the availability of data. Data on private equity transactions and target company financials is limited because reporting requirements for private companies often lack strictness. Furthermore, the ownership structure of deals and use of holding companies complicate identification of buy-and-build strategies. Another problem with buy-and-build strategies is that follow-on acquisitions mainly involve smaller deals, often lacking availability of data (Bansraj and Smit, 2017). With these data limitations being present, databases do not always provide accurate information. In order to improve reliability, cross-checking data be through the respective company's websites and available press releases is necessary.

In line with recent work concerning buy-and-build strategies within private equity (see e.g. Bansraj and Smit, 2017; Bansraj et al., 2019; Hammer, 2017), the data is collected from Bureau van Dijk's Zephyr Database. Due to the high coverage and reliability of deals, Zephyr has become a popular source of transaction data for private equity and M&A researchers. Zephyr has the advantage that the build-up tag can be used in order to identify buy-and-build strategies, which is particularly useful for this study. Zephyr defines deals with a build-up tag as follows: "when a private equity company builds up the company it owns by acquiring other companies to amalgamate into the larger firm, thus increasing the total value of its investments through *synergies between the acquired"* (Bansraj et al., 2019). This definition fits well into the earlier discussed theoretical framework of buy-and-build strategies.

This study limits itself to deals where the portfolio firm is headquartered in the United Kingdom. The United Kingdom is the largest and most mature private equity market, providing a sufficient number of private equity transactions. Moreover, due to strict reporting standards, the UK market allows to include company financials (Bansraj and Smit, 2017). Restricting the study to one country limits potential cross-border macro-economic effects and regulatory difficulties.

4.1 Sample selection

Buy-and-build sample. In order to form a set of portfolio firms following a buy-and-build strategy, deals categorised with the build-up tag in Zephyr were extracted. Using the unique BvD company identification numbers, Zephyr allows to find the corresponding entry and exit transactions of the portfolio firm executing the buy-and-build strategy. Following the approach of Hammer (2016), a buy-and-build strategy is identified when a private equity firm

acquires a company, i.e., the platform acquisition, with which it undertakes at least one add-on, classified by the build-up tag, during the holding period of its investment. In Zephyr, deals are classified in acquisitions, mergers, institutional buyouts, management buy-ins, management buyouts, IPOs, and share buy-backs. Since the platform acquisition is the initial investment of the private equity firm in the portfolio firm, only deals which are classified as acquisitions, IBOs, MBOs and MBIs are taken into account. Moreover, in line with recent literature, only platforms involving majority stakes are included. The time restriction for the platform acquisitions is set from 01/01/1998 until 31/12/2018. Using the unique BvD company identification numbers, it is possible to track the portfolio companies over time, allowing to find the corresponding exits. Only exits from 01/01/2007 until 31/12/2018 are included. This 12-year timespan is chosen because it is most recent and involves growing and declining markets. In order to avoid changes within the database to cause incorrect categorisations, all deals were cross-checked manually. This was done by hand-collecting information through the respective private equity company's websites, available press releases and deal comments in Zephyr. A total of 150 buy-and-build cases have been identified.

Non buy-and-build sample. To identify deals that have not followed an inorganic growth strategy, i.e. standalone private equity investments, all private equity deals were collected from 01/01/1998 until 31/12/2018 in the United Kingdom. Similar to the buy-and-build sample, only deals which are classified as acquisitions, IBOs, MBOs and MBIs into account. The deals should only involve majority stakes. Similarly, portfolio firms which were involved in an exit from 01/01/2007 until 31/12/2018 have been collected. Removing deals with firms having unknown BvD ID numbers and removing deals which have already been identified as buy-and-builds, a total of 290 standalone private equity deals with known entry and exit are found.

4.2 Variables

4.2.1 Dependent variables

Holding period. In order to test hypotheses 1 to 3, holding period is used as dependent variable. The holding period is defined as the time between entry and exit and is measured in years *(exit date – entry date / 365).* Data is collected through the Bureau van Dijk Zephyr Database. Missing or incomplete was checked and added through the companies' websites and press releases.

Exit route. Exit route is used as dependent variable in order to test for hypotheses 4a and 4b. Considering only successful exits, the routes of exit are categorised in a financial buyout, a strategic buyout or an IPO. Zephyr is able to identify secondary buyouts and clearly mentions a public listing on an exchange. Hence, the exit routes could be identified. To avoid incorrect categorisations, exits were checked through the private equity company's websites and available press releases.

Table 1: Distribution by year of exit

	All deals		B&B			Non-B&B		
Year	**N**	**HP**	**N**	**%**	**HP**	**N**	**%**	**HP**
2007	52	4.2	9	17%	4.8	43	83%	4.0
2008	21	4.5	4	19%	4.9	17	81%	4.5
2009	10	2.5	2	20%	2.3	8	80%	2.6
2010	30	4.8	8	27%	6.2	22	73%	4.4
2011	23	4.8	2	9%	4.7	21	91%	4.8
2012	25	4.9	10	40%	5.2	15	60%	4.6
2013	40	5.0	15	38%	5.4	25	63%	4.7
2014	47	5.3	21	45%	5.5	26	55%	5.1
2015	56	4.9	20	36%	4.9	36	64%	5.0
2016	39	4.6	16	41%	5.6	23	59%	4.0
2017	51	4.9	16	31%	4.8	35	69%	5.0
2018	46	5.1	27	59%	5.6	19	41%	4.4
Total	**440**	**4.80**	**150**		**5.26**	**290**		**4.56**

From table 1 can be observed that recent years show a tendency towards longer holding periods. Holding periods have increased from 4.3 years for exits between 2007 and 2012 to 5.0 years for exits between 2013 and 2018. Analogous to the increase in holding periods, the number of buy-and-build exits increased from 2012 onward. On average, the holding period of buy-and-builds is 0.7 years, i.e. more than 8 months, longer than the holding period of standalone private equity investments. Although only deals within the United Kingdom are examined, the data shows similar characteristics to the presented figures in the Bain Private Equity report (2018) and the data presented by Hammer (2016).

Table 2: Distribution by exit route

	All deals			B&B			Non-B&B		
Route	**N**	**%**	**HP**	**N**	**%**	**HP**	**N**	**%**	**HP**
IPO	19	4%	4.5	6	4%	5.1	13	6%	4.2
Trade	128	29%	4.5	50	33%	5.2	78	26%	4.1
Financial	293	67%	5.0	94	63%	5.3	199	67%	4.8
Total	**440**	**100%**	**4.80**	**150**	**100%**	**5.26**	**290**	**100%**	**4.56**

Figure 4: Exit routes per year

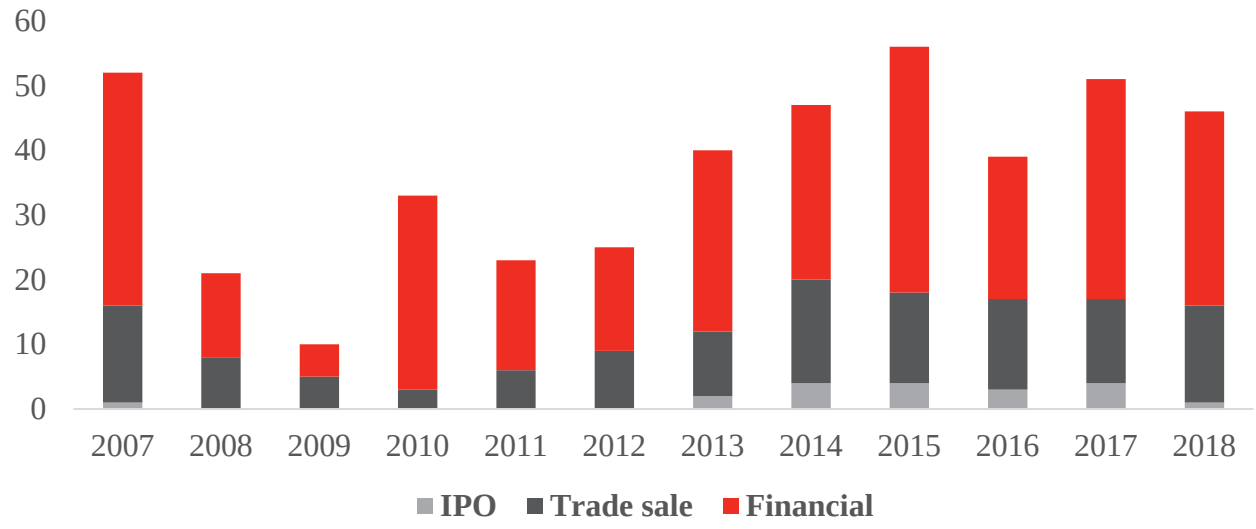


Table 2 shows the distribution per exit route. It can be observed that financial buyouts cover the majority of total exits (67%), followed by trade sales (29%) and IPO exits (4%). The distribution of exit routes is in line with earlier work of Kaplan and Strömberg (2009) and Jenkinson and Sousa (2015), showing similar results for private equity exits in the UK.

Figure 4 shows the exit route distribution for all 440 cases. A financial buyout is the most common exit route in all years. Remarkable is that within this sample, no IPO exits occurred between 2008 and 2012. From 2008, the United Kingdom suffered from the global financial crisis and the subsequent European sovereign debt crisis. Hence, suggesting that exiting through public listings is highly subject to market conditions. The number of trade sales decreased from 2007 – 2010 but picked up from 2011 onwards.

4.2.2 Independent variables

Quantity. The quantity of add-on acquisitions is defined as the number of add-ons undertaken by the portfolio firm under private equity ownership. Data for this variable is obtained by tracking the acquisition event history of every portfolio firm following a buy-and-build strategy. Most of the add-ons could be found in the initial sample of deals classified as build-up. Nevertheless, when following the acquisition event history of the portfolio firm, acquisitions are found under the same holding period which are not classified as build-ups. Additionally, most private equity firm's websites disclosed information about the add-on acquisitions and its characteristics. Hence, enabling to check the data provided by Zephyr. Given that the portfolio firm has at least one deal classified as build-up, these acquisitions are considered as add-on acquisitions. Data is collected through the BvD Zephyr database. The quantity shows a non-normal distribution due to the large number of single add-ons and some large outliers. For that reason, the logarithm of the quantity is used to normalise the distribution.

Complexity. Following Hammer (2016), a buy-and-build strategy is seen as complex whether the add-on acquisitions executed by the portfolio company were either cross-border or industry diversifying. Therefore, two binary variables are constructed. The first binary variable yields one if the portfolio firm executes a cross-border acquisition during private equity ownership, zero otherwise. Since this study only considers portfolio firms in the United Kingdom, all acquisitions outside the United Kingdom are considered as cross-border acquisitions. The second binary variable yields one if the portfolio firm executes industry diversifying acquisitions during private equity ownership, zero otherwise. NACE Rev. 2 codes are used to identify acquisitions in unrelated industries (Table 12 – 14; Appendix). In order to examine the combined effect, an interaction variable between industry diversifying- and cross-border add-ons has been constructed. To avoid incorrect categorisations and to cope with unavailable information for some of the add-ons, the sample was cross-checked through private equity companies' websites and press releases.

Buy-and-build experience. For the investigation of hypothesis 3, buy-and-build experience is used as key independent variable. Prior buy-and-build experience is defined as when the private equity firm was involved in at least one sequential acquisition strategy in the three years prior to the buyout. This implies that the private equity firm is involved in a buy-and-build strategy at the time of the buyout, or that the last exit of a portfolio firm involved in a buy-and-build strategy was at latest three years prior to the buyout. Given these conditions, a

binary variable is constructed, yielding one if the private equity firm possess prior buy-and-build experience, and zero otherwise.

This definition and corresponding restrictions are based on the approaches of Fuller et al. (2002) and Billet and Kian (2008). Fuller et al. (2002) define frequent acquirers as firms making at least five acquisitions within a three years' time period. Billet and Kian (2008) take a more conservative approach and define serial acquirers as firms who buy at least two public targets within five years. This paper follows the time interval of Fuller et al. (2002). Within a time-interval of three years it is expected that learning benefits from a previous deal are retained. Moreover, it is likely that the private equity professionals previously involved in a buy-and-build strategy are still on board. However, since this paper does not study experience of all private equity investments, but experience of sequential acquisition strategies, it can take a more conservative approach regarding the number of strategies used as an indicator for experience. Since the assumption is made that a private equity firm should already experience learning benefits from at least one sequential acquisition strategy, only including one sequential acquisition strategy within this time period will suffice.

Following the earlier discussion about buy-and-build experience in section 3.3, it is expected that previous buy-and-build experience of the private equity firm has a negative effect on the holding period. To collect data about the prior acquisition experience of the private equity firm, the BvD Zephyr Database is consulted. By selecting deals with a build-up tag in Zephyr, prior buy-and-builds of the private equity firm can be identified. Buy-and-build experience occurs when the private equity firm was either the acquirer or the fund manager / general partner in a buy-and-build deal. Buy-and-build experience is not only restricted to deals from the United Kingdom but broadened to global buy-and-build experience.

Portfolio firm experience. In order to measure acquisition experience, the acquisition history of all portfolio firm is tracked through the BvD Zephyr Database. Similar to experience on private equity firm level, the time period in which the acquisitions should be undertaken is restricted to at most three years prior to entry of the private equity owner. An indicator variable is constructed yielding one if the portfolio company acquired or merged with another company in three years prior to entry of the private equity owner. Zero otherwise.

The BvD Zephyr Database is consulted in order to track the vendor source. This database clearly mentions whether the platform acquisition involves a secondary, tertiary or even quaternary buyout and allows to check whether the vending company is a private equity firm. Hence, incorrect categorisations are avoided. A binary variable is constructed yielding one if the vendor at entry involves a private equity firm, zero otherwise.

Interacting the two above mentioned variables allows to find out whether the portfolio company is continuing its inorganic growth strategy under new private equity ownership.

Buy-and-build vs non-buy-and-build. In line with the work of Hammer (2016), a buy-and-build strategy is defined if the portfolio company executes at least one add-on acquisition under private equity ownership. Portfolio firms with at least one acquisition during the holding period classified as build-up by Zephyr are seen as portfolio firms executing a buy-and-build strategy. A dummy variable is included which is equal to one if the portfolio company has conducted at least one add-on acquisition under private equity ownership and zero otherwise. In this way, a distinction can be made between buy-and-build deals and non-buy-and-build deals. Although hypothesis 1 – 3 work with the sub-sample, including only buy-and-build cases, this variable is used to test hypothesis 4.

4.2.3 Control variables

The set of control variables can be sorted in four different categories: private equity firm characteristics, deal characteristics, portfolio firm characteristics, and market conditions.

Private equity firm characteristics. Jenkinson and Sousa (2015) argue that the age of the private equity firm has a significant effect on the buyout duration. The age of the private equity firm gives insights about the experience of the firm and could therefore be of influence on holding periods and hence, this study will control for this. Older and more established private equity firms are more likely to have wider experience and hence, have valuable networking capabilities and more exit opportunities. Apart from the route exit, is expected that more experienced private equity firms would have lower holding periods. Younger private equity firms cannot deploy capital as quickly due to a lack of experience in deal sourcing and value creation during holding periods (Giot et al., 2014). The age of the private equity firm is hand-collected through the BvD Orbis Database, which provides the incorporation dates of the firms. Changing names of entities and potential fallacies urged for cross-checking the dates of incorporation with the respective company websites. In addition, to account for non-normality due to some large outliers, this variable is log-transformed.

In line with the work of Arcot et al. (2015) and Hammer (2016), this study controls for the institutional affiliation of the private equity firm. If a private equity firm is affiliated to an institution (e.g. insurance companies, banks, pension funds, governmental institutions), their investment philosophy and time horizon might be different compared to private equity firms which are independent. When affiliated, it is expected these firms are looking for longer time

horizons, which is likely to have an impact on the holding period. Data is hand-collected through the private equity firm's websites and the Orbis database. An indicator variable is constructed yielding one if the private equity company is institutional affiliated. Zero otherwise.

Deal characteristics. Jelic (2011) finds the entry channel, syndication and management participation as important determinants for buyout duration. Previous private equity ownership is considered as independent variable in 4.2.2, which therefore accounts for the entry channel. Syndication finds place if more than one private equity firm backs the investment. Wright and Lockett (2003) and Meuleman et al. (2009) argue that due to syndication, disadvantages such as coordination difficulties and agency costs arise. When ownership is dispersed, decision making processes in add-on acquisitions might take longer than when under concentrated ownership. It is therefore expected that syndication is positively related to holding period. An indicator variable is constructed yielding one if there is more than one private equity firm is involved in the acquisition. In line with Hammer (2016), management participation is included as a control variable. A binary variable is constructed yielding one if the deal is MBO/MBI related. Data regarding the vendor source, syndication and management participation is hand-collected through the Zephyr database. Missing data has been checked through the respective private equity company's websites and press releases.

Portfolio firm characteristics. Following Hammer et al. (2016), financial data for the portfolio firms is collected to account for differences in portfolio firm characteristics, and hence, tackles heterogeneity among portfolio firms. Sudarsanam (2005), Nikoskelainen and Wright (2007) and Jenkinson and Sousa (2015) all argue that the exit route is at least partly dependent on certain portfolio company characteristics related to its financial state. Sudarsanam (2005) and Jenkinson and Sousa (2015) argue that exit routes are partly subject to profitability margins and the size of the company. For example, a strategic sale is more likely if the portfolio firm is smaller and has relatively lower margins. On the other hand, a secondary buyout is more likely for larger companies with significantly better margins. In addition, the size of the portfolio firm increases the likelihood of an IPO, since the firm is better visible for investors and is better able to bear the higher fixed costs (Jenkinson and Sousa, 2015). To control for the size of the company, the portfolio firm's total assets in the year of exits is used. Assets are denoted in millions of British Pounds. Given the large outliers, this variable is winsorised on a 99 percent interval. To account for further non-normality, this study takes the logarithm of the winsorised variable. EBITDA margin is used to control for the profitability

margins of the portfolio company. Given the large outliers, this variable is winsorised on a 99 percent interval.

Data of the portfolio firm's financials is collected through the BvD Orbis database. Since Orbis and Zephyr or both affiliated to BvD, Orbis allows for the use of the unique BvD identification number to find financials of the portfolio firm. Financial company data in Orbis is only available from 2010 onwards. For that reason, it was only possible to find financial company data for exits from 01/01/2010 until 31/12/2018.

Furthermore, industry controls are included to account for potential heterogeneity between industries of the portfolio firms. To gather data on industries, the BvD Orbis Database is consulted to extract Nace Rev. 2 Industry Classifications.

Market conditions. Gompers et al. (2015) state that capital market conditions are the most important determinants for private equity firms regarding the exit timing decision of their investments. Controls for market conditions and the competitive environment are included as they may have an impact on both the holding period as well as the exit channel.

First, in times of high M&A market activity it is more likely that there exist attractive exit opportunities. This might lead to higher likelihood of successful exits and shorter holding periods. Therefore, a proxy for M&A market conditions is included. Since this study only considers deals where the target firm is active in the United Kingdom, only M&A deals finding place within the United Kingdom are included from 01/01/2007 until 31/12/2018. Following Wang and Wang (2012), the proxy for M&A marketing conditions is defined as the quarterly number of M&A deals.

Jenkinson and Sousa (2015) argue that shareholders will take advantage of "hot" IPO markets. This is confirmed by Bansraj and Smit (2017), arguing that periods of high public market valuations offer attractive exit opportunities for the private equity firm. Mäkiho and Torstila (2017) find that during "hot" IPO markets, the likelihood of a successful exit within five years significantly increased. Hence, arguments arise that increased exit attractiveness will negatively affect the holding period as well. To account for the number of IPOs in the market, the BvD Zephyr database is consulted. Given the time restrictions on exit, only IPOs from 01/01/2007 until 31/12/2018 are included finding place on either the AIM or the London Stock Exchanges. These are the stock exchanges of the public listings in my dataset. Similar to M&A activity the proxy for IPO activity is defined as the quarterly number of IPOs on the London Stock Exchange or AIM.

Besides capital market conditions, Jenkinson and Sousa (2015) find that credit market conditions have a significant impact on the choice and timing of exit. They base their findings

on previous work of Axelson et al. (2013), arguing that a higher credit risk premium of leveraged loans, measured as the high yield spread over LIBOR, leads to lower levels of leverage used in transactions. Since leveraged buyouts use a substantial amount of debt financing, higher credit risk premiums lead to decreased attractiveness of debt financing and a lower number of LBOs. Attractive credit market conditions, i.e. low credit spreads, are likely to foster LBO markets and hence, the probability of exiting through a secondary buyout. Due more attractive exit opportunities, positive credit markets are likely to decrease holding periods as well. Following the work of Axelson et al. (2013), this paper defines the credit spread as the difference between the Bank of America Merrill Lynch Euro High-Yield and the 6-month LIBOR. This spread is seen as a proxy for credit market conditions. In addition, this study takes the logarithm of the credit spread. Data is obtained through the St. Louis Fed Economic Database.

4.3 Descriptive statistics

As presented in table 3, the full sample consists of 443 deals with known entry and exits, of which 150 are buy-and-build related. For the control variables, however, it can be observed that some lack availability of data. Table 3 indicates a mean holding period of 4.8 years. Portfolio firms involved in a buy-and-build strategy execute on average 3.4 add-ons. However, one portfolio firm executed 50 add-ons leading to non-normality of this variable. Hence, providing reasoning for a log-transformation. In around 35 percent of the cases, the portfolio firm executed at least one cross-border add-on. Industry diversifying add-ons occurred in 24 percent of the buy-and-build cases.

For a substantial number of observations there was no indication on Zephyr or the company's websites about vendor source, syndication or management involvement, leading to less observations for these variables. In addition, it was not possible to gather financial data for all portfolio companies. The Orbis database only allowed to find data later than 01/01/2010 and some portfolio firms did not disclose their financials. Therefore, only 298 observations are found for *Assets*, and only 191 for *EBITDA margin*.

Table 3: Summary statistics

Variables	N	Mean	SD	Min	Max
Holding period	440	4.793	2.383	0.2	13.2
Buy-and-build	440	0.341	0.475	0	1
Quantity	150	3.400	5.285	1	50
Cross-border	150	0.347	0.478	0	1
Diversifying	150	0.240	0.429	0	1
BB experience	150	0.640	0.482	0	1
PC M&A experience	150	0.207	0.406	0	1
PE Age	440	19.862	16.871	0	114.8
Institutional affiliation	440	0.082	0.255	0	1
SBO	353	0.265	0.442	0	1
Syndication	353	0.093	0.291	0	1
Management involvement	353	0.279	0.449	0	1
IPO activity	443	21.515	10.396	1	48
M&A activity	443	1336.858	240.265	821	2333
Credit spread	443	0.042	0.028	0.004	0.202
Assets	298	129.168	334.139	43.088	2653.158
EBITDA Margin	191	0.108	0.18	-0.443	0.521

5. Methodology

5.1 Regression models

This section introduces the statistical regression models used in this study to address the research question on the explanatory factors of longer holding periods in buy-and-build strategies and its effect on the route of exit. In order to examine the factors explaining potential prolongation in holding periods of buy-and-builds, an Ordinary Least Squares (OLS) regression will be applied. In order to check for robustness of these findings, a categorical approach is used for which a trinomial logistic model has been applied. To study the effect of holding periods and buy-and-builds on exit routes, a trinomial logistic model will be applied.

OLS Regression. For the analysis on holding periods, the use of an OLS regression is an appropriate measure since the sample in this study only contains deals with known entry and exit dates. When including deals with unknown exit dates, right-censoring of data is necessary and an OLS regression will not allow for this. Survival analysis would then be the appropriate measure (see e.g. Jenkinson and Sousa, 2015; Hammer, 2016). However, the appropriateness of an OLS regression still rests on other assumptions. First, presence of multi-collinearity between the independent variables needs to be checked. By applying the Variance Inflator Factor (VIF) test, it can be concluded that there is no multi-collinearity among the variables. Second, an OLS regression relies on the assumption that the variance of the error terms should be homoscedastic. The HET test tests for potential heteroscedasticity in the error terms. Being not able to reject the hypothesis that the variance of the error terms is heteroscedastic, violates the assumptions of an OLS regression (Figure 5; Appendix). Log transforming the dependent variable, *Holding period,* results in homoscedasticity in the variance of the error terms (Figure 6; Appendix). OLS regression is applied to *hypotheses 1 – 3,* all having *LN (Holding Period)* as dependent variable. Moreover, since these hypotheses are based on characteristics of buy-and-build cases, the regression builds upon the sub-sample including only buy-and-build cases (150 observations).

Hypotheses 1a - 1c estimate the impact of the quantity and complexity of add-on acquisitions on holding periods of buy-and-builds. The key independent variables of interest are *LN (Quantity)*, indicating the number of add-on acquisitions executed during holding period, and *Cross-Border* and *Diversifying*, indicating whether the buy-and-build involves cross-border or industry diversifying acquisitions. The latter are a measure for complexity of add-ons.

Hypothesis 2 examines the relationship between prior buy-and-build experience of the private equity firm and holding periods of a buy-and-build strategy. Prior buy-and-build experience is denoted as *BBexp*.

Hypotheses 3a – 3c, examine the impact portfolio company experience with private equity and M&A on holding periods of buy-and-build strategies. The key independent variables of interest are *SBO,* indicating if the platform acquisition is a secondary buyout, and *PCMA,* indicating whether the portfolio company possessed previous M&A experience. In addition, a combination of these two variables allows to construct the interaction variable *SBO*PCMA*, indicating whether the new private equity owner continues the buy-and-build strategy started under previous private equity ownership. Given these key dependent and independent variables, the following regression model can be constructed:

$$LN(Holding\ period) = \alpha + \beta_1 \boldsymbol{Quantity} + \beta_2 \boldsymbol{CB} +$$
$$\beta_3\, \boldsymbol{Div} + \beta_4 \boldsymbol{CB} * \boldsymbol{Div} + \beta_5 \boldsymbol{BBexp} + \beta_6 \boldsymbol{SBO} + \beta_7 \boldsymbol{PC\ MA} + \beta_8 \boldsymbol{SBO} * \boldsymbol{PC\ MA} + \beta_8 \boldsymbol{Y'}_c + \beta_9 \boldsymbol{Y'_i} + \varepsilon \quad (5.1)$$

$\boldsymbol{Y_c}$ is the vector of the control variables used, and $\boldsymbol{Y'_i}$ is used to control for heterogeneity among industries of portfolio firms. As theoretically discussed in section 4.2.3 and summarised in appendix A1, the following variables will be included to control for variation in the model unexplained by the key independent variables: *PE age*, *Institutional affiliation, Management participation, IPO activity, M&A activity* and *Credit spread.* The random error term ε is the part of the variance of the holding period unexplained by the independent and control variables.

Trinomial Logistic Model. Following the work of Jenkinson and Sousa (2015) and Sudarsanam et al. (2005), a trinomial logistic regression is used to examine the effect of buy-and-build strategies on the exit channel. The multinomial logistic regression model is considered as an attractive analysis method since it does not have assumptions regarding normality, linearity or homoscedasticity. Nevertheless, the multinomial logistic regression model does have the assumption of independence among the dependent variable choices, implying that the choice for one category should not be related to the choice for another category (Starkweather and Moske, 2011). Since the types of exit are mutually exclusive from each other, this condition is met.

The exit probability model is based on a trinomial logistic regression using the three exit routes as the dependent variables. In line with Jenkinson and Sousa (2015), the model assumes the value of 0 if the exit channel is a financial buyout, 1 if the exit channel is a trade sale and 2 if the exit channel is an IPO. Since this study is interested in comparing buy-and-build strategies to non-buy-and-builds with regard to the route of exit, the indicator variable *BB* is used as key independent variable. Furthermore, this study analyses the effect of the holding period on the exit strategy, indicated by *Holding period.*

$$EXIT\ CHANNEL = \alpha + \beta_1 \boldsymbol{BB} + \beta_2 \boldsymbol{Holding\ period} + \beta_2 \boldsymbol{Y'_c} + \beta_3 \boldsymbol{Y'_i} + \varepsilon \quad (5.2)$$

The data availability of some of the control variables used in the trinomial logistic model cause this study to drop a substantial number of variables. For that reason, the set of control are divided into different categories. The first set of controls is related to the present market characteristics at year of exit. These include: *M&A activity, IPO activity,* and *Credit spread.* Market characteristics are seen as highly important for explaining exit routes in private equity,

and given the full availability of these control variables, these controls will be always involved in explaining exit routes. Secondly, regarding private equity company characteristics, the age of the private equity firm is deemed important for explaining exit routes. This control is indicated by *LN(PEage)*.

As argued in the previous section, portfolio company's size and profitability are considered to be important factors in explaining exit routes. However, data availability cause to drop a substantial number of observations. Therefore, these controls are added one-by-one and include *LN(Size)* and *LN(Profitability).*

5.2 Additional models and robustness

Adding different set of controls, and thereby changing the size of the sample is one way to check for robustness, which is done throughout the baseline regression results. Additionally, checks are conducted to test whether the results are robust when applying a different model and adjusting the definitions of key variables.

Marginal effects. Including a variable measuring the quantity of add-on acquisitions only allows to tell whether the number of add-ons is either positively or negatively related to holding period. In order to account for the marginal effect of additional add-ons, new binary variables are constructed, accounting for more than 1 add-on, more than 2 add-ons, or more than 3 add-ons.

Categorical approach. In the OLS model, testing solely buy-and-build strategies, the key dependent variable is a continuous variable: holding period. To check for robustness an additional model is applied: the trinomial logistic model. This model allows to test for the likelihood of an exit within different time frames. Moreover, this model serves the additional benefit that the results are better interpretable. Since this test has the purpose of an additional analysis and checks for robustness, a conservative approach has been applied to categorise the holding periods. Therefore, the different time frames are categorised as follows:

(1) Short: Holding periods less than 3 years.
(2) Medium: Holding periods between 3 and 7 years.
(3) Long: Holding periods longer than 7 years.

$$Holding\ period\ (categorical) = \alpha + \beta_1 \boldsymbol{Quantity} + \beta_2 \boldsymbol{CB} + \beta_3 \boldsymbol{Div} + \beta_4\ \boldsymbol{BBexp} + \beta_5\ \boldsymbol{SBO} + \beta_6\ \boldsymbol{PC\ MA} + \beta_7 \boldsymbol{Y}_c' + \beta_8 \boldsymbol{Y}_i'\ + \varepsilon \quad (5.3)$$

Redefining the buy-and-build strategy. A more conservative approach for a buy-and-build strategy is used to test for robustness of outcomes. A buy-and-build strategy is redefined as a strategy where the portfolio firm executes at least three add-on acquisitions during holding period. This check is only executed for the analysis of the exit routes. For the buy-and-build sample, the number of observations becomes too small to draw conclusive inferences from this.

6. Results and discussion

6.1 Buy-and-build strategies and holding periods

In line with previous research (e.g. Hammer, 2016), table 4 shows that buy-and-build strategies are significantly extending holding periods. Redefining a buy-and-build to a strategy with at least three add-ons and increasing the number of controls still allow to conclude that buy-and-build strategies cause longer holding periods.

Table 4: OLS regression results on the relationship between buy-and-build strategies and holding periods in private equity investments.

	Buy-and-build: ≥ 1 add-on		Buy-and-build: ≥ 3 add-ons	
	LN (Holding period)			
VARIABLES	(1)	(2)	(3)	(4)
Buy-and-build	0.202***	0.249***	0.250***	0.269***
	(0.056)	(0.061)	(0.076)	(0.081)
LN (PE age)	-0.022	-0.037	-0.028	-0.044
	(0.027)	(0.032)	(0.027)	(0.032)
Institutional affiliation	0.086	0.111	0.092	0.110
	(0.095)	(0.106)	(0.096)	(0.107)
SBO		0.000		-0.002
		(0.069)		(0.070)
Syndication		-0.098		-0.113
		(0.103)		(0.104)
Management participation		0.064		0.084
		(0.067)		(0.067)
IPO activity	0.002	0.002	0.001	0.001
	(0.004)	(0.005)	(0.004)	(0.005)
M&A activity	-0.006	-0.021	-0.008	-0.024
	(0.014)	(0.017)	(0.014)	(0.017)
LN (Credit Spread)	0.038	-0.015	0.030	-0.027
	(0.064)	(0.074)	(0.064)	(0.075)
Constant	1.402***	1.630***	1.509***	1.783***
	(0.280)	(0.331)	(0.278)	(0.330)
Industry Controls	Yes	Yes	Yes	Yes
Observations	440	352	440	352
Adj. R-squared	0.029	0.058	0.028	0.054

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 reports the empirical results of the OLS regression examining explanatory factors of the prolonged holding periods of buy-and-build strategies. Given a set of 150 buy-and-build cases, model (1) – (6) present the results of hypothesis 1 – 3. Whereas sets of independent variables are tested separately in model (1) – (5), all variables are tested simultaneously in model (6). As observed in the adjusted R-squared, testing all variables simultaneously considerably increases the explanatory power of the model. Therefore, the discussed results will be based on this model, unless indicated otherwise.

Hypothesis 1a. In line with hypothesis 1a, this study finds that the number of add-ons is positively related to holding periods in buy-and-build strategies. These findings are line with the work of Hammer (2018). Additional add-ons come with additional negotiation costs and time for investors. Moreover, since the integration process leads these add-on acquisitions to not immediately reflect its value creation potential. Therefore, longer holding periods might be needed before the company realises a maximum compensation at time of exit. In addition, the search and integrations of add-ons is time-consuming and leads to distraction of organic growth of the portfolio firm. Cumming and Dai (2011) and Humphery and Jenner (2013) refer to this as the limited attention hypothesis, leading to opportunity costs and therefore explaining longer holding periods. Given the theoretical argumentation and empirical evidence, it can be concluded that multiple add-ons significantly increase holding periods of private equity investments.

Hypotheses 1b-d. In section 3, the complexity of add-ons is extensively discussed as a determinant in explaining extended holding periods when using buy-and-build strategies. The complexity of add-on acquisitions is proxied by two variables: cross-border and industry diversifying add-ons. Table 5 provides mixed results regarding the complexity of add-on acquisitions.

No conclusive evidence can be tied to the relationship between cross-border add-on acquisitions and holding periods, therefore rejecting hypothesis 1b. This study is not able to follow the work of Hammer (2016), stating a significant positive relationship. Also, Servaes and Zenner (1996) find a significant positive relationship between cross-border deals and holding periods, although not specified on add-on acquisitions within buy-and-build strategies. Pre-transaction complexities (e.g. geographic proximity, different legal regimes) might lead to longer due diligence processes and factors such as cultural differences might slow down the

Table 5: OLS regression results on the relationship between add-on characteristics an experience (PE and portfolio firm level) on holding periods

	LN (Holding period)					
Variables	(1)	(2)	(3)	(4)	(5)	(6)
LN (Quantity)	0.101**	0.104**				0.120**
	(0.046)	(0.046)				(0.046)
Diversifying	0.236***	0.286**				0.255**
	(0.089)	(0.111)				(0.111)
Cross-border	-0.002	0.031				0.044
	(0.078)	(0.090)				(0.089)
CB*Div		0.183				0.122
		(0.136)				(0.138)
PE BB experience			-0.285***			-0.269***
			(0.0810)			(0.082)
PC M&A experience				0.010	0.052	-0.048
				(0.098)	(0.129)	(0.126)
SBO				0.001	0.028	0.062
				(0.089)	(0.106)	(0.100)
PCMA*SBO					-0.016	-0.005
					(0.126)	(0.121)
LN (PE age)	-0.081*	-0.082*	-0.003	-0.053	-0.055	-0.039
	(0.042)	(0.042)	(0.043)	(0.043)	(0.044)	(0.045)
Institutional affiliation	0.124	0.134	0.003	0.119	0.125	0.029
	(0.163)	(0.164)	(0.163)	(0.169)	(0.170)	(0.165)
Syndication	0.271*	0.261	0.200	0.211	0.205	0.238
	(0.161)	(0.162)	(0.159)	(0.167)	(0.168)	(0.159)
Management participation	0.069	0.066	0.025	0.049	0.049	0.030
	(0.078)	(0.078)	(0.076)	(0.080)	(0.080)	(0.077)
IPO activity	-0.001	-0.001	-0.002	-0.001	-0.001	-0.002
	(0.001)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
M&A activity	-0.021	-0.019	0.009	0.001	0.000	-0.009
	(0.026)	(0.026)	(0.025)	(0.026)	(0.027)	(0.026)
LN (Credit Spread)	0.046	0.045	0.074	0.065	0.064	0.049
	(0.086)	(0.086)	(0.085)	(0.089)	(0.089)	(0.084)
Constant	1.825***	1.800***	1.563***	1.601***	1.614***	1.750***
	(0.426)	(0.427)	(0.418)	(0.437)	(0.439)	(0.418)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	150	150	150	150	150	150
Adjusted R-squared	0.023	0.063	0.000	0.000	0.108	0.109

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

integration process (Ahern et al., 2015). On the other hand, when a portfolio firm is expanding geographically, it is exposed to new markets and therefore also to new potential buyers. Gaining foothold in a new market raises attention from new buyers, either private equity firms, strategic buyers and public investors. Increased attention from buyers leads the private equity firm to have more chance to exit the portfolio firm at their preferred timing and returns. In accordance, Espenlaub et al. (2014) argue that cross-border deals open up networks and opportunities that make the portfolio company more marketable. Hence, explaining the non-significant positive result of cross-border add-ons on holding period.

In line with hypothesis 1c and the study of Hammer (2016), this study finds a significant positive relationship between industry diversifying add-on acquisitions and holding periods. These findings lend support to the theory that industry diversifying acquisitions are prone to higher pre-deal information asymmetry, leading to higher transaction costs and therefore positively affecting holding periods of private equity investments (Servaes and Zenner, 1996). In addition, industry diversifying acquisitions often lack management attention, complicate monitoring and require additional resource allocation (Humphery-Jenner, 2013).

No evidence can be provided that the combined effect of executing both cross-border- and industry diversifying add-ons would lead to a stronger prolongation of holding periods. Strong theoretical argumentation yielded the expectation that the execution of both cross-border and industry diversifying add-ons would prolong holding periods, given its high level of complexity, time-consuming processes and monitoring issues. Nevertheless, following the insignificant results for cross-border add-ons and the limited number of observations of this interaction (only 15 cases), this finding seems logical.

Hypothesis 2. In line with hypothesis 2, evidence is found that prior buy-and-build experience of the private equity firm has a significant negative effect on holding period. This result implies that that private equity firms with prior buy-and-build experience have lower holding periods in subsequent buy-and-builds compared to firms without experience. These findings lend support for the notion that private equity firms with buy-and-build experience have become more skilful in these strategies and have secured learning benefits in later deals (Aktas et al., 2013). Moreover, these results for the specialised learning hypothesis. In this hypothesis, serial acquirers gain proficiency when repeating specific type of deals, e.g. buy-and-build strategies (Kengelbach et al., 2012).

Hypotheses 3a-c. The outcomes of model (4) – (6) do not allow to state evidence for hypothesis 3a, b and c, testing the effect of prior M&A experience of the portfolio firm on holding periods of buy-and-build strategies. Previous literature points out that acquirers with

acquisition experience have become more skilful about the process, leading to benefits in later deals (Aktas et al, 2013). Moreover, as experience in the process is likely to lead to lower transaction costs, subsequent acquisitions are expected to be less time consuming. An alternative explanation can be that portfolio firms with previous M&A experience are still in the integration process of recent acquisitions. This distracts attention from organic growth, potentially explaining longer holding periods. The ambiguous theoretical argumentation can explain the insignificant results for this variable. No evidence is found if portfolio firms in a secondary buyout have shorter holding periods. Hammer (2016) find this variable to have a significant diminishing effect on holding periods. Although the negative direction of the coefficient shows that holding periods tend to be diminished if the portfolio firm was under previous private equity ownership, no conclusive evidence is provided. In addition, the interaction term is also insignificant. It is therefore argued that continuing a buy-and-build strategy started under previous private equity ownership does not result in lower holding periods. Altogether, regarding the experience of the portfolio firm, no variables are found to be significant and the explanatory power of the model is negligible. Therefore, no conclusions are tied to these results.

6.2 Effect of holding periods and buy-and-build strategies on exit routes

Using a trinomial logistic regression model, the results in table 6 show the likelihood of selling the portfolio firm to a financial sponsor or going public relative to selling to a strategic buyer. Model (1) – (4) in table 6 show the effect of holding periods and the effect of using a buy-and-build strategy on the route of exit. Model (3) – (4) contain financial company data, which was only available from 2010 – 2018. The inclusion of the portfolio's company financials as set of controls results in analysing a different timespan and leads the number of observations to drop significantly. Nevertheless, including these controls significantly increases the explanatory power of the model, i.e. the highest pseudo R-squared.

Hypothesis 4a. Model (1) – (3) indicate a significant negative relationship between holding periods and the likelihood of a financial buyout relative to trade sales. However, when controlling for the portfolio company's profitability margin in the year of exit (model (4)), the relationship loses significance. Furthermore, the significance in model (1) – (3) is not strong and weakens when the explanatory power of the model rises. Since model (4) results in the highest explanatory power, no conclusive evidence can be stated for hypothesis 5a. Historically, holding periods tended to increase the likelihood of secondary buyouts (Jenkinson

and Sousa, 2015). When the investment is in the beginning of its holding period, private equity investors generally prefer an IPO - serving as marketing device and generating high returns - or a trade sale, often resulting in larger premiums due to synergies. However, when holding periods extend and private equity firms and GPs face exit pressure, an exit to another private equity provides a quick process with clear returns. Hence, a preferred option. Nevertheless, the recent rise in number of buyout funds and growing heterogeneity among private equity funds (i.e., funds targeting differently in terms of size and industry) lead the exit to a financial sponsor to not always be the exit of last resort anymore. Hence, this can explain the non-conclusive evidence demonstrated in the results.

Hypothesis 4b. From model (1) – (4), no evidence can be drawn upon the relationship between the use of buy-and-build strategies and the likelihood of an exit to a financial sponsor. Therefore, no evidence can be stated for hypothesis 4b. Nevertheless, model (3) and (4) allow to draw weak evidence that buy-and-build strategies decrease the likelihood of an IPO in comparison to trade sale. Although model (1) and (2) do not show significance, the explanatory power is much lower than model (3) and (4), allowing to base the results on the latter. As mentioned, model (3) and (4) are based on the years 2010 – 2018. This result is in contrast to the findings and discussion of Hammer et al. (2017), arguing that the use of buy-and-build increases the likelihood of exiting through an IPO. Hammer et al. (2017) argue that buy-and-build firms typically grow larger in size, which makes them more visible for investors and better able to bear the high fixed costs of an IPO. These results indicate that larger companies indeed have a significantly higher likelihood of exiting through an IPO in comparison to a trade sale. However, when controlling for the size of the portfolio firm, it can be observed that the use of buy-and-builds decrease the likelihood of an IPO in comparison to a trade sale. Although not extensively discussed in section 3.4, several arguments exist why the use of a buy-and-build would increase likelihood of a trade sale relative to an IPO. First, a buy-and-build often requires additional monitoring compared to standalone private equity deals. For example, integration processes of add-on acquisitions might require extensive monitoring. According to Bienz and Leite (2008), firms requiring additional monitoring are less likely to be involved in an IPO and more likely to be involved in a trade sale. Furthermore, large strategic players may see the buy-and-build as competitors rapidly gaining market share in a consolidating market. Also, when there is still add-on potential left, a sale to an IPO might not be the preferred option as decision making processes are slower relative to a private company environment.

Although this study is not able to draw conclusions on hypotheses 4a and 4b, the results in table 6 show some interesting features. First, in line with literature, the results suggest that

Table 6: Multinomial logistic regression results on the relationship between holding period and the use of buy-and-build strategies on the likelihood of a financial exit or IPO relative to trade sale.

	(1)		(2)		(3)		(4)	
	2007-2018		2007-2018		2010-2018		2010-2018	
	Base: Trade sale		Base: Trade sale		Base: Trade sale		Base: Trade sale	
VARIABLES	Financial	IPO	Financial	IPO	Financial	IPO	Financial	IPO
Buy-and-build	-0.395	-0.325	-0.058	-0.466	-0.093	-1.408**	0.127	-1.418*
	(0.242)	(0.536)	(0.245)	(0.552)	(0.311)	(0.676)	(0.420)	(0.785)
Holding period	0.101**	0.017	0.096*	0.023	0.135**	-0.102	0.077	-0.134
	(0.048)	(0.113)	(0.051)	(0.108)	(0.067)	(0.132)	(0.084)	(0.143)
IPO activity	0.005	0.054	0.005	0.059*	0.021	0.108**	0.055	0.152***
	(0.017)	(0.034)	(0.019)	(0.036)	(0.026)	(0.043)	(0.040)	(0.056)
M&A activity	-0.073	-0.155	-0.101	-0.148	-0.171	0.0283	-0.130	0.164
	(0.059)	(0.142)	(0.066)	(0.141)	(0.119)	(0.246)	(0.156)	(0.280)
LN (Credit Spread)	-0.174	-0.001	-0.208	0.077	-0.014	-0.745	0.047	-0.407
	(0.269)	(0.556)	(0.296)	(0.579)	(0.404)	(0.924)	(0.547)	(1.003)
LN (PE Age)	0.259**	0.273	0.219*	0.278	0.410**	-0.246	0.350	-0.359
	(0.112)	(0.260)	(0.124)	(0.262)	(0.185)	(0.362)	(0.267)	(0.415)
SBO			0.457*	-0.413	0.242	-1.045	0.298	-0.713
			(0.278)	(0.696)	(0.335)	(0.841)	(0.492)	(0.983)
Syndication			-0.084	0.733	-0.126	0.493	1.894*	2.572*
			(0.411)	(0.742)	(0.519)	(0.901)	(1.148)	(1.381)
Management participation			-0.113	0.531	-0.045	1.373**	0.458	2.219**
			(0.268)	(0.544)	(0.347)	(0.701)	(0.493)	(0.864)
LN (Size)					0.072	0.818***	0.218	1.091***
					(0.075)	(0.219)	(0.168)	(0.349)
Profitability							-0.008	-0.016
							(0.012)	(0.020)
Constant	0.918	-1.734	1.050	-2.128	0.166	-10.80**	-2.219	-16.09***
	(1.198)	(2.603)	(1.343)	(2.711)	(2.001)	(4.539)	(3.037)	(6.067)
Industry Controls	Yes		Yes		Yes		Yes	
Observations	440		352		246		161	
Pseudo R-squared	0.025		0.036		0.122		0.164	

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

private equity owners make use of a so-called “window of opportunity” when listing their portfolio firm on an exchange. During hot IPO markets, the likelihood of exiting through an IPO in comparison to a trade sale is significantly higher. In addition, results in model (1) – (3) show that the relationship between the age of the private equity firm and the likelihood of a secondary buyout is significantly positive. Older and more established private equity firms are more likely to have wider experience and hence, have valuable networking capabilities and more exit opportunities. In this case, it can be argued that networking capabilities of more experienced private equity firms among other private equity firms increase the likelihood of a secondary buyout.

6.3 Additional analysis and robustness

Marginal effects. Table 7 shows that the effect of executing multiple add-ons in comparison to a single add-on significantly increases holding period. This significant increasing effect on holding periods remains present when comparing the effect of executing at least three add-ons compared to less than three add-ons on, but is less strong. However, the effect loses significance when examining cases with at least four add-ons. These findings allow to draw two inferences. First, executing less than three add-ons serves as a mitigating factor for longer holding periods. This enforces the findings of Hammer (2016), arguing that only one add-on will mitigate longer holding periods. Second, the effect is less strong for at least three add-ons and loses significance when comparing at least four add-ons to less than four add-ons. This might indicate that the portfolio firm obtained learning benefits from the first add-on, or that the already larger firm is better able to bear the integration and monitoring issues of subsequent add-ons. These benefits lead the prolonging effect of additional add-ons to be less strong. Hence, leading to decreasing marginal prolongation of holding periods in subsequent add-ons.

Categorical approach. Using a trinomial logistic regression model, the results in table 8 show the likelihood of a short holding (< 3 years) and long holding (> 7 years) compared to a medium length holding (between 3 and 7 years). The results show that industry diversifying add-on acquisitions significantly increase the likelihood of a holding period longer than 7 years. In addition, prior buy-and-build experience of the private equity firm significantly increases the likelihood of holding period of less than three years. The number of add-ons does not seem to have an effect on different classes holding periods. Nevertheless, when distinguishing between single (= 1) and multiple (> 1) add-ons, it is found that multiple add-ons increase the

likelihood of a long holding period. These results are in line with the previous findings and the findings in this paper are therefore found to be robust. In fact, these new findings are actually better interpretable and applicable compared to the results shown in table 5.

Exit routes. To check for robustness for the exit model, a stricter definition of a buy-and-build strategy is used. Whereas this study follows the methodology of Hammer (2016) and defines a buy-and-build a strategy with at least one add-on acquisition, other studies define a buy-and-build as when at least three add-ons are executed. Similar to the results in table 6, table 8 shows that holding periods tend to increase likelihood of a financial buyout. However, again no conclusive inferences can be drawn upon this result since controlling for the profitability margin, resulting in a higher explanatory value, provides insignificant results. Using this stricter approach, the relationship between a buy-and-build strategy and the likelihood of exiting through a public listing remains negative but becomes insignificant. Hence, no conclusive evidence can be provided for the relationship between buy-and-build strategies and the route of exit.

Table 7: OLS regression results on the relationship between the number of add-on acquisitions and holding periods of private equity investments when using buy-and-build strategies.

	LN (Holding period)		
VARIABLES	(1)	(2)	(3)
> 1 add-on	0.196**		
	(0.076)		
> 2 add-ons		0.163**	
		(0.076)	
> 3 add-ons			0.132
			(0.091)
Cross-border	-0.012	0.000	0.010
	(0.077)	(0.077)	(0.078)
Diversifying	0.195**	0.197**	0.199**
	(0.091)	(0.091)	(0.092)
PE BB experience	-0.248***	-0.253***	-0.262***
	(0.081)	(0.081)	(0.082)
PC M&A experience	-0.058	-0.050	-0.027
	(0.093)	(0.094)	(0.093)
SBO	0.053	0.057	0.061
	(0.085)	(0.086)	(0.087)
LN (PE age)	-0.044	-0.036	-0.035
	(0.044)	(0.044)	(0.045)
Institutional affiliation	0.004	0.023	-0.003
	(0.162)	(0.165)	(0.165)
Syndication	0.232	0.259	0.250
	(0.157)	(0.158)	(0.159)
Management participation	0.050	0.044	0.044
	(0.077)	(0.078)	(0.078)
IPO activity	-0.002	-0.001	-0.001
	(0.005)	(0.006)	(0.006)
M&A activity	-0.008	-0.009	-0.009
	(0.026)	(0.026)	(0.026)
LN (Credit Spread)	0.053	0.065	0.064
	(0.083)	(0.084)	(0.085)
Constant	1.718***	1.739***	1.750***
	(0.414)	(0.417)	(0.421)
Industry Controls	Yes	Yes	Yes
Observations	150	150	150
Adj. R-squared	0.112	0.099	0.083

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Trinomial logistic regression results on the relationship between add-on acquisitions and experience (on private equity and portfolio firm level) on holding period on the likelihood of a short- (< 3 years) and long holding (> 7 years), compared to a medium length holding (between 3 and 7 years)

	(1)		(2)	
	Base: Medium		Base: Medium	
VARIABLES	Short	Long	Short	Long
LN (Quantity)	-0.568	0.275		
	(0.361)	(0.267)		
Multiple			-0.691	0.853*
			(0.523)	(0.510)
Diversifying	-1.329	1.273**	-1.355	1.280**
	(0.855)	(0.538)	(0.858)	(0.544)
Cross-border	-0.154	-0.154	-0.133	-0.242
	(0.540)	(0.483)	(0.542)	(0.488)
PE BB experience	1.147*	-0.467	1.100*	-0.418
	(0.663)	(0.479)	(0.663)	(0.477)
PC M&A experience	0.321	-0.185	0.245	-0.256
	(0.662)	(0.577)	(0.655)	(0.587)
SBO	-0.426	0.419	-0.360	0.420
	(0.605)	(0.528)	(0.598)	(0.535)
LN (PE age)	-0.021	-0.428	-0.005	-0.469*
	(0.321)	(0.277)	(0.320)	(0.282)
Syndication	-14.22	0.400	-14.11	0.369
	(871.6)	(0.894)	(880.5)	(0.898)
Management participation	0.165	0.595	0.133	0.614
	(0.522)	(0.482)	(0.517)	(0.483)
IPO activity	-0.003	0.013	-0.007	0.009
	(0.038)	(0.034)	(0.038)	(0.034)
M&A activity	0.308	0.207	0.282	0.206
	(0.194)	(0.167)	(0.191)	(0.168)
LN (Credit Spread)	-0.109	0.107	-0.194	0.0666
	(0.555)	(0.527)	(0.554)	(0.531)
Constant	-5.387*	-3.776	-4.859*	-3.853
	(2.955)	(2.730)	(2.898)	(2.758)
Industry controls	Yes		Yes	
Observations	150		150	
Pseudo R-squared	0.123		0.133	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Multinomial logistic regression results (robust) on the relationship between holding period and the use of buy-and-build strategies on the likelihood of a financial exit or IPO relative to trade sale.

	(1)		(2)		(3)		(4)	
	Base: Trade sale		Base: Trade sale		Base: Trade sale		Base: Trade sale	
VARIABLES	Financial	IPO	Financial	IPO	Financial	IPO	Financial	IPO
Buy-and-build (3)	-0.182	0.112	0.077	0.068	0.0748	-1.095	0.232	-1.236
	(0.314)	(0.691)	(0.324)	(0.700)	(0.388)	(0.915)	(0.542)	(1.087)
Holding period	0.091*	0.003	0.092*	0.006	0.129*	-0.105	0.072	-0.103
	(0.048)	(0.113)	(0.051)	(0.109)	(0.067)	(0.133)	(0.084)	(0.142)
IPO activity	0.006	0.0557	0.005	0.062*	0.020	0.109**	0.054	0.158***
	(0.017)	(0.034)	(0.019)	(0.035)	(0.026)	(0.042)	(0.040)	(0.056)
M&A activity	-0.067	-0.151	-0.101	-0.148	-0.174	0.001	-0.129	0.124
	(0.058)	(0.142)	(0.066)	(0.143)	(0.118)	(0.244)	(0.156)	(0.274)
LN (Credit Spread)	-0.149	0.026	-0.202	0.108	-0.004	-0.604	0.012	-0.324
	(0.268)	(0.555)	(0.296)	(0.573)	(0.402)	(0.909)	(0.544)	(0.991)
LN (PE Age)	0.259**	0.269	0.216*	0.282	0.407**	-0.173	0.322	-0.331
	(0.111)	(0.261)	(0.124)	(0.265)	(0.185)	(0.365)	(0.266)	(0.418)
SBO			0.454	-0.424	0.238	-1.073	0.303	-0.772
			(0.278)	(0.694)	(0.335)	(0.825)	(0.491)	(0.980)
Syndication			-0.066	0.821	-0.102	0.462	1.871	2.667*
			(0.410)	(0.740)	(0.517)	(0.911)	(1.142)	(1.390)
Management participation			-0.126	0.474	-0.070	1.040	0.481	1.826**
			(0.266)	(0.539)	(0.343)	(0.665)	(0.487)	(0.805)
LN (Size)					0.069	0.819***	0.217	1.028***
					(0.0750)	(0.217)	(0.169)	(0.326)
Profitability							-0.007	-0.012
							(0.012)	(0.019)
Constant	0.703	-1.924	1.023	-2.335	0.222	-11.10**	-2.047	-15.57***
	(1.186)	(2.596)	(1.339)	(2.702)	(2.016)	(4.420)	(3.077)	(5.811)
Industry Controls	Yes		Yes		Yes		Yes	
Observations	440		352		246		161	
Pseudo R-squared	0.022		0.035		0.115		0.155	

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7. Limitations and suggestions for further research

Endogeneity concerns. To validate the findings of this study, establishing a true causal relationship between the holding period and explanatory variables would be ideal. To minimise endogeneity issues, this study controls for deal-, private equity firm-, portfolio company-, and market characteristics. However, these controls reduce endogeneity issues caused by observable factors. To truly state causality, unobservable factors resulting in the correlation between holding periods and potential significant explanatory variables should be ruled out. Unobservable factors might include the preferences and characteristics of private equity funds and GPs. Although partly accounted by controlling for institutional affiliation of the private equity fund, the preferences of the private equity firm and its fund managers could potentially explain holding periods without being accounted for. Another potential unobservable factor is the size or financial health of add-on acquisitions. Acquiring add-ons which are very large or in dire shape might require additional monitoring and higher integration costs, leading to longer holding periods. However, since add-ons are acquired under changing ownership structures and sometimes involve small deals, these deals are prone to limited information and data availability. This limitation could further be addressed by applying an instrumental variable regression, e.g. Two Stage Least Squares Regression. This would require an "instrument" which is truly exogenous to the model and has a high correlation with the potential endogenous variables. Potential instruments for industry diversification could be related to industry growth rates. Low industry growth could be correlated with the executing of industry diversifying acquisitions, and not related to the holding period. However, identifying the correct instrument resulted in an unsuccessful quest. Using weak instruments do not allow to draw conclusive inferences from the results. Nevertheless, as observed in the correlation matrix, the variables significantly impacting holding periods have low correlations. The significant variables are therefore expected to have a causal relationship with holding period, rather than just a correlation. Hence, concerns for endogeneity can be tempered.

Survivorship bias. In this study, only deals with known entry and exit dates have been included. Deals with long holding periods which have not been exited yet are not included. Neither are bankruptcies or write-offs considered. Deals with long holding periods and no exit yet are likely to face exit pressure, leading these deals to be sold at undesirable timing and price. Henceforth, the deals in my sample are considered to be rather successful, implying that there might exist survivorship bias. Hence, this is a methodological weakness of this study. Collection of data for ongoing and unsuccessful deals is challenging and a time-consuming

process. The vast majority of the detected ongoing cases suffers from incorrect categorisation, since its name and the BvD ID of the holding company changed during holding period. For that reason, the choice was made to focus on deals with known entry and exit dates. To overcome a survivorship bias in future studies, ongoing cases, write-offs and bankruptcies should be included. When including these deals, survival analysis should be applied, allowing for right-censoring of data.

Sample characteristics. As already pointed out in the data section, one of the key challenges of empirical research in private equity is the collection of data. To avoid incorrect categorizations and improve reliability of the dataset, all buy-and-build cases and its characteristics were cross-checked through the private equity companies' websites, press releases and deal comments in Zephyr. This process resulted in the identification of a total of 150 buy-and-build cases, with known entry and exit dates. Despite the limitations being present, the small sample size remains a drawback of this study and weakens the ability to draw conclusive inferences from the results. Increasing the sample set could be done by expanding the geographical scope or including additional years. An additional limitation is that this study solely focuses on the United Kingdom. The United Kingdom has one of the most mature private equity markets in Europe and has strict reporting standards, leading to greater availability of data. Moreover, focusing on one country limits potential macroeconomic differences between countries. Nevertheless, this remains a limitation as expanding geographical scope might result in different outcomes. When expanding the geographical scope, it is important to control for macroeconomic differences between countries.

Cross-border add-ons. This study was not able to provide evidence that cross-border add-ons result in longer holding periods. Cross-border add-ons might incur additional due diligence, regulatory complexities and complicated monitoring. Still, no significant relationship was found, being explained by the increased exit attractiveness resulting from cross-border activity. Still, this study did not distinguish between continental and intercontinental add-ons. Add-ons with further geographical and cultural distance are likely to incur more information asymmetries and regulatory complexities, leading to longer holding periods. Using continental and intercontinental add-ons as proxies for geographical and cultural proximity, future research should test whether these have in impact on holding periods. Additionally, since the data sample comprises of portfolio firms situated in the UK, Brexit might have important implications for the role of cross-border add-ons in explaining future holding periods. Increased regulatory complexities might be expected in the post-Brexit period. Hence, this might be an interesting topic for future research.

Real options. Buy-and-build strategies involve longer term horizons, leading to unpredictable economic events or rival moves changing initial plans. Following the real options approach, such uncertainty creates value because flexibility is taken into account and valuable new growth options can arise as uncertainty resolves (Smit and Moraitis, 2010). High uncertainty often results in a "wait and see" strategy. However, when uncertainty resolves, the acquirer is likely to quickly execute multiple add-ons. Potential for further research could focus on a decreasing time between add-ons in a later stage of the sequence, as a result of resolved uncertainty.

Longer holding periods and returns. In general, it is assumed that longer holding periods of private equity investments deteriorate returns and prospects for future fundraising (Cumming et al., 2005; Valkama et al., 2013; Jenkinson and Sousa, 2015; Hammer, 2016; Hammer et al., 2017). Although Valkama et al. (2013) empirically find that longer holding periods negatively affect financial returns, limited research has been focusing on the influence of longer holding periods on returns. In particular, within buy-and-build strategies, the impact of longer holding periods on return has not been examined yet. In buy-and-builds, add-ons might not only lead to longer holding periods, but might also be necessary in order to complete integration processes and for the add-ons to reflect its full value creation potential. Shorter holding periods within buy-and-builds could therefore also result in a lower selling price and hence, lower financial returns. Future research should indicate whether the synergetic benefits of additional and complex add-ons outweigh the negative externalities caused by longer holding periods. Access to databases such as Preqin is required to analyse return potential.

Fund characteristics. This study did not include the characteristics of the fund as a potential explanatory factor for holding periods. Data on the fund characteristics was not readily available in the used databases. Nevertheless, this remains a limitation of the study. Holding periods are perceived differently dependent on the remaining lifetime of the fund. Exit pressure of private equity investors might lead to different decisions regarding the exit of an investment. As discussed in the Bain Private Equity Report 2018, large private equity firms have been launching buyout funds with anticipated holding periods of up to 15 years. Having a 15-year life span, it targets IRR's of 12 to 14 percent while charging lower fees. For these long-hold buyout funds, investors do not need to sacrifice returns in exchange for longer duration. According to Bain (2018), these long-hold buyout funds might increasingly raise the attractiveness to incorporate add-on acquisitions during holding period, as extension of holding periods is less of an issue. Hence, providing potential for future research.

8. Conclusion

The buy-and-build strategy has gained significant importance over the last decade in the private equity industry. Despite its relevance, academics devoted limited attention to this topic so far. Previous literature focusing on buy-and-build strategies focus mainly on the conditions for occurrence (Bansraj and Smit, 2017), its determinants (Bansraj et al. 2017; Hammer et al. 2017) or its performance (Acharya et al., 2013; Nikoskelainen and Wright, 2007). While the vast majority of these studies highlighted advantages and outperformance of buy-and-build strategies relative to other private equity strategies, Hammer (2016, 2018) addressed a research gap by examining potential disadvantages. Hammer (2016, 2018) argues that buy-and-build strategies increase holding periods significantly. Longer holding periods are known to tie up committed capital, deteriorate financial returns (Valkama et al., 2013; Hammer, 2016) and negatively affect future fundraising (Cumming et al., 2005; Hammer, 2016; Loos and Schwetzler, 2017). Despite the high value enhancing nature of buy-and-builds, its longer holding periods are clearly seen as a drawback.

Using a sample of 150 UK-based buy-and-build cases, this study is able to address several determinants impacting the holding periods of buy-and-build strategies. Significant results indicate that the number of add-on acquisitions is positively related to holding periods of buy-and-build strategies in private equity. Although the number of add-ons significantly increases the holding period, the marginal positive effect of additional add-ons loses significance after executing more than four add-ons, indicating diminishing marginal prolongation. Moreover, it is shown that executing multiple add-ons increases the likelihood of holding periods longer than 7 years.

The presented findings confirm that industry diversifying add-on acquisitions are significantly increasing holding periods of buy-and-build strategies. These findings are robust to the additional categorical analysis, implying that industry diversifying acquisitions increase the likelihood of holding periods longer than 7 years. However, no significant relationship can be found on an alternative measure for add-on deal risk, cross-border add-ons.

In investigating the role of prior buy-and-build experience of the private equity firm, it can be concluded that buy-and-builds executed by private equity firms with recent buy-and-build experience result in significantly lower holding periods. This finding is robust to the categorical analysis, implying that prior buy-and-build experience increases the likelihood of holding periods shorter than 3 years in subsequent buy-and-builds. No evidence is found for influence of previous private equity ownership, prior M&A experience or continuing a buy-and-build

strategy under new private equity ownership and its relationship to holding periods. No conclusive evidence could be tied towards the relationship between holding periods and exit strategies. Although longer holding periods tend to increase the likelihood of a secondary buyout, controlling for the portfolio firm's financial performance cause this relationship to become insignificant. The role of buy-and-build strategies on the route of exit tends to be negatively related to the likelihood of an IPO. However, using a stricter approach of a buy-and-build strategy, i.e. more than three add-ons, and increasing the number of observations and years lead this relationship to lose its significance. Hence, this evidence is found to be negligible.

Overall, the presented findings improve understanding about the buy-and-build strategy and its relationship with holding periods and exit routes. Therefore, this study adds to the debate of short- versus long-term nature of private equity and the appearance of buy-and-build strategies (Kaplan, 1991; Hammer, 2016). Furthermore, this study adds to the role of learning benefits in sequential acquisitions strategies (Aktas et al, 2013) and of experience in specific strategies on learning benefits, i.e. the specialised learning hypothesis (Kengelbach et al., 2012). Last, this study adds to empirical analysis on exit routes in private equity (Jenkinson and Sousa, 2015; Hammer et al., 2017).

Apart from its academic contribution, the presented findings have relevant implications for practitioners in private equity. Financial models should be based towards longer term strategies when the buy-and-build involves a larger number of add-ons and if industry diversifying add-ons are executed. When recent buy-and-build experience is present at the private equity firm level, shorter holding periods can be expected in subsequent buy-and-builds. In general, buy-and-build strategies prolong holding periods, and limited partners can expect an illiquid asset base for more than 4 to 5 years. Coincidently, private equity firms are already raising long-hold buyout funds, where extension of holding periods is less of an issue. Although holding periods are expected to erode financial returns and negatively impact future fundraising, further research should address how holding periods influence financial performance of private equity investments, and in particular, buy-and-build strategies. By researching its return potential, future research could indicate whether the synergetic benefits of e.g., additional and more complex add-ons, outweigh the negative externalities caused by longer holding periods.

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Appendix

Table 10: Description and sources of variables

Dependent variables	**Description**
Holding period	The time between the entry acquisition and the exit acquisition and is measured in years: *(exit date – entry date / 365).* Source: BvD Zephyr; Company websites; Press releases
Exit channel	The channel through which the private equity firm exits its investment. There are three types of exits: financial buyout, trade sale, and IPO. Bankruptcies and write-offs are not included. Source: BvD Zephyr
Independent variables	**Description**
Quantity	The number of add-on acquisitions executed by the portfolio firm during holding period. Source: BvD Zephyr; Company websites; Press releases
Cross-border	Indicator variable yielding one if the portfolio firm executed at least one cross-border add-on. Zero otherwise. Source: BvD Zephyr; Company websites; Press releases
Diversifying	Indicator variable yielding one if the portfolio firm executed at least one add-on in an unrelated industry. Zero otherwise. Source: BvD Zephyr; Company websites; Press releases
Buy-and-build experience PE level	Indicator variable yielding one if the private equity firm executed at least one buy-and-build sequence in the three years prior to entry. Source: BvD Zephyr; Company websites; Press releases
Portfolio firm acquisition experience	Indicator variable yielding one if the portfolio firm acquired or merged with another company in three years prior to entry of the private equity owner. Zero otherwise. Source: BvD Zephyr
Financial buyout (SBO)	Indicator variable yielding one if the vendor source is another private equity firm. Zero otherwise. Source: BvD Zephyr; Company website; Press releases

Control variables	Description
Private equity firm age	Years between the founding date of the private equity firm and the date of the entry acquisition. (*Entry date – founding date PE firm / 365)* Source: BvD Orbis; Company websites
Institutional affiliation	Indicator variable yielding one if the private equity company is institutional affiliated. Zero otherwise. Source: BvD Orbis; Company websites
Syndication	Indicator variable yielding one if the platform is acquired by more than one private equity firm. Zero otherwise.
Management participation	Indicator variable yielding one if the deal is MBI/MBO related. Source: BvD Zephyr; Company website; Press releases
IPO activity	Quarterly number of IPOs on the London Stock Exchange or AIM. Source: BvD Zephyr
M&A activity	Quarterly number of M&A deals where the target firm is active in the United Kingdom. Source: BvD Zephyr
Credit spread	Difference between the Bank of America Merrill Lynch Euro High-Yield and the 6-month LIBOR. Source: St. Louis Fed Economic Database
Size	The portfolio firm's total assets in the year of exit. Source: BvD Orbis
Profitability	The portfolio firm's EBITDA margin in the year of exit. Source: BvD Orbis

Table 11: Correlation matrix (1/2)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Holding period	1.000											
(2) Exit type	0.045	1.000										
(3) Quantity	0.046	-0.053	1.000									
(4) Cross-border	0.008	-0.054	0.165	1.000								
(5) Diversifying	0.194	0.121	0.130	0.150	1.000							
(6) PE BB exp	-0.297	0.012	0.096	0.049	-0.228	1.000						
(7) PF M&A exp	-0.067	-0.048	0.314	0.063	0.118	0.046	1.000					
(8) SBO	-0.164	-0.160	0.048	0.043	-0.215	0.009	0.291	1.000				
(9) PE age	-0.169	0.008	0.369	0.081	0.064	0.256	0.038	0.190	1.000			
(10) Inst. Affiliation	-0.021	-0.045	-0.084	0.091	0.150	-0.191	0.140	0.233	0.123	1.000		
(11) Syndication	0.094	0.099	-0.004	-0.135	0.050	0.009	-0.112	0.019	0.111	-0.046	1.000	
(12) Management	0.181	-0.025	-0.015	-0.245	-0.059	-0.213	-0.142	-0.093	0.020	-0.039	0.002	1.000
(13) IPO activity	-0.062	0.109	0.161	0.148	-0.158	0.013	-0.080	0.042	0.191	-0.105	0.075	-0.045
(14) M&A activity	0.075	0.026	0.166	-0.053	0.161	-0.110	0.033	-0.011	0.107	0.020	-0.009	0.125
(15) Credit spread	0.051	-0.055	0.037	0.161	0.168	0.039	0.143	-0.077	-0.109	-0.014	-0.105	-0.054
(16) Size	-0.016	0.332	0.132	0.008	0.289	0.035	0.074	-0.068	0.168	0.074	0.295	-0.184
(17) Profitability	-0.054	0.137	0.001	-0.193	0.067	0.116	-0.052	-0.156	0.137	-0.003	0.137	0.011

Table 11: Correlation matrix (2/2)

	(13)	(14)	(15)	(16)	(17)
(13) IPO activity	1.000				
(14) M&A activity	0.033	1.000			
(15) Credit spread	-0.217	-0.340	1.000		
(16) Size	0.229	0.042	0.049	1.000	
(17) Profitability	0.085	0.143	-0.265	0.153	1.000

Table 12: Nace Rev. 2 Industry Classifications

Industry	Division
A - Agriculture, forestry and fishing	01-03
B - Mining and quarrying	05-09
C - Manufacturing	10-33
D - Electricity, gas, steam and air conditioning supply	35
E - Water supply; sewerage, waste management and remediation activities	36-39
F - Construction	41-43
G - Wholesale and retail trade	45-47
H - Transportation and storage	49-53
I - Accommodation and food service activities	55-56
J - Information and communication	58-63
K - Financial and insurance activities	64-66
L - Real estate activities	68
M - Professional, scientific and technical activities	69-75
N - Administrative and support service activities	77-82
O - Public administration and defence	84
P – Education	85
Q - Human health and social work activities	86-88
R - Arts, entertainment and recreation	90-93
S - Other services activities	94-96
T - Activities of households as employers	97-98
U - Activities of extraterritorial organisations and bodies	99

Table 13: Industry classifications of all portfolio firms

Nace Rev. 2 Industry classifications	Count	Percentage
M - Professional, scientific and technical activities	101	23%
C - Manufacturing	65	15%
K - Financial and insurance activities	55	13%
J - Information and communication	51	12%
G - Wholesale and retail trade	44	10%
N - Administrative and support service activities	42	10%
I - Accommodation and food service activities	18	4%
Q - Human health and social work activities	17	4%
R - Arts, entertainment and recreation	8	2%
Other industries	39	9%
Total	440	100%

Table 14: Industry classifications buy-and-build portfolio firms

Nace Rev. 2 Industry classifications	Count	Percentage
M - Professional, scientific and technical activities	37	25%
K - Financial and insurance activities	21	14%
J - Information and communication	21	14%
C - Manufacturing	16	11%
N - Administrative and support service activities	16	11%
G - Wholesale and retail trade	8	5%
I - Accommodation and food service activities	8	5%
Q - Human health and social work activities	7	5%
R - Arts, entertainment and recreation	4	3%
Other industries	6	8%
Total	150	100%

Figure 5: Residuals vs Fitted Plot before log transformation holding period

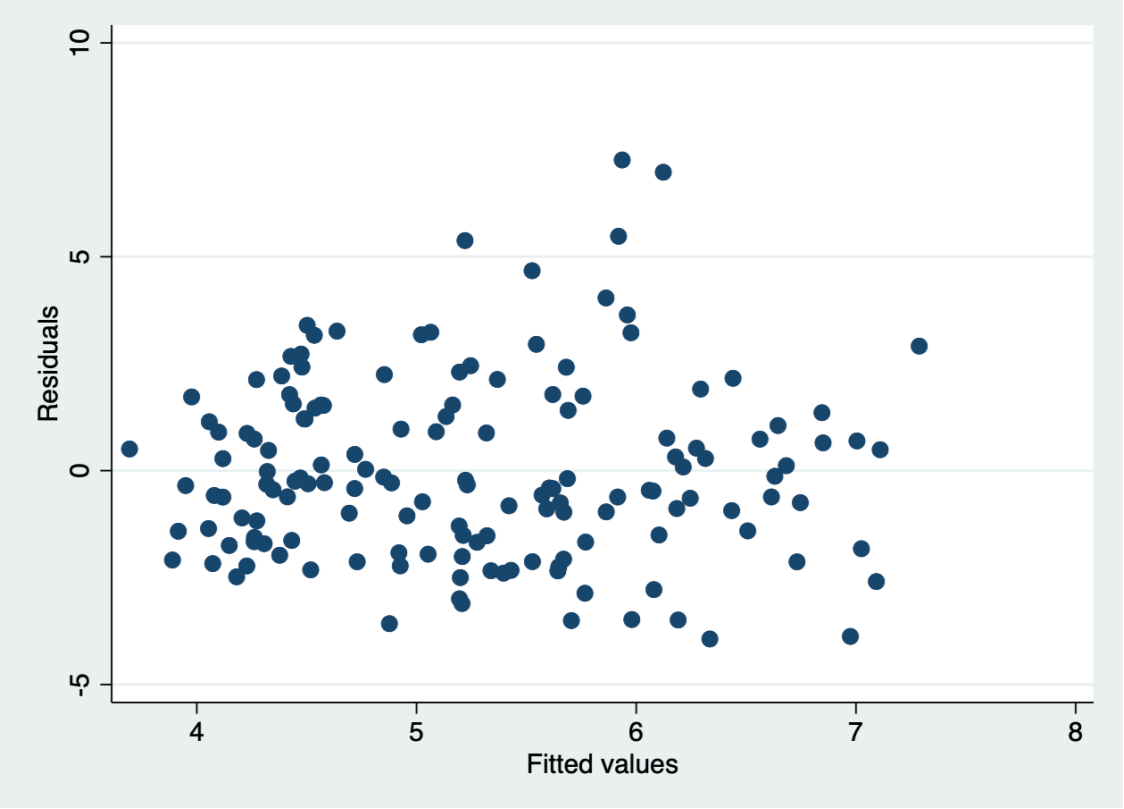

Figure 6: Residuals vs Fitted Plot after log transformation holding period