

Can Private Equity Funds Act as Strategic Buyers?

Evidence from Buy-and-Build Strategies*

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Abstract

We study a serial (buy-and-build) acquisition strategy that accounts for more than a third of all private equity transactions in Europe in the last fifteen years. We ask whether these strategies focus on long-run value creation through operating improvements or rather are “window-dressing” for fundraising or are used to justify spending the committed capital. Using matched-sample difference-in-differences estimations in a large sample of serial private equity acquisitions in seven European markets, we find that the more longer-term strategies achieve higher sales, profitability, and labor productivity. Even larger benefits come from exploiting synergies in capital intensive industries and along the production value chain. These findings confirm that private equity has found a new way of value creation by acting similarly to strategic buyers.

Key Words: Buy-and-Build Strategies, Operating Performance, Synergies, Productivity, Private Equity, Leveraged Buyouts

JEL Codes: L2, G24, G34

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1 Introduction

The market for corporate control, or takeover market, is one of the largest financial markets in the world. The key players in this market are strategic and financial buyers. The common view is that strategic buyers – i.e., companies in a related type of business, such as competitors, suppliers, or customers – buy companies in order to realize long-term operational synergies through integration into their own business. In contrast, financial buyers, such as private equity (PE) companies, look for undervalued targets with a potential to generate high cash flow. In leveraged buyouts (LBOs) a financial acquirer takes over a company using a significant amount of debt, restructures the target, and sells it once exit opportunities become sufficiently appealing (Kaplan and Strömberg, 2009).¹ Nowadays, PE companies developed a new hybrid strategy, referred to as the “buy-and-build” (BB), that combines the long-term synergy focus of strategic buyers with the financial synergies of LBOs in private equity. The strategy involves buying the “platform” assets and building the scale and scope through subsequent M&As as a primary source of business growth.

Anecdotal evidence tells us that by exploiting this strategy PE companies started to beat corporations at their own game. This paper represents a comprehensive empirical study of buy-and-build strategy based on a unique sample of 818 buy-and-build strategies from seven European markets over 1997–2016. We investigate whether, by engaging into such serially-related acquisitions, PE companies act like successful corporate strategic buyers realizing operational synergies, or, rather, these transactions is a “window-dressing” to motivate fundraising or justify spending committed capital. We find that these strategies show higher sales, profitability, and labor productivity that are not driven by merely acquiring more companies. These findings provide evidence that private equity has found a new way of value creation by acting similarly to strategic buyers.

The involvement of multiple companies makes the analysis of the operating performance of BBs more challenging than the analysis of traditional LBOs. First, BBs are pre-determined well-specified strategies intending to exploit some form of synergetic relationship, and should be distinguished from the incidental acquisitions performed by portfolio

¹According to this traditional view, expressed in, for example, Gorbenko and Malenko (2014), strategic buyers can implement the same changes as financial bidders, but they can also potentially realize synergies better and, thus, are willing to pay more for targets. Gorbenko and Malenko (2014) estimate valuations of various bidders in auctions of companies and find that an average strategic bidder has a higher private value than a financial buyer. But there is a distinction within this average effect. Strategic bidders assign higher private values to targets with more valuable growth opportunities while financial bidders are willing to pay more for poorly performing targets when subsequent restructuring could render them profitable again.

companies of PE companies (Smit, 2001). Therefore, we start from the deal-level data, collect the buyouts specifically designated by the source as a part of BB, and forensically investigate the disclosed rationale and ownership structure of every private equity buyout in order to identify a platform and the related follow-on acquisitions. In total we identify 818 platforms and related 1,346 follow-on acquisitions, completed between 1997 and 2016 in seven major European private equity markets including Denmark, Finland, France, Norway, Spain, Sweden, and the United Kingdom.²

Second, endogeneity of acquisition decisions makes establishing the causal effect of BBs difficult. While PE companies generally carefully select LBO targets or focus on sectors with below average performance in particular countries and years, the BB strategies often are justified by industry consolidation. To confront these selection issues we use the combination of propensity score matching with a difference-in-differences analysis. Propensity score matching helps alleviate the selection on observable company-level factors by finding industry peers that are similar in observable characteristics to the target companies but that were not a part of a BB strategy. In order to control for possible endogeneity at the sector-country-year level we draw the control sample from all the companies that are located in the same country, year and 2-digit industry and ensure the match on pre-deal trends of the outcomes.³ The difference-in-difference analysis then measures the treatment effect of being a part of the BB strategy.⁴ The novelty of our paper is to set up the *placebo strategies*—the observationally equivalent portfolios constructed from the matched peers of the platform and add-on companies within our observed strategies. This allows us to establish the correct comparison at the strategy-level and identify the organic synergetic growth. Using placebo strategies to mimic and measure strategy performance has never been done before.

We observe new regularities compared to what is typically seen with the conventional

²We collect data on private equity deals and on company financials from Zephyr and Orbis databases provided by Bureau van Dijk, a Moody's company. Orbis provides information on firms' financial and productive activities from balance sheets and income statements together with detailed information on firms' domestic and international ownership structure for over 200 million public and private companies across the world. Zephyr is the database focusing on transactions, from the minority stake acquisitions to the majority take-overs, IPOs, etc., across the globe. We prepare the financial and ownership data in order to reduce the survivorship bias present in direct Orbis downloads and ensure good coverage of historic data for ownership and financials as described in Kalemli-Ozcan et al. (2015).

³We also experiment with a less restrictive matching within the sector-year or country-year cells. In order to control for remaining selection on unobservable time-invariant strategy-level factors, we include strategy fixed effects. And we include year fixed effects to control for common time trends across countries.

⁴The diff-in-diff estimator eliminates any constant or strongly persistent difference between the treatment and control groups by inclusion of the treatment indicator variable. Any common trend affecting both the treatment and control group is also differenced away by inclusion of the post-treatment trend variable.

LBOs. We confirm the focus on a longer time horizon in BB strategies: the average holding period in our sample is over five years, longer than the horizon for a typical LBO. With respect to the sectoral patterns, we confirm that many acquisitions are within the same industry implying industry consolidation as an important goal (see Bain & Company, 2018). The most of follow-ons are in services and manufacturing. In addition to these horizontal acquisitions, there are many BB strategies with platforms and follow-ons in vertically related or seemingly unrelated industries.

Our first contribution to the existing literature is to focus on strategy-level (multiple connected targets) in contrast to the company-level analysis.⁵ Using our matched-sample difference-in-differences estimation, when we compare strategies to the placebo strategies, we find improvements in return on sales (ROS) at the strategy level over three year horizon.⁶

Our second contribution is to verify the arguments from the PE industry that the BB is a long-term strategy with the focus on operating synergies that might take time to realize. Focusing on the strategies that were exited in at least five years, we find that the significant synergies in terms of higher sales arrive later, in the year 4 and 5, while the profitability increases throughout, and the effect grows over time. There are no statistically significant differences between the long-term (at least five years to exit) and short-term strategies (up to four years to exit, with an average of three years) over the first three years, once we control for the differences in the observable characteristics accounted for by the placebo strategies. The short-term strategies themselves show a strong growth in assets and superior ROS compared to their placebo strategies.

These effects are economically meaningful. Compared to the pre-deal sample mean, the ROS of the long-term strategies increases by, on average, 2 percentage points over the first three years and 3.3 percentage points over the first five years. The former short-run effect on profitability is comparable to the 2.3 percentage points increase in ROS of the short-term strategies. The effects imply that over the first three years an average short(long)-term strategy shows close to 41(33) percent improvement of ROS over the average pre-acquisition

⁵Focusing on individual companies, we find that over three years after the acquisition, the platforms grow faster in terms of total assets and sales compared to their peers, while the profitability is flat. These company-level results are in line with the findings of Acharya et al. (2013), but go against previous studies that found that private equity companies try to improve the profitability of the portfolio companies over a relatively short period. For follow-ons, we do not see any significant changes, except for reduction of cash holdings. However, over three-year horizon there is no synergistic effects: comparing the entire strategy to the peers of the platform we still find strong growth of assets and sales but the most of this represents the “inorganic” growth due to follow-on acquisitions.

⁶This time horizon is typical in finance literature.

ROS, while over five years the increase of the ROS of the long-term strategies is 55 percent.⁷

Next, we explore whether BB strategies bring any “real benefits” by changing employment and labor productivity. Davis et al. (2014) find, in a sample of leveraged buyouts in the U.S., that these transactions lead to only modest net job losses but total factor productivity gains at target firms. Antoni et al. (2018) find that PE buyouts in Germany are followed by a reduction in overall employment and an increase in employee turnover. As BB is directed towards growth, we investigate if these results differ for BB strategies. We find that BB strategies do not significantly change employment levels. However, we do find that profit per employee and labor productivity increase in long-term strategies. This means that this is a new type of strategies that focuses on the long-run value creation but not on employment growth.

We also investigate what strategy characteristics are likely to deliver the largest operating performance improvements relative to placebo strategies (by introducing triple interactions into our diff-in-diff regressions). First, we document that in the long-term strategies with above median capital intensity PE cuts back assets and sales more than in the other BB strategies with the same time to exit. The long-term strategies also rely less on external debt, hold more cash, and show significant improvement in profitability and efficiency measured by the asset turnover. These findings are consistent with the assets redeployability hypothesis advanced by Shleifer and Vishny (1992) and Williamson (1988) and evidence in Fidrmuc et al. (2012). PE owners engaging into the longer-term BB strategies in capital intensive industries dispose of the redundant capacity and improve profitability, which makes the portfolio more attractive for the strategic buyers. There is no evidence that this channel of value creation is being exploited by the shorter strategies, perhaps, because synergies in capital-intensive industries take time to realize.

Second, we directly test whether horizontal BB strategies, likely motivated by industry consolidation, bring the operational benefits, or whether the benefits come from the acquisition of suppliers or customers in vertical acquisitions.⁸ Following the literature, we identify the relative position of a portfolio company in the production value chain using

⁷The average pre-treatment ROS of long-term strategies is about 6.2 percent with the standard deviation of 9.2 percent. For short-term strategies, the pre-treatment ROS has the mean of 5.6 percent with the standard deviation of 8.5.

⁸The early paper which suggests that horizontal BB strategies may be motivated by industry consolidation is Smit (2001). The vertical M&As can be explained by the decreasing industry dependence, better control over the product quality, or by improving the negotiation position by learning about the market of the supplier (Porter, 1980).

its 4-digit industry and a detailed input-output (I-O) table from the U.S.⁹ We do not find that horizontally related follow-ons significantly change the operating performance of the strategies—these strategies only seem to secure higher operating leverage. In contrast, profitability increases in the strategies that combine vertically related companies. Longer-term vertical strategies are more efficient by increasing sales-to-assets and labor productivity. Zooming in on the configuration of vertical relationships, we discover that the latter results are mostly driven by follow-ons from upstream (supplier) industries. In addition, acquisition of close suppliers is related to the higher growth of sales.

This study contributes to the strand of private equity research on the key drivers behind operating improvements of the portfolio firms (Bharath et al., 2014; Boucly et al., 2011; Davis et al., 2014; Guo et al., 2011; Harris et al., 2014; Kaplan, 1989b). We show that acting more like strategic buyers and focusing on the long-run, BB strategies do capture valuable operating synergies. Therefore, for these growth-oriented strategies it is necessary to measure the performance over the long-run, beyond the usual in the literature three year horizon. Moreover, to reap the operating benefits the strategy should be carefully designed in terms of the types of companies in portfolio. Larger operational benefits seem to accrue in capital-intensive industries and in the strategies built along the production value chain, rather than in horizontal strategies.¹⁰

Our paper is the first to fully identify and analyze the entire BB strategy, as a series of buyout transactions that have a common goal related to synergetic growth. In their study on the PE partner background, Acharya et al. (2013) differentiate between “inorganic” deals (the deals with the M&A events during the private phase) and “organic” deals (that had no M&A event) in Western Europe. Their focus is on the match between the nature of the deal (M&A-based or organic) and the PE partner background (financial or operating/consulting).¹¹ This paper represents a comprehensive study of serial M&A deals

⁹We define the horizontal acquisitions to include the follow-ons in the same 4-digit NACE code as the platform company. A close customer is the company whose 4-digit industry sources from the industry of the platform according to the I-O table but is within the *same* 2-digit industry; the “other” customer is the company whose 4-digit industry sources from the industry of the platform according to the I-O table but is in *another* 2-digit industry. The follow-ons that are (close or distant) suppliers of the platforms are defined similarly if their industry supplies to the industry of the platforms based on the I-O table. Alternatively, we define close suppliers or customers as companies in industries in the top quartile in terms of input-output relationships. The results are qualitatively similar.

¹⁰The important caveat, which we have in mind about the latter finding, is that we are not focusing on the multiple expansion as a possible goal of BBs in the same narrow industry. If the key goal of the horizontal strategies is to eliminate the small firm discount and sell the combined larger company at higher multiple *without meaningful operating changes* we will not capture this effect in our operating outcomes. Studying the exit multiples of these strategies is a possible extension of this paper.

¹¹Valkama et al. (2013) demonstrate that the inorganic transactions positively influence the internal rate

by PE, and we separate the transactional and synergetic growth using the replicated strategies constructed from matched peers of portfolio companies. Our focus is on what strategy characteristics are delivering the largest operating performance improvements.

The findings in this paper provide insights on serial acquisition strategies in general, when one recalls those known characteristics of private equity that make them well-equipped for handling serial M&A strategies. The existing explanations of serial acquisitions, for instance, empire building or learning, are proposed for public entities (Aktas et al., 2013; Laamanen and Keil, 2008; Masulis et al., 2007) but they do not apply to private equity (Jensen, 1986, 1989). The strong management incentives provided by private equity and limited holding period reduce potential for empire building (Jensen and Meckling, 1976; Kim et al., 2011). PE companies are experienced deal makers that can be beneficial when acquiring multiple companies in a brief period of time (Aktas et al., 2013). We find that in BB strategies by PE grow in size, which is typical in any serial M&A, while are accompanied by the profitability and other efficiency improvements, and that it is not just “window-dressing” for fundraising or are used to justify spending the committed capital as is frequently the case in secondary LBOs (Arcot et al., 2015; Degeorge et al., 2016).¹²

The rest of paper is organized as follows. In section 2 we discuss the conceptual issues related to value creation in BB strategies. In section 3 and 4 we discuss the data and the empirical methodology. Section 5 presents the results of the paper. Section 6 concludes.

2 Sources of Value in Serial Buyouts

It is well established in the literature on traditional LBOs that PE increases the value of targets through some operational improvements, better governance, and financial engineering (Gompers et al., 2016; Guo et al., 2011; Kaplan and Strömberg, 2009).¹³ These investors have expertise in restructuring targets (Cressy et al., 2007; Demiroglu and James, 2010), improve corporate governance (Acharya et al., 2013; Cornelli et al., 2013; Nikoskelainen and

of return in LBOs in the UK. Hammer et al. (2017) focus on factors explaining the probability of individual acquisitions undertaken by the the PE portfolio companies during the holding period. We look at operating performance or the complete strategies.

¹²Secondary buyouts (the LBO transactions where both the buyer and seller are private equity funds) could be thought of as the repeated LBOs where the companies change hands in a sequence of acquisitions between PE firms. Arcot et al. (2015) and Degeorge et al. (2016) show that the “pressured” purchases or sales destroy value and this opportunistic behavior emerges from the nature of the PE contract.

¹³The related literature on private equity returns for its investors reached a general consensus is that private equity outperforms public equity markets even net of fees and after adjusting for risk (Kaplan and Schoar, 2005; Korteweg and Sorensen, 2017; Robinson and Sensoy, 2016; Sensoy et al., 2014).

Wright, 2007), or have access to debt at a lower cost than strategic buyers due to established relationships with banks (Ivashina and Kovner, 2011). They are aggressive and skillful at using leverage to enhance returns (Kaplan, 1989a), good at managing working capital and efficiently turning non-core fixed assets into cash, invest in firm innovation (Lerner et al., 2011), and reallocate labor to the most effective use (Davis et al., 2014).

Other sources of high returns to investors include the use of political connections (Faccio and Hsu, 2017) and favorable industry and debt market conditions. The latter may allow exploiting multiple expansion (“buy cheap—sell high” strategy), increase the valuation of new investments by PE funds (the “money chasing deals”) and, thus, deliver high return even without any operational improvements, as shown by Axelson et al. (2013), Gompers and Lerner (2000), Jenkinson and Sousa (2015), and Wang (2012).

Recent literature challenges the early assumption that the PE business model is the best to align the interests of investors and company insiders advanced by Jensen and Meckling (1976). Agency conflicts may have negative consequences for operating performance an investor returns due to the nature of the contracts governing the relationships between capital providers and PE firms that raises the money for subsequent acquisitions. The examples range from inflated accounting valuations and numerous and cryptic PE fees (Brown et al., 2019; Phalippou and Gottschalg, 2009; Phalippou et al., 2018), to organizational diseconomies (Holmström and Roberts, 1998; Lopez-de-Silanes et al., 2015), to the “window-dressing” to motivate fundraising or justify spending committed capital (Arcot et al., 2015; Degeorge et al., 2016).

Private equity market and its typical business models have gone through dramatic transformations since the early days in the 1980s. Then, the main drivers behind performance improvements were expenditure reductions through governance and financial engineering (Kaplan, 1989a,b; Smith, 1990). By now, the PE market has transformed from a niche to a mature investment market showing a strong increase in fundraising and deal-making activities by PE companies. Figure 1 shows that value of PE buyouts is relatively small share of the total global M&A activity reaching all-time maximum of above 15 percent in 2007. Nevertheless, PE groups are increasingly poised to capture a larger share of the M&A market, exert competitive pressure onto strategic buyers, and even compete with banks as loan providers to midsize companies.¹⁴ According to Preqin, a provider of data on alterna-

¹⁴In the U.S., companies with credit ratings in junk territory took out \$564 billion worth of commercial loans on 2017, larger than pre-crisis. Bulk of the money comes from pools of capital run by pri-

tive assets, private equity will overtake hedge funds as the largest alternative asset class by 2023 as return-hungry investors switch from public-to-private markets.¹⁵

[Figure 1 about here]

With growing size, the PE market became more mature and increasingly competitive (Braun et al., 2017b; Sensoy et al., 2014). It became harder to exploit traditional value drivers in leveraged buyouts as financial engineering, valuation techniques, and restructuring became more commoditized and investment professionals started to move between or form new funds. Building long-term relations between capital providers (limited partners) and successful PE funds (general partners) or securing access funds are now much less valuable than when the buyout market was developing. Even the way the deals are concluded became more competitive.¹⁶ In order to continue to deliver high returns, PE companies developed new ways to add value to their portfolio companies based on growth strategies and holding companies for longer periods. In a recent survey by Gompers et al. (2016), a number of fund managers mention growth (either internal or external to the company) as an important value driver in leveraged buyouts, while cutting costs is losing importance. A larger attention by the PE industry to operating improvements through growth finds some anecdotal and empirical support.¹⁷

The growth of popularity of the serial buy-and-build strategy is a reflection of refocusing of the market toward the long-term in a highly-competitive environment. By now, the follow-on acquisitions comprise around 30% of the total private equity deal activity in Europe (see Figure 2 based on our data).

private equity firms and other asset managers that accumulated unprecedented \$162 billion in unused capital, so called “dry powder.” See Mark Vandeveld “Jitters mount as loans from private equity continue to rise,” Financial Times, 7 May 2018, available at <https://www-ft-com.eur.idm.oclc.org/content/efda2c6c-4a27-11e8-8ee8-cae73aab7ccb1/>

¹⁵Preqin estimates that total assets under management in alternative classes (hedge funds, private equity, private debt and infrastructure, natural resources and real estate funds) would grow 59 percent to \$14 trillion by 2023. Out of these, PE assets are expected to grow by 58 percent, from \$3.1 trillion at the end of 2017 to \$4.9 trillion while hedge funds are projected to expand by 31 percent from \$3.6 to \$4.7 trillion. See Lindsay Fortado and Javier Espinoza “Private equity set to surpass hedge funds in assets,” Financial Times, 24 October 2018, available at <https://www-ft-com.eur.idm.oclc.org/content/715fda20-d6ff-11e8-a854-33d6f82e62f8>

¹⁶A growing number of buyouts are being purchased through an investment bank auctions rather than through less competitive proprietary deal flow of PE funds (Braun et al., 2017a).

¹⁷Buyout groups are increasingly looking to hold assets for well more than a decade, preparing their clients to a bit lower but stable and less risky returns instead of the “buy, strip and flip” approach aiming to double or triple their money within a few years. See Javier Espinoza “Private equity aims lower and longer,” Financial Times, 20 September 2018, available at <https://www-ft-com.eur.idm.oclc.org/content/95539ab8-7b81-11e8-bc55-50daf11b720d>. Boucly et al. (2011) find empirical evidence that PE companies in their sample increase profitability through growth of sales instead of through the cost reduction, as commonly believed.

[Figure 2 about here]

Therefore, buy-and-build strategies constitute a hybrid of serial acquisition strategies by strategic and financial buyers and are well-suited to create value in a new competitive environment. Similar to traditional LBOs, these strategies are executed by private equity investors, who can provide expertise about acquisitions, financing, and exiting, create valuable tax shields, and strengthen managerial incentives to improve operating efficiency and cash flow management. These traditional sources of value in LBOs are well documented literature.

However, the unlocking of synergetic benefits to a portfolio of companies by buy-and-build investors is a new source of value that is not yet covered in the literature. The practitioners are more informed about this strategy but even among them the consensus on these deals is lacking. In a recent interview to Financial Times, the director of PE practice at a global management consultancy Bain & Company Brenda Rainey summarizes the appeal of this strategy nicely “If I can buy a platform and add on small companies that tend to be sold at lower multiples, I can create something bigger that tends to go for a higher multiple. This way PE can compete head on with corporations.”¹⁸ At the same time, Bain’s annual report warns about a worrisome structural imbalance in the PE industry due to the industry’s inability to put money to work as fast as it is raised. Both competition within the industry and from corporate M&As and the pressure to deploy this “dry powder” may encourage serial acquisitions (Bain & Company, 2018).

Given the theoretical ambiguity and lack of comprehensive evidence in the literature, we investigate if private equity investors are able to realize these synergies through focusing on growth, integration, and improving margins using *strategy-level analysis* in a large sample of European buy-and-builds.

¹⁸There are many examples of BB. For instance KKR’s Calsonic Kansei auto parts supplier (bought by KKR from Nissan in 2016 for \$4.5 billion) would acquire its rival component maker Magneti Marelli from Fiat Chrysler Automobiles for €6.2 billion, creating one of the world’s largest parts manufacturers with combined revenues of \$15 billion and employment of 65 thousand. In services, the Swedish PE group Nordic Capital bought veterinarian services company AniCura and in the next four years quadrupled the number of clinics, selling it to an American global manufacturer of confectionery and pet food and a provider of animal care services Mars Inc. See Peter Campbell, “Fiat agrees €6.2bn sale of Magneti car parts unit to KKR’s Calsonic,” Financial Times, 22 October 2018, available at <https://www-ft-com.eur.idm.oclc.org/content/77efcc26-d568-11e8-a854-33d6f82e62f8> and Javier Espinoza, “Private equity accelerates ‘buy-and-build’ strategy,” Financial Times, 30 July 2018, available at <https://www-ft-com.eur.idm.oclc.org/content/ac1b1ad4-91b4-11e8-b639-7680cedcc421>.

3 Data

Data availability is a major challenge for research on private equity. This is especially the case in BB strategies that typically involve smaller private firms. First, the data on PE transactions and on target company financials is limited in general because in most countries the reporting requirements for private companies are lax, especially for smaller companies (e.g., in the U.S., Securities and Exchange Commission does not require private companies to file detailed financial records). Second, the serial acquisition nature creates an additional data challenge because private equity firms deliberately conceal the deal information in order to prevent learning about the deals by the possible future targets or competitors. Third, the ownership structure of the deals and the use of holding companies complicates the identification of BB strategies.

Facing the data availability issues, the literature typically obtains the data on PE investments from the capital providers (the limited partners, such as funds-of-funds working with many PE companies) or from the PE companies themselves. This “top-down” approach provides the direct estimates of returns to investors and precise measurement of deal leverage, however, the information on portfolio companies is often limited. Measurement of investment returns provided by the investor side is also not without issues, since the poorly performing part of the portfolio might be under-reported. Our empirical methodology requires detailed knowledge of the portfolio firms. Consequently, we follow the “bottom-up” approach and collect the PE deals data from the transaction-level database, and identify the real activity of the relevant companies from the accounting data from the linked database of firm financials. Our source also provides ownership structure of the deal that is crucial for identifying BB strategies.

We our data from several databases by the Bureau van Dijk (BvD), a Moody’s company. We identify the relevant PE acquisitions from Zephyr database of BvD that focuses on transactions from the minority stake acquisitions to the majority takeovers, IPOs, etc., across the globe. The database is similar in nature to Thomson’s SDC or, currently, ThomsonOne databases. The BvD Orbis database provides information on firms’ financing and real activities from balance sheets and income statements, together with detailed information on firm ownership structure for over 200 million public and private companies across the world in a standardized and internationally comparable format. Deals in Zephyr can be merged to company information in Orbis by a common identifier. We download and clean the

financial data for target companies and ownership structure of strategies as recommended in Kalemli-Ozcan et al. (2015) in order to reduce the survivorship bias present in online Orbis downloads and ensure good coverage of historic data for ownership and financials.¹⁹

3.1 Deal Sample and Identification of Strategies

We begin by collecting all follow-on deals from Zephyr database, which defines these deals 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*” (our italics). This definition fits nicely the conceptual difference between buy-and-builds, which have a clear pre-determined goal, and other inorganic acquisitions by PE.²⁰ We require that the deal is a majority stake acquisition, from less than 50% of the target’s equity before the deal to more than 50% after. The average acquired stake in our sample is 97% which is common in the PE market. The time period for the deals is between 1999 (when Zephyr has a relatively good coverage) and 2014. We stop in 2014 in order to observe the operating performance of the acquired companies for several years after the deal. Geographically, our targets are located in one of the following countries: Denmark, Finland, France, Norway, Spain, Sweden, and United Kingdom that have the most active PE markets in Europe.

We are interested in fully characterizing the *strategy*—that is, a platform and follow-on companies that are purchased to pursue a common strategy to exploit some form of synergistic relationship—as well as the exit, when the larger company is sold. For this task, we have to overcome several challenges. First, Zephyr does not have a dedicated tag for the platform deals; searching Zephyr using the deal type “build-up” does not identify the platforms associated with the follow-ons. Second, we cannot automatically assign the acquired companies into the common strategies (a platforms plus all its follow-ons). Third, the ownership structure associated with serial acquisition BB strategy is complex. The “acquirer” of many follow-on deals mentioned by Zephyr is not necessarily the platform company or the private equity firm, but a different entity that lies somewhere between the follow-on company and private equity firm in the ownership structure. Conversely, the PE firm may be

¹⁹The online version of Orbis only contains the 10 most recent year of financials of a company. Older deals are more likely to be excluded due to missing financials. To overcome this problem, we follow Kalemli-Ozcan et al. (2015) and access the historic vintages of Orbis to collect financials for targets in these older deals.

²⁰Zephyr uses the sub-deal type “build-up” to refer to the follow-on deals. The tag is given by Zephyr to a deal where a PE portfolio company has been given additional funds by the PE firm to buy companies directly.

mentioned as the acquirer by Zephyr but the deal is structured such that a separate entity (or multiple entities) is established to allocate the controlling stake in the target but is itself controlled by the PE firm. Several frequently found ownership structures are presented in Figure 3. We refer to these intermediate companies as the “holding companies.”²¹

We utilize rich information in the historic vintages of Orbis Ownership database, deal description in Zephyr, and various external sources such as the websites of PE companies in order to find the portfolio companies and combine them with relevant follow-ons into the individual strategies (See Appendix ZZ for details of our search methodology (to be added)). Using Orbis Ownership database, we trace the controlling shareholder of every follow-on found in Zephyr and, sequentially, every other entity in the ownership structure that lies between the follow-on and the private equity firm that initiates the deal. These entities are potential platforms or holding companies (see Figure 3). Using the names and identifiers of the potential platforms we search *all* the Zephyr deals in the previous years that are not identified as “build-up” but in which the target is (similar to) the potential platform found in the previous step.²² To ensure we have a unique and relevant platform, we verify whether these earlier transactions were executed by the same PE firm and whether the ownership structure of the potential platforms can be traced to the same PE firm or holding company of the follow-on deal in question. When we are not able to identify platforms or exits solely on the ownership structure, we use additional information from deal comments in Zephyr, news sources, and company websites (of the PE firm and of the potential platform) to identify the platform deal in Zephyr. This procedure allows us to create a unique data set containing platform, follow-on, and exit deals and group them in the unique strategies. In total we collect the data on 818 BB strategies with unique platforms across seven European countries in which a total of 1,346 follow-on acquisitions were completed in these and other countries.

Table 1 presents the number of platform and follow-on acquisitions by year in our broad-

²¹In PE industry, these entities are also referred to by the names “bidco,” “midco,” or “topco” reflecting their place in ownership structure between the target and the PE acquirer. Holding companies offer several advantages. First, holding companies can be used as acquisition vehicles to allocate the debt raised for acquisitions. Second, holding companies can be used to create structures with tax benefits. Third, by creating layers of ownership the ultimate owner (the private equity firm) alters the relation between the control (voting) rights and cash flow rights in its favor. Fourth, keeping the companies as a separate legal entities the PE firm ensures that a possible distress of individual companies does not directly influence the other portfolio companies as would be the case were the companies integrated. Furthermore, the exit is streamlined because the sale can be discussed at a single holding company level with less parties involved.

²²To determine the relevant time window for searching these earlier transactions we use the typical holding period of PE portfolio companies of 4-5 years.

est deal sample. Each strategy has a single platform, so that their number coincides. The number of completed BB transactions was relatively small up to 2004 but strongly increased in the second half of 2000s, prior to the Global Financial Crisis in 2007-08. After a short set-back, the number of acquisitions returned to their pre-crisis levels in 2010. Figure 2 presents this trend visually in absolute terms (dark-blue shaded area, left axis) and relative to the total number of LBOs, including BBs (solid line, right axis). Together with the large volume of these transactions, the uninterrupted upward trend in the BBs share from 2003 onwards suggests that this type of acquisitions are becoming more important and permanent in the private equity market.

[Table 1 about here]

In Table 2 we present the number of follow-on acquisitions per BB strategy. Most strategies have acquired either 1 or 2 follow-on companies, with an average of 1.7 follow-ons. A few BB strategies, while designated in deal descriptions as such, have not acquired any follow-on companies yet. BB strategies with 4 or more acquisitions are less common, although one strategy in our sample consists of an impressive 34 follow-on companies.

[Table 2 about here]

Out of our 818 strategies, 240 were still active (no exit) as of August 2017. For 33 strategies it was unclear whether they were exited or not. The average length of the BB strategies in our sample is more than 5 years confirming our expectation that BBs are indeed longer-term strategies. This is new, because the typical PE transaction takes 3-4 years to exit, while most of the research focuses on portfolio performance in the first three years post acquisition. Nevertheless, our sample also includes some “quick-flips” in which the strategy took less than a year to complete. On the other side of the spectrum, we also have strategies that took more than 10 years from the platform acquisition to exit.

[Table 3 about here]

3.2 Sectoral Patterns

PE industry and existing theoretical literature mentions industry consolidation in the local market as the primary goal of the BB strategy (see Bain & Company, 2018; Smit, 2001). Through consolidation, the combined company could obtain economies of scale or a stronger

market position towards suppliers and buyers, which has been shown for horizontal mergers in general (Bhattacharyya and Nain, 2011; Singh and Montgomery, 1987). If true, we would expect that most follow-on acquisitions are within the same industry. In Figure 5 we plot the sector of main activity of the platform on the vertical axis against the sector of its follow-ons on the horizontal axis, using three levels of sector classification. The dots on the 45 degree line indicate follow-on targets that are in the same sector as the platform (or horizontally related); the other dots indicate vertically related (suppliers or users) or unrelated acquisitions. While many acquisitions are within the same industry, there are also strategies in which the follow-ons are active in a different industry than the platform, even a different main industry. Clearly, the PE acquirers seek to exploit a variety of goals, not just the industry consolidation as is commonly believed.

[Figure 5 about here]

In Figure 6 we zoom out panel C of the previous graph and present the volume of acquisitions where platform and follow-ons belong to the same 4-digit NACE sector, in panel A, or a different sectors, in panel B. The size of the circles indicates the number of follow-ons in this industry combination. The area between the red lines indicate the sectors in 1-digit sector manufacturing. The graph shows a strong variation in the deal activity per industry. The PE is especially active acquiring follow-ons in services industry (the industry numbers 6xxx and up) Panel B, focusing on follow-on acquisitions in different 4-digit industries, shows a lot of variation in industry patterns. Still, the majority of the deals are clustered around the 45-degree line, where close but not the identical sector combinations line-up. Even excluding the deals in the *exactly* same 4-digit sector, in many strategies the platform and follow-ons are not too dissimilar in terms of business activity.

[Figure 6 about here]

So far, we established that in many BB strategies the platform is combined with its actual or potential competitors from the same industry. These, so called, horizontal mergers imply that industry consolidation is an important motive for the PE industry. But there are many strategies where the platforms and follow-ons do not belong to the same industry. The industrial organization literature has a long tradition investigating the so called “vertical linkages,” where the companies might be related along the production value chain through the supplier-user linkages. Acquiring own suppliers could give the company more control

on the speed of the production process and on the quality and reliability of the inputs.²³ Acquirers can also “learn” from their subsidiaries who are downstream customers.²⁴

The intensity of the supplier-customer linkages is typically measured by the coefficients from the input-output (I-O) tables that show the fraction of each sector output supplied to or sourced from all other sectors in an economy, either intermediate inputs or final products.²⁵ We follow this approach and construct the I-O coefficients at the 4-digit industry level using the U.S. input-output table from 2007, compiled by the Bureau of Economic Analysis (BEA). This is the most detailed I-O table.²⁶ In Figure 7 the deals are divided based on the possible I-O relation between the platform and follow-on. The light-gray dots indicate that the platform (or follow-on) is a direct supplier or consumer to the follow-on (platform), while the dark-gray circles indicate that there is no direct I-O relation. The figure shows that the majority of the deals do indeed have a direct I-O relation. However, there are still numerous combinations in which the relation between the platform and follow-on is unclear. One potential source of value is exploiting technological relatedness between platforms and follow-ons.²⁷ Either type of non-horizontal acquisitions can potentially be motivated by the economies of scope. We exploit the relatedness of the companies in product space in the following empirical analysis.

[Figure 7 about here]

²³Barrot and Sauvagnat (2016) use natural disasters as the source of firm-level idiosyncratic shocks propagating in production networks. They find that affected suppliers impose substantial output losses leading to lower market share on their customers, especially when they produce specific inputs.

²⁴Javorcik (2004) found the evidence of productivity spillovers from multinationals to domestic firms through customer-supplier relationships between domestic firms and their multinational downstream customers or upstream suppliers.

²⁵The earlier papers that use I-O tables to measure vertical linkages at industry level are Caves and Bradburd (1988) and Lemelin (1982). The use of I-O tables in finance was popularized by Fan and Lang (2000) who improve over the field’s common practice to measure relatedness based on the common industry code. They employ commodity flow data from I-O tables to construct measures of inter-industry vertical relatedness and complementarity and then estimate the intersegment relatedness of firms (within a diversified firm) using the industry-level relatedness coefficients.

²⁶Using the U.S.-based measures implicitly assumes that the patterns of input flows in the advanced European countries of our sample are close to those of the United States. If the U.S. production and input structures are imperfect for European countries, we are introducing random error in the measurement of our regressors and, therefore, reducing the probability of finding statistically significant results. The alternative is the World Input-Output Database (WIOD) that provides time-series of I-O tables for forty countries but at the less detailed 2-digit industry level.

²⁷Bloom et al. (2013) show that firms learn from the technological innovation of firms that are close in technology space. Acemoglu et al. (2016) argue that technological progress is not only a cumulative process, with new technologies building on existing knowledge, but also a process where innovation in one firm affects firms in technologically close fields. Fons-Rosen et al. (2017) show that positive knowledge spillovers from MNCs can happen without input-output linkages as long as the firms produce in technologically close sectors.

3.3 Company and Strategy Financials

Our main outcomes are the natural logarithm of sales and total assets, to verify whether portfolio companies of these strategies grow faster than their industry peers post acquisition. Second, we use the return on assets (ROA, equal to EBIT over total assets), return on sales (ROS, EBIT over sales), and asset turnover (ATR, sales over total assets) to observe whether the PE owned companies show a stronger operating performance than their industry peers.²⁸ Third, we analyze the leverage and the cash holdings over assets. The former variable is an important determinant of private equity returns, while the latter characterizes the degree of financial constraints of the companies (Erel et al., 2015). Finally, we test whether these strategies have a “real” effect by looking at the effect on labor productivity, defined as sales over the number of employees.

Individual companies may report unconsolidated and consolidated financial statements (the latter include operations of subsidiaries). Figure 4 demonstrates how we assign financials to time for a hypothetical strategy involving a platform and one follow-on. The platform was acquired in 2006 ($t=0$ in our notation everywhere) and the follow-on in 2007. For individual companies, we prefer to rely on the numbers from unconsolidated statements. The “pre-deal” financials, denoted in red italic font, are taken as of two years before the entity was acquired. We use the financials from the year following the acquisition year as the post-deal outcomes because the deals are spread out throughout the acquisition year and we want to count full years of economic activity; these are denoted by black regular font. The numbers from the acquisition years (marked with “X”) are, thus, excluded from the analysis.

When computing the outcomes of strategies we have to take into account the timing of acquisitions. Financials of strategies pre-deal and in all years up to and including the year when the follow-on was acquired (here, 2007) coincide with financials of the platform. In the years after the acquisition of follow-on the strategy financials must include the financials of platform and all follow-ons ($115+45=160$ in 2008, and so on, in the example). When computing the outcomes of strategies in these periods we have to take into account the ownership structure of the strategy and types of accounts reported in Orbis. As shown in Figure 3, the complex ownership structure established for buy-and-build strategies makes measurement of operating activity of strategies difficult.

²⁸We also run the analyses with EBITDA instead of EBIT. The results are qualitatively the same.

If the follow-on companies are subsidiaries of the platform (such as in Case A) one could identify the financials of the strategy using the consolidated accounts of the platform in the years following the follow-on acquisition. Often, the platform and follow-on companies are the same level subsidiaries of a separate holding company (Case B) or a separate holding company is used to acquire add-ons (Case C). In such cases, using the consolidated data of the platform will overlook the financials of the follow-ons because the real activity of the strategy would be reflected in the financials of the holding company. Our ownership data allows differentiating these various ownership structures. By tracing the ownership relationships from each acquisition target to the ultimate acquirer (the PE company) we collect the correct financials and aggregate them in the way avoiding double-counting but accounting the activity of the relevant platforms and follow-ons. With this forensic bottom-up approach we are able to measure the real and financial performance of these strategies more comprehensively than when the data comes from the PE side. The latter data is typically limited to the reported portfolio performance and scant company information.

4 Empirical Methodology

Our goal is to identify the causal effect of buy-and-build strategy on the operating performance of the acquired companies. The challenges we face are typical in empirical corporate finance research due to endogeneity of acquisition decision and we adopt the empirical methodology used in the literature to alleviate these concerns.²⁹ In addition, in the context of serial acquisitions, one can talk about individual company analysis and strategy-level analysis. The latter is the main contribution of this paper and we offer a novel methodology suited for determining the operating synergies of the entire strategy.

Our empirical strategy relies on three pillars. First, our dataset is large and spans various industries across several countries that allows us to generalize our results with confidence and to account for the trends that are common to sector-year, country-year, or country-sector-year combinations.

Second, we use a difference-in-differences estimation to compare the performance of acquired entities (treated) with the performance of the comparable non-acquired entities (controls) over time after the acquisition. In a standard M&A context, the “entity” would

²⁹See Roberts and Whited (2013) for a review of empirical approaches aimed at addressing endogeneity problems in firm-level analysis.

refer to a single company, while in our context it can either be an individual target (a platform or follow-on) or the entire strategy including a platform and all related follow-ons. In both cases, the difference-in-differences estimator eliminates any constant or strongly persistent difference between the treatment and control groups by inclusion of the treatment indicator variable. Any common trend affecting both the treatment and control group is controlled for by the inclusion of the post-treatment trend variable. Specifically we estimate the following specification:

$$Y_{i,t} = \alpha + \beta_1 Post_{i,t} + \beta_2 Post_{i,t} BB_i + \eta_i + \eta_t + \epsilon_{i,t}, \quad (1)$$

where $Y_{i,t}$ are different outcomes for a company or strategy i in the year t . $Post_{i,t}$ is equal to one for the observations (treated or controls) after the deal and zero otherwise. The BB_i is our treatment indicator, equal to one for targets in BB strategies. β_2 is our difference-in-differences estimate and the coefficient of interest.

PE companies are professional investors who carefully select their acquisition targets. If there are differences between the acquisition targets and other companies prior to the treatment that are taken into account by the PE but unobserved by us then the regression Eq. (1), estimated on the largest possible sample of companies, will not recover the causal effect of BB strategies. In order to control for selection on unobservable *time-invariant* company-level factors, we include firm fixed effects, η_i . Similarly, we include year fixed effects, η_t , to control for common time trends across countries.

Third, to further alleviate the selection issue, we combine the difference-in-differences approach with propensity score matching.³⁰ We match each firm that was acquired into a BB strategy with companies as similar as possible in terms of observable characteristics prior to the acquisition. This creates an “artificial counterfactual” by having the estimated coefficients being identified from the post-buyout performance of acquired companies compared to performance of similar stand-alone firms. Traditionally, PE companies favor some firms or sectors with below average performance. Alternatively, the BB strategies often imply consolidation in on an industry in different markets. In addition, our results may be caused by common reactions to country-level changes in, say, the business climate. We hedge against such effects by matching treated and control companies in the same country,

³⁰Originally applied in labor economics, the diff-in-diff matching estimator has become increasingly popular in causal analyses in other fields. For instance, Arnold and Javorcik (2009) apply this technique to examine the relationship between firm productivity and foreign acquisitions while Lemmon and Roberts (2010) use it to identify the effect of credit supply contractions on corporate behavior.

industry, and year. We recognize that matching methods do not rely on a clear source of exogenous variation for identification and does require knowledge and measurement of the relevant covariates that determine the selection into the BB targets.³¹ However, it offers an improvement over a simple regression methods, especially in conjunction with controlling for unobserved trends and other checks we perform.

4.1 Matching Procedure

We match the individual companies that are part of the strategy with non-acquired companies in the same country, industry, and year to control for the common trends in fundamentals.³² We require the relevant financials of control companies to be available in Orbis in the two pre-deal years and in the first three post-deal years, where the deal year refers to the year when the platform was acquired. For the long-term analysis we require the controls to have at least five years of post-buyout financials. For each treated company we keep the five closest matched controls to balance the accuracy of matching with the precision of the resulting estimates.³³

For the consistency of the difference-in-differences estimator, the data should satisfy the parallel trends assumption. In our case, this condition means that without acquisition, the average change in company performance would have been the same for both the treated and control firms. The assumption cannot be tested but is typically verified graphically by ensuring that the pre-treatment trends in outcomes for the treatment and control groups are the same. With the diff-in-diff matching estimation, Roberts and Whited (2013) recommend to match on firm characteristics and growth rates of outcome variables to ensure similarity of pre-treatment trends.

The nature of the traditional leveraged buyouts by the PE and the postulated difference of the BB strategy guides our choice of the matching variables. While PE companies traditionally look at firm profitability when selecting the targets, recent claims from the industry suggest that the BB strategy is primarily aimed at sales growth over the long-run, perhaps, at the expense of near-term returns. Consequently, we match on the return on assets, the

³¹As discussed by Roberts and Whited (2013, p.553), if selection occurs on unobservables the matching is subject the same endogeneity problems as in regression that arise from omitted or unobserved variables.

³²Similar choice of control group was used by Davis et al. (2014) and Bharath et al. (2014) in their studies of the effects of private equity on jobs and productivity in the U.S.

³³We also make sure that the probability of selection into the BB strategy of the matched peer differs by at most twenty percentage points (a 0.2 caliper of the propensity score) and then keep the closest five neighbors if more than five neighbors are identified. We match with replacement to have a better match but at the expense of worse power, which is a lesser concern in our large sample.

return on sales, log of total assets, log of total sales, the squares of both, the growth of sales and of assets, and the changes in return on assets and return on sales, using the *pre-treatment* values to reduce the possibility that the matching variables are affected by the treatment.³⁴ The matched control sample for follow-ons is formed by a similar procedure, using the year when the follow-on was acquired as the deal year.

In Table 4 we present the means of financial variables from the matched treated and control group for the pre-deal year, together with the results of the test of difference of means, for platforms (panel A) and follow-ons (panel B). The company size (log Total Assets) is somewhat larger for acquired platforms while the asset turnover is lower, but only at 10% significance level. These differences in level variables, if persistent, would be absorbed in the regression analysis by firm fixed effects. In addition, the magnitude of the difference in log-assets is about 1.5 percent which is economically small. The difference in means of the other matching variables are insignificant at conventional levels. What is more important, the changes in outcomes are not significantly different between treated and matched controls. Levels and trends for follow-ons reported in panel B are not significantly different for between treated and matched controls.³⁵ The Figure 8 also demonstrates that in our largest matched sample of Panel A of Table 4, the “parallel trends” condition is satisfied: in the pre-treatment year, there is no significant differences in growth of key outcomes between treated (acquired into BB strategy) and control (non-acquired) platform companies.

[Table 4 about here]

[Figure 8 about here]

4.2 Buy-and-builds and Individual Company Performance

In Appendix A we we present the results of estimating the model in Eq. (1) for individual companies that are a part of the buy-and-build strategies using out diff-and-diff matching

³⁴We use two lags of level and one lag of growth of outcomes, relative to the acquisition year. We have winsorized our variables before the matching procedure: assets and sales at 1% and 99% and the profitability measures at 10% and 90% levels. The data coverage in pre-deal years is limited, and matching on the earlier lags of pre-deal growth would seriously decrease the sample size.

³⁵As a robustness check, we match on just the pre-treatment log of total assets, total sales, the squares of both, return on assets and return on sales. This requires only one year of pre-buyout data and expands the sample by about 12 percent. This modest increase in sample size does not, in our view, justify the risk of affecting our results due to divergent pre-treatment trends.

estimation methodology. We find that assets and sales of the platform companies grow compared to that of their peers, which is not surprising considering that the PE owners often shift assets and sales from the follow-on to the platform while the companies are being integrated. At the same time, the profitability of platforms or add-ons is flat. In the same appendix we compare strategies (the platform company with follow-ons) to the matched peers of the platform and show that the cumulative size of the follow-on acquisitions largely explains the strategy-level sales growth, compared to the peers of the platform. This evidence implies that the individual-company analysis might be misleading in context of serial acquisition strategies, such as buy-and-builds, because it is difficult to fully separate the inorganic growth (the “size” effect due to follow-on acquisitions) from the organic synergetic growth. The latter is the true value creation we try to identify. For this reason, we focus on strategy-level analysis, which requires a control sample for the entire strategy.

4.3 Placebo Control Strategies

In order to identify the effect of buy-and-build strategy at the strategy level, we create the *placebo control strategies* by combining the observed post-deal financials of the companies from the samples of matched platforms and follow-ons. Specifically, for each company (a platform or an add-on) included in every observed strategy we randomly draw a company from the five matched controls (correspondingly, the platform or add-on) and assign this matched company to a single placebo strategy, keeping track of acquisition years in actual strategies. We aggregate financials of individual companies to form (placebo) strategy financials similarly to actual strategies, as explained in Section 3.3. Since we retain five matched controls for each platform and add-on, each strategy obtains five placebo strategies with randomly assigned controls.

5 Results

5.1 Performance of Strategies over the Short-run

Most of literature on private equity, and on M&As in general, analyses what happens to the companies over the first three years after the acquisition. Therefore, we begin our empirical analysis by estimating the model in Eq. (1) at the strategy level over this time horizon, which

can be considered the short run for these serial acquisition strategies.³⁶ The variable *Post* takes the value of zero at $t-1$ and one for the period $t+1$ up to $t+3$ where t is the company acquisition year. The coefficient of the $Post \times BB$ is our main coefficient of interest, showing the difference in the outcome of the observed strategies to the placebo control strategies during three years after the acquisition. If the strategy brings the synergetic benefits, the coefficient to this interaction would be significant. The standard errors are clustered two-ways over the strategy and year dimension.

We report the results in Table 5. None of the coefficients of the interaction variable $BB \times Post$ are significant once we control for the comparable placebo strategy which may be interpreted that these strategies do not bring operating benefits once we control for inorganic growth (the “size effect”) associated with the follow-on acquisitions.

[Table 5 about here]

It is possible that our sample contains well-performing and less successful strategies. We showed in Table 3 that one-third of our strategies are still active. If these strategies have not exited precisely because they underperform, they can potentially counterbalance the positive effects seen in the strategies that exit. In Table 6 we re-estimate the regressions in the previous table excluding the strategies that are still active or with unknown status. Compared to the full sample, the size of the coefficients almost triples and the effect of strategies on ROS becomes statistically significant. This is consistent with our conjecture that non-exited strategies are underperforming and, therefore, the PE companies hold on to them. In panel B we show this directly by focusing on the sample of just the non-exited strategies. As seen from the coefficients of the $BB \times Post$, the strategy sales grow faster than assets (column 5) but this is achieved at the expense of inferior return of sales than in the comparable placebo strategies (column 4).³⁷ While the coefficient in the regression with assets and sales in column 1-2 are not statistically significant their magnitude may imply that an increase of assets turnover is achieved by an accelerated reduction of assets. These strategies have also less cash (column 7). Having documented these patterns we focus on the strategies with known exit in the rest of the paper.

[Table 6 about here]

³⁶We measure the performance of the strategies during the first three year holding period. If a strategy exits before the first three years we measure the performance up to the exit.

³⁷The profitability of these strategies is quite poor because the comparable placebo strategies show a significant positive ROS over the same time period as seen from the coefficient of *Post*.

In Table 7 we investigate whether the results differ depending on the time to exit by looking at the subsamples of the short-term strategies (up to four years to *known* exit) and the long-term strategies (five years or more to exit), while still concentrating on the first three years since the portfolio acquisition. We choose the four year threshold for defining the short-term strategies to be consistent with the literature because it results in exactly three years to exit on average in this subsample. Panel A reports the results for the short-term strategies. Compared to their placebo strategies, these strategies show a strong growth in assets (column 1). Sales grow slower than assets relative to the peers (column 5) but the profitability of sales is superior (column 4). In panel B, we check how the long-term strategies perform over the short term. We do not see any significant differences of their outcomes compared to their placebo strategies.

In panel C, we compare the short-term and long-term strategies by combining them in one sample. We satiate our regressions with the variables that control for the cross-sectional and over-time differences between the two types of strategies *and* their corresponding matched placebo strategies to rule out the possibility that the differences might be driven by the different controls. In particular, the variable *LT strategy* identifies the long-term strategy and its controls; then, the *BB×LT strategy* isolates the actual long-term strategy (the treated). Conditional on included variables, the coefficient of the triple interaction *BB×LT strategy×Post* is the test whether the actual long-term strategies outperform over time the short-term ones. They do not—the only significant difference we see is in higher leverage of the long-term strategies over the first three years (column 6). The coefficients of *BB×Post* identify the effect of the short-term strategy relative to its controls while the coefficients of *Post* show the performance of the short-term placebo strategies. The results virtually coincide with panel B and confirm the finding of superior performance of these strategies relative to their placebo controls that, in turn, show decline in profitability and cash holding over time. Looking at the *LT strategy×Post*, it turns out that the placebos of the long-term strategies do not show a significant difference in performance compared to the placebos of short-term strategies.

Taken together the evidence in Table 7 shows that faster growth of assets and superior profitability (ROS) of strategies relative to their placebos seen in panel A of Table 6 is more likely to be driven by the short-term strategies because they outperform their placebos, the long-term strategies do not show significant difference compared to the short-term ones, and there are no significant differences between the placebo strategies across sub-samples.

[Table 7 about here]

5.2 Performance of Strategies over the Long-run

We find that, except for the leverage, there are no significant *short-term* differences between strategies depending on the time to exit once we control for the differences in the observable characteristics accounted for by the placebo strategies. The arguments from the PE industry imply that the BB is a *long-run strategy* with the focus on operating synergies that might take time to realize because there are multiple companies in portfolio that need to be restructured. Indeed, the average length of our BB strategies, from the platform acquisition to exit, is over five years, while the longest exited strategy took around thirteen years. Perhaps, the traditional in finance literature time horizon of three years is too short to see all the possible benefits accruing to the long-term strategies.

We verify this by focusing on the strategies that were exited in at least five years after the platform buyout.³⁸ In panel A of Table 8, the *Post* dummy takes the value of one in year one to five after the platform acquisition. Now we see a positive significant effect of the strategy on return on assets and return on sales, while the other outcomes are similar to those of the placebo strategies. In panel B, we split the *Post* dummy into two, the *Post-Short* taking the value of one in the first three years after the platform acquisition and the *Post-Long* equal to one thereafter. The results indicate that the significant synergies in terms of larger sales arrive later, in the year 4 and 5, while the profitability increases throughout but the effect grows over time. Based on the coefficients in column (4), the ROS of the long-term strategies increases, on average, by 2 percentage points over the first three years and by additional 1.3 percentage points in the following two years, compared to pre-treatment level. The short-run effect on profitability is comparable to the 2.3 percent increase in ROS of short-term strategies documented in panel A of Table 7.

[Table 8 about here]

These effects are economically meaningful. The average pre-treatment ROS in the sample of Table 8 is about 6.2 percent with the standard deviation of 9.2 percent. The results imply that over the first three years an average strategy shows close to 33 percent improvement of ROS over the pre-treatment sample mean, while over five years the increase of the ROS of

³⁸This is the sample comparable to the one in panel B of Table 7 except in implementing propensity score matching we now require our controls have at least five (instead of three) years of data post-buyout.

the long-term BB is 55 percent. Taking the longer horizon view, beyond what is typically looked at in the existing literature, we find that the value is created by the BB strategies through growth of sales and improvements in the profitability of the combined firm over the long-run.

5.3 Employment and Labor Productivity

The impact of private equity on employment has been a topic of an intense debate among politicians and academics for a long time. The typical critique is to note that when private equity companies are focused on cost reduction cutting the labor force can be the easiest way to reduce the expenses. Davis et al. (2014) challenge this view. Using establishment level data from the U.S., they find that the net effect on employment is small but there is a sizable reallocation of labor between the establishments within the firms. Private equity grows the labor force at expanding or new establishments while reduces it at shrinking or existing establishments. The authors also document the productivity gains due to this within-firm reallocation of jobs.

While we see some performance improvements in BBs, it is unclear how these strategies influence the employment and labor productivity. First, some employees may become redundant when platform and follow-on companies integrate. As a result, BB strategies might decrease employment but, in turn, improve the productivity of the remaining labor. Second, the productivity of labor can improve through knowledge transfer (the learning effects) or directed moving of jobs from less productive companies to more productive companies within a strategy, as in Davis et al. (2014). This reallocation of jobs would have no effect on the total employment of the strategy, but may have a positive effect on labor productivity. Third, due to the expanding size of the combined company more labor might be needed to maintain the new scale of operations.

In Table 9 we test these conjectures. Combining all exited strategies and focusing on the short-run (first three years on acquisition) in panel A we do not see any changes in employment or gains in labor productivity. Same is the case when we focus only on the short-term strategies, with exit in up to 4 years, in panel B. Turning attention to the long-term (5+ years) strategies in panel C we do not find any significant changes in employment but see the significant improvement in EBITDA/employment throughout five years after acquisition (column 2). In addition, these strategies show the improvement in labor productivity over

the short-run, in the first three years after acquisition. Together, the evidence of growth of sales and profitability in Table 8, no changes in employment, and a higher labor productivity is consistent with the mechanism of Davis et al. (2014) where PE achieves productivity gains by reallocating labor to the most productive use within the portfolio.

[Table 9 about here]

5.4 Heterogeneity of the Effects of Buy-and-builds

Our results so far show that the PE investors who “wait and grow” the companies for a longer period achieve significant additional operating results, compared to the near-term investment period of three years. From this prospective, it seems the BB strategy does not rely on the “quick fixes” that have characterized the other PE strategies. But what is being done? In the previous section we show that the long-term strategies improve the productivity of labor. Figure 6 and Figure 7 revealed a great heterogeneity in the type of the companies entering the strategy as platforms or follow-ons. In the remainder of the paper we explore what kinds of companies are likely to deliver the largest benefits for investors keeping in mind the possible sources of value behind this strategy.

5.4.1 Capital Intensity

One of the claimed sources of value in serial acquisitions, such as BBs, is the economies of scale. Larger firms achieve operating efficiency by pooling resources together; they also become more competitive by capturing a larger market share. Our data shows that most of the BB targets are clustered either in manufacturing or services sectors. From an operational point of view, it is easier to realize the economies of scale in capital intensive industries, such as manufacturing. We would expect that cutting redundant capital could make a company more profitable when the returns to capital are decreasing in scale for very capital intensive companies.

Alternatively, Fidrmuc et al. (2012) show that in the U.S. over 1997-2006, the strategic buyers would typically buy listed targets with higher market-to-book ratios and more specific assets (firms with high R&D or intangible assets) while the private equity buyers target firms with lower market-to-book ratios. They interpret this finding as evidence of the theory of Shleifer and Vishny (1992) who argue that it is strategic buyers who can put very specific

assets to their best use while PE prefer more generic, or redeployable, assets that they can manage or dispose of more easily.³⁹ Such interpretation implies that the private equity buyers are industry outsiders who cannot put the assets to the best use and is against our hypothesis that the PE companies engaging in the BB strategy *are* well-positioned to identify and exploit synergies and, therefore, close to the strategic buyers. Either way, what matters for us is dependence of the strategy performance on the asset redeployability, which we measure by the capital intensity of the platforms.

To verify the possible heterogeneous effect along this dimension, we interact the degree of capital intensity of the platform with our diff-in-diff estimator. The results are reported in Table 10. *K Intensity* is a dummy variable equal to one for the strategies in which the platform had the fixed assets to employees higher than the sample median in the pre-deal year.⁴⁰ For the long-term strategies in panel A, results in column 1-2 imply that the strategies with more capital intensive platforms cut back their assets and sales more than other BBs with the same time to exit. They also rely less on external debt and hold more cash, as shown in column 6-7. At the same time, these strategies show significant improvement in profitability in terms of ROA and ROS (column 3-4) and efficiency measured by the assets turnover (column 5).⁴¹ These findings are consistent with the assets redeployability hypothesis advanced by Shleifer and Vishny (1992). PE owners engaging into the longer-term BB strategies in capital intensive industries dispose of the redundant capacity and improve profitability, which makes the portfolio more attractive for the strategic buyers.

For the short-term strategies in panel B, the interaction is not significant, except for asset turnover. There is no evidence that this channel of value creation is being exploited by the shorter strategies.

[Table 10 about here]

³⁹Gorbenko and Malenko (2014) show that strategic buyers—that are usually companies in a related type of business, such as competitors, suppliers, or customers—tend to value research and development expenses and intangible assets such as growth options.

⁴⁰We experimented with the definition of capital intensity based on the split below/above the median sales to assets ratio within either the treatment or control group in the pre-deal year and obtained qualitatively similar results.

⁴¹In appendix Table B.3 we split the *Post* dummy into *Post-Short* and *Post-Long* to check the timing of these benefits. We find that all the effects we document in Table 10 occur from right after the acquisition and grow over time.

5.4.2 Type of Follow-on Acquisition

Thus far, we have not yet differentiated between the types of relations between the platform and follow-on companies. We distinguish between two different types of acquisitions: horizontally and vertically related follow-ons. By acquiring a rival the platform increases its market share, which provides a stronger market position within the industry and towards customer and supplier industries. The increase in size can furthermore lead to economies of scale by operating more efficiently. Follow-on acquisitions are vertically related when it is either a customer of or supplier to the platform. These latter type of acquisitions could improve the quality of products or improve the production efficiency.

The literature typically defines horizontal acquisitions as those within the same 2-digit NACE (or comparable) sector. To analyze the impact of different types of acquisitions along the value chain within our strategies we need a narrower definitions of industries. We classify industry relations based on 4-digit NACE codes. We further use input-output table from the U.S. for the benchmark year 2007 that is detailed enough allow us to identify customer-supplier linkages on a 4-digit industry level.⁴²

We define two variables that characterize the degree to which the strategy relies on follow-ons that are either horizontally or vertically related to the platform. Specifically, the variable *Horizontal* is the proportion of follow-ons in a given year in the same 4-digit NACE sector as the platform as the ratio of all follow-ons acquired as of this year. The variable *Vertical* is the proportion of follow-ons in a given year outside of the 4-digit NACE sector of the platform, but that have either a supplier or customer relation based on the I-O table, as the ratio of all follow-ons acquired as of this year. For the control samples, the relatedness measures are defined similarly. As before, the *BB* is a dummy indicator for the treated sample. Because in our sample the follow-ons are being acquired starting in the first year after the acquisition of the portfolio the coefficients of these proportions capture the development of the given outcome relative to the pre-acquisition year, much like the shifter *Post* in all the previous regressions, and the influence of the strategy characteristics. Therefore, we do not include the *Post* and $BB \times Post$ in our regressions.⁴³ The results

⁴²The input-output coefficients derived from the I-O table record the fraction of its own output that a given 4-digit sector s_4 supplies to or sources from each given sector \tilde{s}_4 . To construct our measure at the four-digit level, we use the U.S. input-output table from the Bureau of Economic Analysis (BEA). Using the U.S.-based measures implicitly assumes that the patterns of input flows in the countries of our sample are close to those of the United States. If the U.S. production and input structures are imperfect for advanced European countries, we are introducing random error in the measurement of our regressors and, therefore, reducing the probability of finding statistically significant results.

⁴³We verified that the results do not change on inclusion of these terms.

for longer-term strategies are reported in Table 11. Contrary to expectations, we do not find that horizontally related follow-ons significantly change the operating performance of strategies; these strategies only seem to secure higher leverage. In contrast, profitability seem to increase in the strategies which combine vertically related companies.⁴⁴ Longer-term vertical strategies are more efficient by increasing sales-to-assets and labor productivity. One possibility behind the lack of relationship between operating outcomes and “horizontalness” measure is that the horizontal BBs are focusing on the multiple expansion as a possible goal of BBs in the same narrow industry. If the key goal of the horizontal strategies to eliminate the small firm discount and sell the combined larger company at higher multiple *without meaningful operating changes* we will not capture this effect in our operating outcomes.⁴⁵

Next we explore further what lies behind our *Vertical* measure by exploring if i) the place in the value chain and ii) the degree of closeness of vertical relation matters for strategy performance. We create the dummy variables that take the value of one in the year when the strategy acquired a follow-on that is either a supplier or customer of the platform based on I-O relationship, and stay hence. In addition, we measure the importance of these relations because closer acquisitions could lead to more knowledge spillovers, more efficient integration, and more synergies. We differentiate between close customers (or suppliers) based on the industry classification. We define a close customer (or supplier) as a customer that has a trading relation with the platform and lies outside the same 4-digit industry, but within the same 2-digit industry. This indicates that in addition to sharing an input-output relation, the companies are closer in terms of product similarities. The “other” customers (or suppliers) are those who still have trade linkages but are outside of the platform’s 2-digit NACE sector. In Table 12 we report the results, suppressing the terms not interacted with our treatment indicator *BB* to save space. We find that strategies focusing on not so close suppliers of the platforms tend to reduce overall assets but acquiring *close* suppliers improves growth of sales and profitability of the strategy. In addition, such strategies improve labor productivity. Interactions with horizontal or customer dummies are not significant.⁴⁶

⁴⁴This result also holds in the short-run for the sample of short-term and long-term strategies. The results are available upon request

⁴⁵Studying the exit multiples of these strategies is a possible extension of this paper.

⁴⁶As robustness reported in appendix Table B.4, we measure closeness as the intensity of the trade as seen in the input-output table, defining close customers (suppliers) to be the follow-ons in industries in the top quartile in trade intensity and other customers (suppliers) to be in industries in the bottom quartile in trade intensity. The omitted category are suppliers (customers) with intermediate relatedness. With this definition, we still find the positive effects of strategies focused on close suppliers on profitability (measured by ROA) and labor productivity. At the same time these strategies reduce employment and total assets.

6 Conclusion

In this paper we analyze the operational performance of buy-and-builds, a hybrid strategy that combines the long-term synergy focus of strategic buyers with the financial synergies of LBOs in private equity. Through follow-on acquisitions private equity investors aim to grow and improve the profitability of portfolio companies in the long-run. The market for these strategies has increased tremendously and in the recent years comprises around 30% of the European private equity deal market.

There is a concern that private equity firms use the follow-on acquisitions purely for the purpose of increasing the size of their portfolio. Then the entire strategy could merely be a “window-dressing” for raising new capital. Likewise, PE may use the term to justify investments from unspent funds (so called “dry powder”). The positive returns of private equity can then simply be the result of debt repayments. In contrast, BB strategies could offer potential synergies such as economies of scale or increased market power. These are typically realized by the successful strategic buyers.

To shed the light on these issues, we collect a large sample of serial acquisitions by PE in Europe that, according to the deal description, have a clear stated goal of pursuing some form of synergetic growth. Our empirical strategy to establish a causal relation between these strategies and the operating performance of portfolio companies is a combination of propensity score matching and difference-in-differences analysis. To control for selection effects, propensity score matching is used to find industry peers that are similar in observable characteristics as the target companies, but that were not part of a buy-and-build strategy. The novelty of our paper is to set up the placebo strategies—the observationally equivalent portfolios constructed from the matched peers of the platform and add-on companies within our observed strategies. This allows us to establish the correct comparison group at the strategy-level and identify the outcomes that can be interpreted as the organic synergetic growth.

Our findings show that this increasingly popular investment strategy focuses more on growth and synergies from serially related acquisitions and less on value creation from the traditional value drivers in leveraged buyouts, such as tax shields and restructuring. Longer-term strategies, taking at least five years to exit, are especially successful to grow sales and improve profitability of the entire portfolio. Buy-and-build strategy also improves productivity of labor without sacrificing employment.

We also discover the importance of heterogeneity within this investment strategy along several dimensions, which provides some evidence on how these improvements come about. The longer-term strategies in more capital-intensive industries and those that seek to exploit vertical product relationships by combining the platforms with their suppliers are especially successful in terms of sales growth and profitability. The vertical integration provides superior operating results compared to horizontal industry consolidation.

These findings confirm the positive view on private equity in which private equity is able to improve the operational performance of its portfolio companies in the long run. It appears, that in order to succeed in a modern highly-competitive market environment private equity firms need to target longer-term investment opportunities and carefully select the types of companies in their portfolio taking into account the entire production value chain.

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Figures

Figure 1: Global M&A Activity and Private Equity Buyouts. This figure presents the deal value of global M&As standalone private equity deals (light-blue bars) and private equity buyouts (red bars) in trillions of U.S. dollars (left vertical axis) and the percentage share of PE deals in total M&A (right vertical axis). The data is from Thomson Reuters obtained from Eric Platt, “Global M&A activity hits new high, ” Financial Times, 30 September 2018, available at <https://www.ft.com/content/b7e67ba4-c28f-11e8-95b1-d36dfe1b89a>.

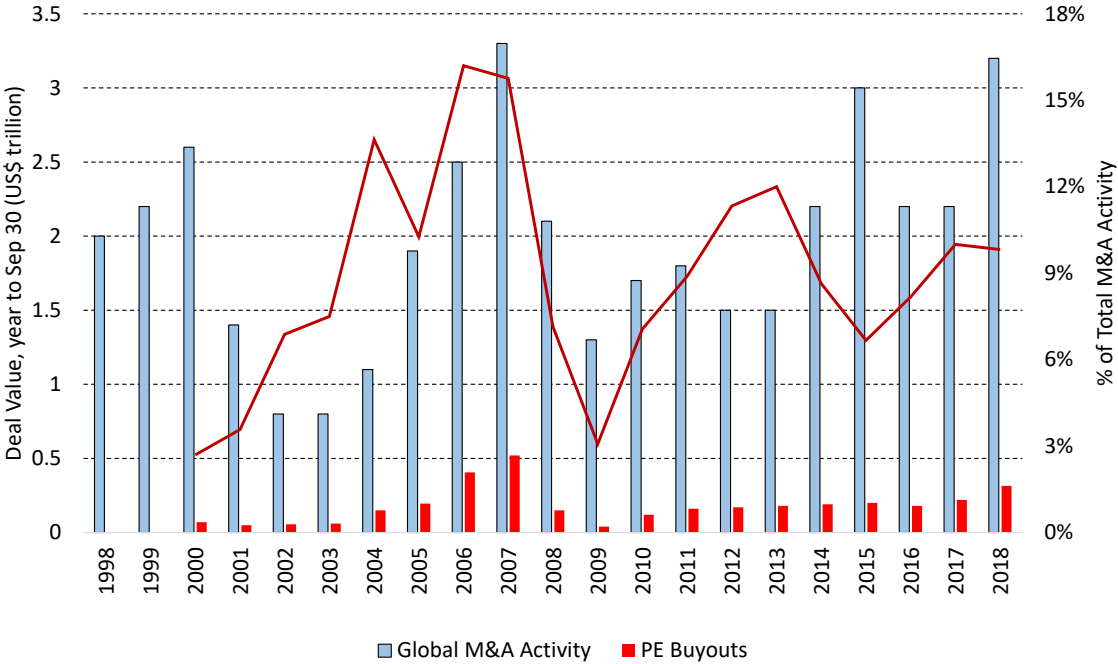


Figure 2: Buy-and-build and standalone deals and over time. This figure presents the deal count (left vertical axis) of standalone private equity deals (light-blue area) and buy-and-build deals, including both platforms and follow-ons (dark-blue area). The ratio (right vertical axis) presents the percentage of BB deals to the total private equity deal market, including standalone and BBs.

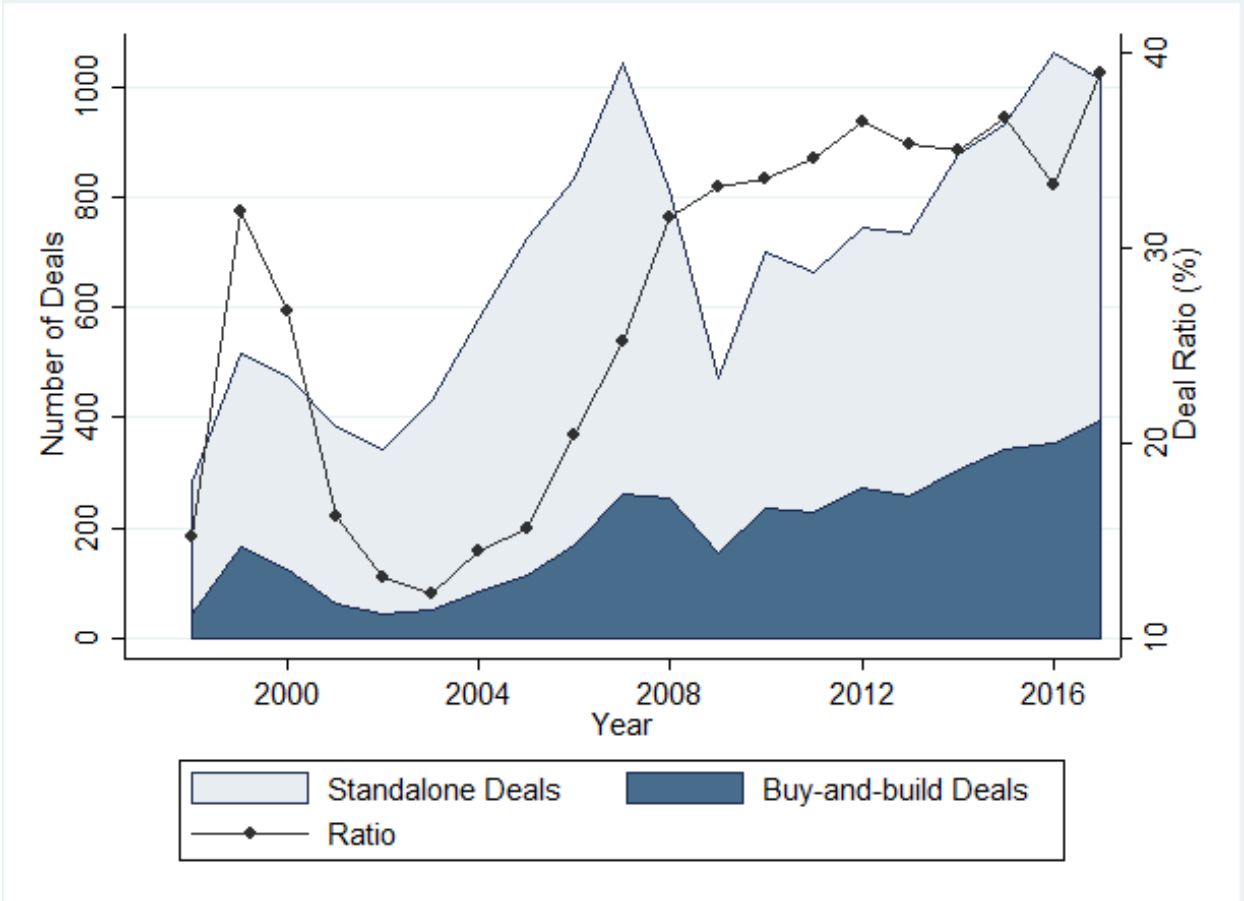


Figure 3: Ownership structures. This figure provides an overview of several examples of ownership structures in buy-and-build strategies in our sample. Case A shows a simple ownership structure in which it is easy to identify the platform from the follow-ons. Cases B–D show more complex structures. The “holding companies” are additional entities which may be created by PE companies as acquisition vehicles for platforms, follow-ons or both.

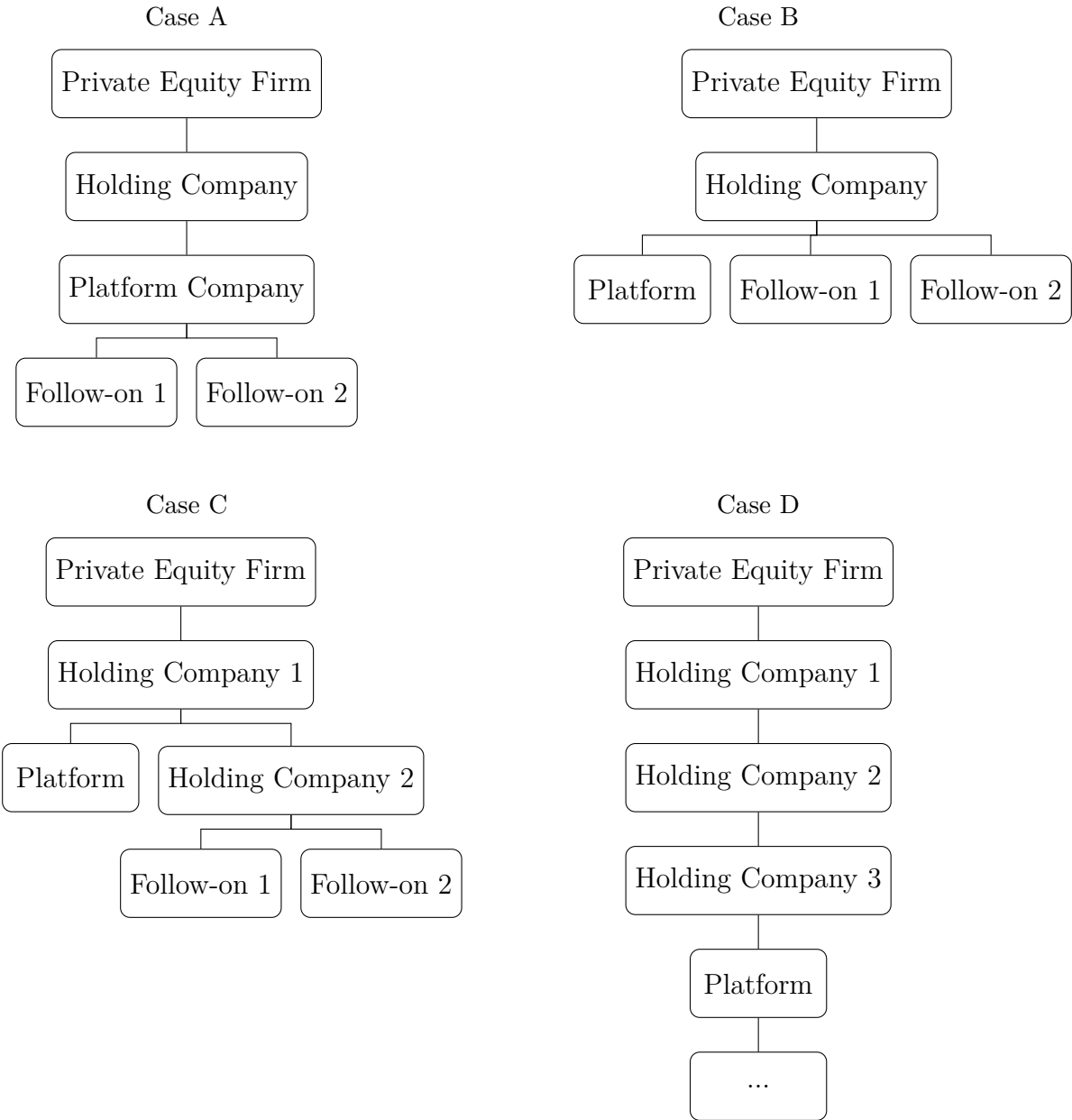
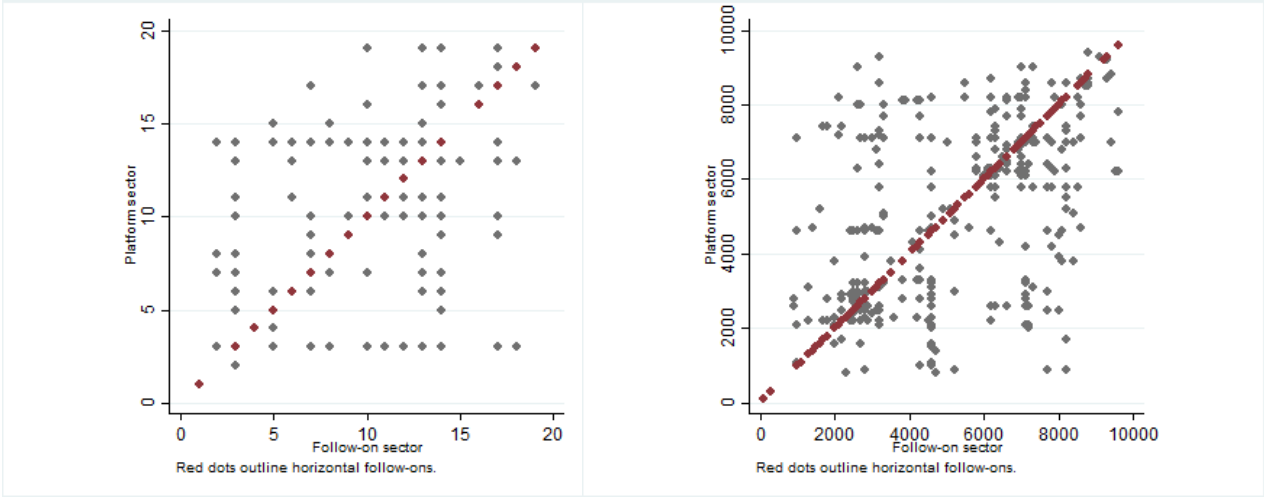


Figure 4: Timing of company financials for strategy-level analysis. This figure presents a hypothetical strategy with one platform and one follow-on. The entries represent the unconsolidated financial data of the platform and follow-on over time. The values in red italics represent pre-deal financials. The consolidated data at strategy level is reported in the third row. Pre-deal, the consolidated financials of the strategy consist of only the financials the platform; the financials of the follow-on are added to the strategy post follow-on acquisition. Under “Placebo Str.” we report the financials of the hypothetical placebo strategies, constructed from the matched peers of the platform and follow-on in actual strategy. The acquisition year (the observations marked by “X”) is excluded in the analysis.

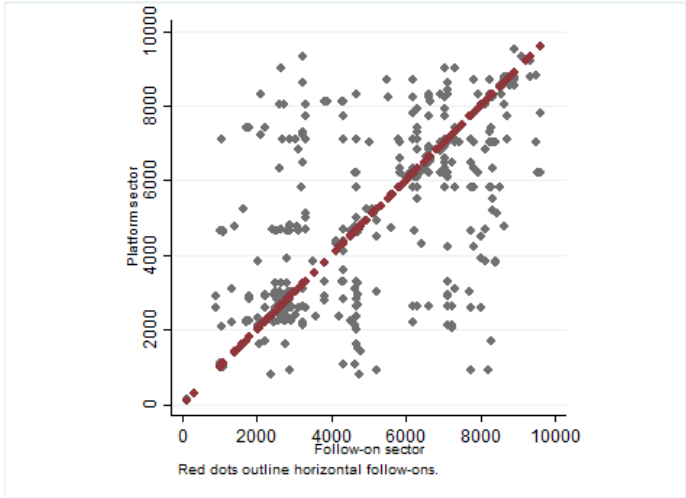
| | | | | | | | | |
|---------------------|-----------|------------|-----------------------|-----------------|------|------|------|------|
| Platform | <i>90</i> | <i>100</i> | 105 ^X | 110 | 115 | 120 | 130 | 140 |
| Follow-on | | <i>35</i> | <i>38^X</i> | 40 ^X | 45 | 45 | 50 | 60 |
| Strategy | <i>90</i> | <i>100</i> | 105 ^X | 110 | 160 | 165 | 180 | 200 |
| Placebo Str. | | | 104 ^X | 111 | 158 | 165 | 182 | 201 |
| Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| t= | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| | | | ⋮ | ⋮ | | | | |
| | | | <i>PL Acq.</i> | <i>FO Acq.</i> | | | | |

Figure 5: Industry combinations. This figure plots the sector of main activity of the platform on the vertical axis against the sector of its follow-ons on the horizontal axis, using three levels of sector classification: a large 1-digit sectors in panel A, 2-digit NACE revision 2 sectors in panel B, and 4-digit NACE rev. 2 sectors in panel C. The dots on the 45 degree line indicate follow-on targets that are in the same sector as the platform (or horizontally related); the other dots indicate vertically related (suppliers or users) or unrelated acquisitions.



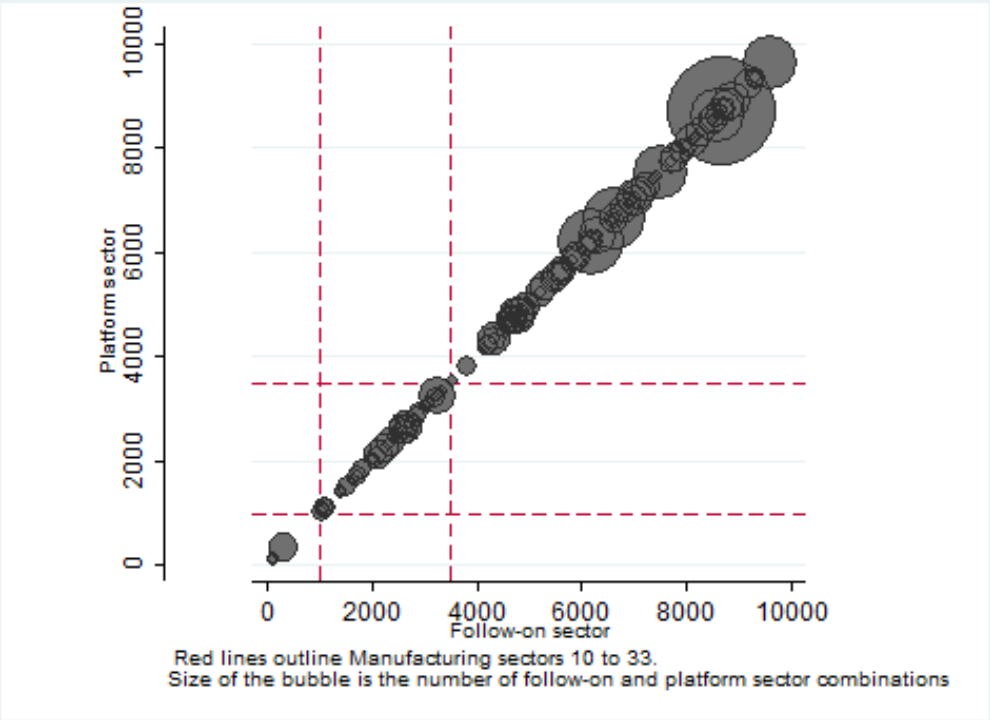
Panel A: Main Sectors

Panel B: NACE 2 digit Sectors

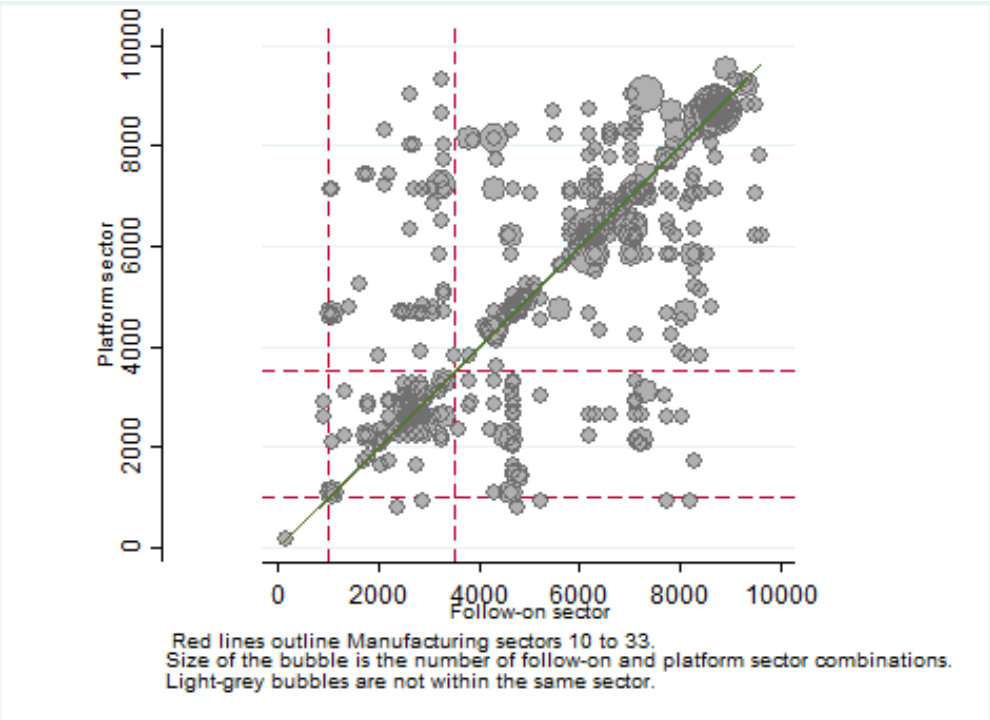


Panel C: NACE 4 digit Sectors

Figure 6: Horizontal and non-horizontal industry combinations. This figure presents the deal activity by industry combinations. The number of 4-digit NACE revision 2 sector of the platform is on the vertical axis, and the number of the sector of the follow-on is on the horizontal axis. Points on the 45-degree line indicate that the platform and follow-on belong to the same industry. The size of the ball is proportional to the deal count for that combination. In panel A, platform and follow-ons belong to the same 4-digit NACE sector; in panel B they belong to a different sectors.



Panel A: Follow-ons per horizontal combination



Panel B: Follow-ons per vertical combinations

Figure 7: Input-output relations of industry combinations in different sectors.

This figure presents supplier-customer relations according to the input-output table between the industry combinations that do not belong to the same 4-digit NACE sector. Light-gray circles indicate that the platform and follow-on share a supplier-customer relation. Dark-grey circles indicate that the platform and follow-on do not share a customer-supplier relation. On the vertical axis and horizontal axis the 4-digit NACE code of respectively the platform and follow-on is presented. The green 45-degree line indicates combinations in which the platform and follow-on belong to the same industry.

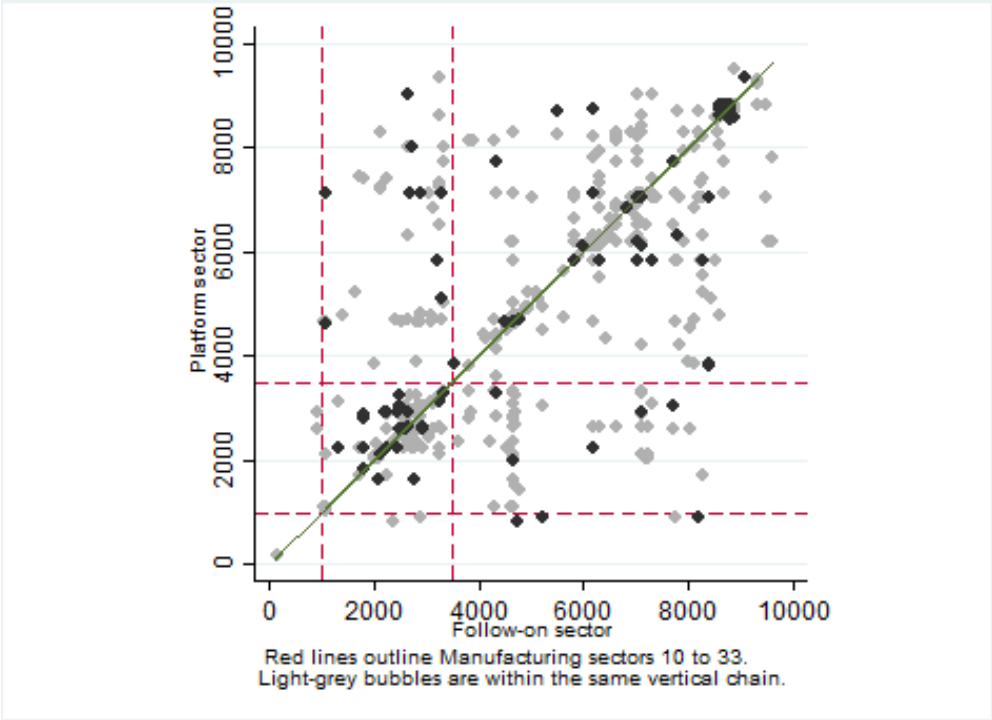
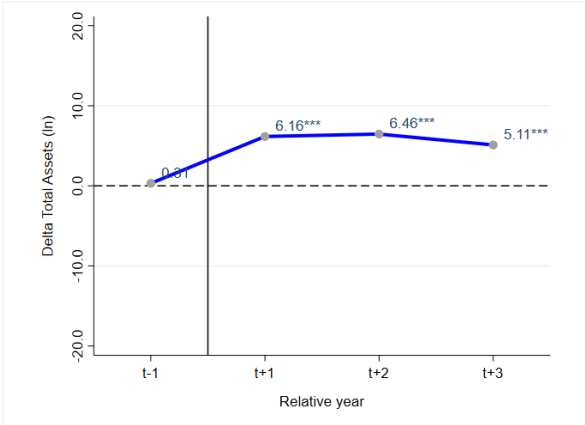


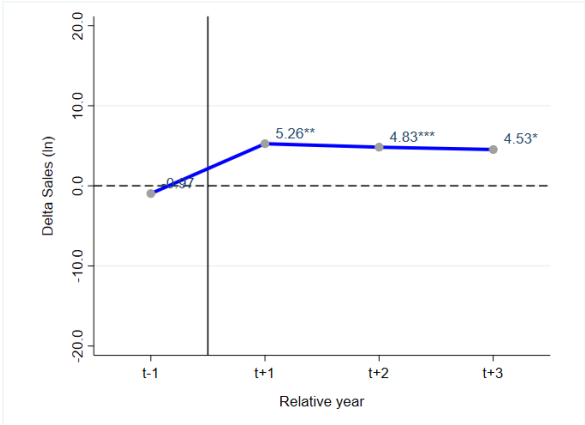
Figure 8: Growth of selected outcomes in matched sample of acquired platforms in buy-and-build strategies vs. non-acquired companies. This figure reports differences of growth rate of selected outcomes between acquired platforms in buy-and-build strategies and matched non-acquired companies, corresponding to the sample in Panel A, Table 4. We match on the return on assets, the return on sales, log of total assets, log of total sales, the squares of both, the growth of sales and of assets, and the changes in return on assets and return on sales, using the pre-treatment values of outcomes (two lags for levels, one lag for growth rates). We use a caliper matching procedure with replacement, retaining five closest matched controls (see Section 4.1 for details). The figure displays the estimated β_t -coefficients from the regression

$$\Delta Y_{i,t} = \alpha + \sum_{\substack{t=-1 \\ t \neq 0}}^3 \beta_t (Acq_{i,t} \times BB_i) + \eta_t + \epsilon_{i,t},$$

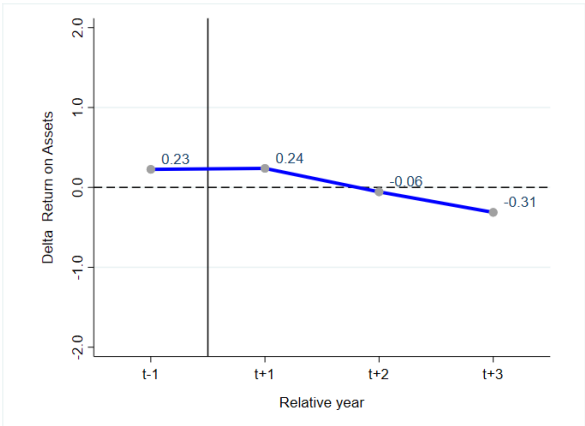
where $\Delta Y_{i,t}$ are changes in outcomes for a company i in the year t and $t = 0$ represents the year when the platform was acquired, the $Acq_{i,t}$ are dummy variables equal to one for the observations (treated or controls) in year t and zero otherwise, the BB_i is our treatment indicator, equal to one for targets in BB strategies, and η_t are year fixed effects. The β_t significantly different from zero at a 10%, 5% and 1% significance level are marked by *, **, and ***, respectively.



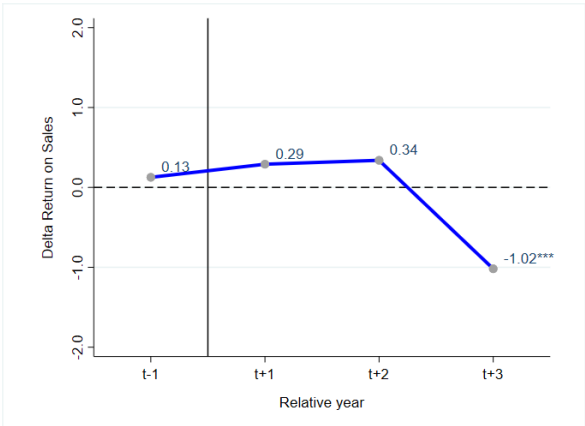
Panel A: Growth in Total assets



Panel B: Growth in Sales



Panel C: Changes in Return on assets



Panel D: Changes in Return on sales

Tables

Table 1: BB acquisitions by year. This table provides an overview of the BB acquisitions over time. Each strategy is associated with a single platform, hence, their count is the same.

| Deal year | Platforms / Strategies | Follow-ons | Total |
|-----------|---------------------------|------------|-------|
| 1997 | 4 | 0 | 4 |
| 1998 | 10 | 4 | 14 |
| 1999 | 26 | 24 | 50 |
| 2000 | 22 | 30 | 52 |
| 2001 | 16 | 20 | 36 |
| 2002 | 11 | 10 | 21 |
| 2003 | 26 | 12 | 38 |
| 2004 | 36 | 26 | 62 |
| 2005 | 55 | 49 | 104 |
| 2006 | 92 | 55 | 147 |
| 2007 | 94 | 121 | 215 |
| 2008 | 74 | 136 | 210 |
| 2009 | 39 | 74 | 113 |
| 2010 | 79 | 121 | 200 |
| 2011 | 90 | 127 | 217 |
| 2012 | 69 | 174 | 243 |
| 2013 | 42 | 176 | 218 |
| 2014 | 29 | 187 | 216 |
| 2015 | 2 | 0 | 2 |
| 2016 | 2 | 0 | 2 |
| Total | 818 | 1346 | 2164 |

Table 2: Follow-on acquisitions by strategy. This table shows the number of follow-ons per BB strategy.

| Number of Follow-ons | Number of Strategies | Percent | Cum. |
|------------------------------|----------------------|---------|-------|
| 0 | 37 | 4.52 | 4.52 |
| 1 | 486 | 59.41 | 63.94 |
| 2 | 204 | 24.94 | 88.88 |
| 3 | 47 | 5.75 | 94.62 |
| 4 | 15 | 1.83 | 96.45 |
| 5 | 10 | 1.22 | 97.68 |
| 6 | 3 | 0.37 | 98.04 |
| 7 | 6 | 0.73 | 98.78 |
| 8 | 1 | 0.12 | 98.9 |
| 9 | 2 | 0.24 | 99.14 |
| 10 | 2 | 0.24 | 99.39 |
| 11 | 1 | 0.12 | 99.51 |
| 12 | 1 | 0.12 | 99.63 |
| 18 | 1 | 0.12 | 99.76 |
| 20 | 1 | 0.12 | 99.88 |
| 34 | 1 | 0.12 | 100 |
| Total number of Strategies | 818 | | |
| Average number of follow-ons | 1.66 | | |

Table 3: BB characteristics. This table provides characteristics of the BB strategies in our deal sample.

| | |
|-----------------------------------|------|
| <i>Length</i> | |
| Number of exited strategies | 545 |
| Number of strategies still active | 240 |
| Strategies without clear exit | 33 |
| Average strategy length (days) | 1987 |
| Minimum length (days) | 44 |
| Maximum length (days) | 5369 |

Table 4: Company statistics in pre-deal year in matched sample (Matching on changes of outcomes). This table presents the means of the outcome variables in the pre-deal year and their difference between the treated and matched controls. The matching is performed on the pre-deal log of total assets, log of total sales, the squares of both, growth of sales, growth of assets, the return on assets, return on sales and changes in return on assets and the return on sales. Panel A presents the data for the platforms; panel B – for the follow-ons. (ln) indicates the logarithmic transformation. *, ** and *** stand for a 10%, 5% and 1% significance level, respectively.

| | Treated | Controls | Difference | (T-stat) |
|----------------------------|---------|----------|------------|----------|
| <i>Panel A: Platforms</i> | | | | |
| <i>Matching variables</i> | | | | |
| ln Assets | 17.129 | 16.889 | 0.240* | (1.92) |
| ln Sales | 16.567 | 16.766 | -0.198 | (-1.39) |
| Return on Assets | 0.087 | 0.083 | 0.004 | (0.50) |
| Return on Sales | 0.055 | 0.056 | -0.001 | (-0.12) |
| Change in assets | 0.073 | 0.072 | 0.001 | (0.09) |
| Change in sales | 0.080 | 0.087 | -0.007 | (-0.48) |
| Change in ROA | 0.003 | 0.002 | 0.001 | (0.20) |
| Change in ROS | -0.000 | 0.001 | -0.002 | (-0.40) |
| <i>Other outcomes</i> | | | | |
| Asset Turnover | 1.223 | 1.345 | -0.122* | (-1.77) |
| Leverage | 0.169 | 0.154 | 0.015 | (0.99) |
| Cash over Assets | 0.113 | 0.123 | -0.010 | (-0.95) |
| <i>Panel B: Follow-ons</i> | | | | |
| <i>Matching variables</i> | | | | |
| ln Assets | 15.746 | 15.714 | 0.031 | (0.28) |
| ln Sales | 16.068 | 16.049 | 0.018 | (0.16) |
| Return on Assets | 0.096 | 0.089 | 0.007 | (0.93) |
| Return on Sales | 0.064 | 0.058 | 0.006 | (1.10) |
| Change in assets | 0.045 | 0.051 | -0.006 | (-0.46) |
| Change in sales | 0.036 | 0.043 | -0.006 | (-0.49) |
| Change in ROA | -0.003 | -0.002 | -0.001 | (-0.23) |
| Change in ROS | 0.001 | 0.002 | -0.001 | (-0.25) |
| <i>Other outcomes</i> | | | | |
| Asset Turnover | 1.781 | 1.793 | -0.012 | (-0.17) |
| Leverage | 0.165 | 0.163 | 0.003 | (0.18) |
| Cash over Assets | 0.144 | 0.152 | -0.008 | (-0.65) |

Table 5: Performance of the strategies relative to the placebo strategies: Synergies over the short-run.

This table shows the performance of the BB strategies compared to placebo control strategies over the first three years following the platform acquisition. *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+3 (or exit, whichever is earlier), where t indicates the year of the acquisition of the strategy's platform. For the control sample, *Post* takes on the respective values of the treated company to which the control is matched. *BB* is a dummy indicator for the treated sample. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------------------|-------------------|-------------------|-------------------|-------------------|-----------------|-------------------|--------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets |
| BB×Post | 0.053 (0.65) | 0.087 (1.13) | 0.005 (0.63) | 0.005 (0.83) | 0.008 (0.17) | 0.007 (0.55) | -0.009 (-1.01) |
| Post | -0.024 (-0.79) | -0.034 (-0.78) | -0.005 (-0.99) | -0.002 (-0.39) | 0.003 (0.13) | -0.006 (-0.80) | -0.016* (-2.02) |
| Observations | 4,564 | 4,536 | 4,555 | 4,515 | 4,535 | 4,083 | 4,377 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.902 | 0.886 | 0.617 | 0.595 | 0.832 | 0.738 | 0.712 |

Table 6: Performance of the strategies relative to the placebo strategies over the short-run: Role of non-exited strategies

Panel A shows the performance of the BB strategies with known exit compared to placebo control strategies. That is, panel replicates Table 5 excluding the strategies which are still active or with unknown status. Panel B only includes the strategies which are still active or with unknown status. *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+3 (or exit, whichever is earlier), where t indicates the year of the acquisition of the strategy's platform. For the control sample, *Post* takes on the respective values of the treated company to which the control is matched. *BB* is a dummy indicator for the treated sample. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) ln Assets | (2) ln Sales | (3) ROA | (4) ROS | (5) ATR | (6) Leverage | (7) Cash/Assets |
|--|-------------------|--------------------|---------------------|--------------------|-------------------|-------------------|--------------------|
| <i>Panel A: Strategies with known exit</i> | | | | | | | |
| BB×Post | 0.125 (1.51) | 0.156 (1.58) | 0.011 (1.57) | 0.014* (2.12) | -0.043 (-0.75) | 0.005 (0.37) | -0.000 (-0.02) |
| Post | -0.057 (-1.36) | -0.094* (-1.76) | -0.012** (-2.24) | -0.010* (-1.91) | 0.019 (0.92) | -0.005 (-0.41) | -0.016* (-1.85) |
| Observations | 3,332 | 3,308 | 3,329 | 3,299 | 3,311 | 2,977 | 3,200 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.893 | 0.890 | 0.630 | 0.593 | 0.834 | 0.732 | 0.704 |
| <i>Panel B: Non-exited strategies</i> | | | | | | | |
| BB×Post | -0.145 (-1.37) | -0.140 (-1.10) | -0.016 (-1.20) | -0.021* (-1.94) | 0.175* (2.01) | 0.021 (0.52) | -0.035* (-2.10) |
| Post | 0.048 (0.71) | 0.097 (0.99) | 0.016 (1.72) | 0.022* (2.03) | -0.076 (-1.44) | -0.017 (-1.04) | -0.008 (-0.93) |
| Observations | 1,148 | 1,147 | 1,144 | 1,135 | 1,143 | 1,032 | 1,099 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.923 | 0.871 | 0.598 | 0.600 | 0.832 | 0.742 | 0.733 |

Table 7: Performance of the strategies over the short-run relative to the placebo strategies: The short-term strategies and the long-term strategies.

This table shows the performance of the BB strategies compared to placebo control strategies over the first three years following the platform acquisition. Panel A includes strategies with up to 4 years to known exit (the short-term strategies). Panel B includes strategies with 5 years or more to known exit (the long-term strategies). Panel C combines the short-term strategies and the long-term strategies. *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+3 (or exit, whichever is earlier), where t indicates the year of the acquisition of the strategy's platform. For the control sample, *Post* takes on the respective values of the treated company to which the control is matched. *LT strategy* is the indicator of the long-term strategy and its matched placebo strategy. *BB* is a dummy indicator for the treated sample (any strategy). All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively. strategy

| | (1) ln Assets | (2) ln Sales | (3) ROA | (4) ROS | (5) ATR | (6) Leverage | (7) Cash/Assets |
|---|-------------------|---------------------|---------------------|---------------------|--------------------|-------------------|----------------------|
| <i>Panel A: Short-term strategies</i> | | | | | | | |
| BB×Post | 0.240** (2.38) | 0.139 (1.14) | 0.017 (1.46) | 0.022* (2.11) | -0.166* (-1.79) | -0.025 (-1.27) | 0.011 (0.56) |
| Post | -0.076 (-0.81) | -0.036 (-0.25) | -0.025** (-2.75) | -0.019** (-2.23) | 0.069 (1.32) | 0.022 (0.96) | -0.033*** (-3.33) |
| Observations | 1,252 | 1,251 | 1,251 | 1,248 | 1,251 | 1,118 | 1,189 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.867 | 0.864 | 0.651 | 0.608 | 0.818 | 0.727 | 0.648 |
| <i>Panel B: Long-term strategies</i> | | | | | | | |
| BB×Post | 0.066 (0.58) | 0.187 (1.53) | 0.007 (0.80) | 0.008 (0.98) | 0.043 (0.56) | 0.027 (1.59) | -0.006 (-0.37) |
| Post | -0.075 (-1.28) | -0.171** (-2.72) | -0.006 (-0.98) | -0.005 (-0.80) | -0.015 (-0.62) | -0.016 (-1.54) | -0.005 (-0.56) |
| Observations | 2,075 | 2,052 | 2,073 | 2,046 | 2,055 | 1,855 | 2,006 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.911 | 0.907 | 0.619 | 0.586 | 0.843 | 0.737 | 0.739 |
| <i>Panel C: Short-term and long-term strategies</i> | | | | | | | |
| BB×LT strategy×Post | -0.152 (-0.98) | 0.068 (0.43) | -0.012 (-0.80) | -0.014 (-1.06) | 0.209 (1.70) | 0.055* (2.00) | -0.020 (-0.71) |
| BB×Post | 0.215* (2.06) | 0.115 (0.92) | 0.018 (1.52) | 0.022** (2.17) | -0.169* (-1.81) | -0.028 (-1.39) | 0.012 (0.62) |
| Post | -0.076 (-0.81) | -0.036 (-0.25) | -0.025** (-2.75) | -0.019** (-2.23) | 0.069 (1.32) | 0.022 (0.96) | -0.033*** (-3.33) |
| LT strategy×Post | -0.057 (-1.16) | -0.100 (-1.36) | 0.002 (0.34) | 0.000 (0.11) | 0.011 (0.40) | -0.008 (-0.77) | 0.010 (1.15) |
| LT strategy | 0.043 (0.54) | 0.010 (0.11) | -0.019 (-1.61) | -0.009 (-1.02) | -0.107 (-0.95) | 0.035* (1.84) | -0.026 (-1.41) |
| BB×LT strategy | 0.366 (0.91) | -0.012 (-0.04) | 0.027 (1.70) | 0.021 (1.72) | -0.099 (-0.59) | -0.032 (-0.69) | 0.033 (1.35) |
| Observations | 3,332 | 3,308 | 3,329 | 3,299 | 3,311 | 2,977 | 3,200 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.893 | 0.890 | 0.630 | 0.593 | 0.834 | 0.733 | 0.704 |

Table 8: Performance of the longer-period strategies relative to the placebo strategies: Synergies over the long-run.

This table shows the performance of the BB strategies compared to placebo control strategies over the first five years following the platform acquisition. We focus on the strategies which exit in at least five years after the platform acquisition. *BB* is a dummy indicator for the treated sample. In panel A, *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+5, where t indicates the year of the acquisition of the strategy's platform. In panel B, *Post-Short* is a dummy indicator equal to zero for t-1 and equal to one for the periods t+1 to t+3. *Post-Long* is a dummy indicator equal to zero for t-1 and t+1 to t+3 and equal to one for the periods t+4 to t+5. For the control samples, *Post* dummies take on the respective values of the treated company to which the control is matched. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|--|-------------------|-------------------|--------------------|-------------------|---------------------|-------------------|-------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets |
| <i>Panel A: Long-term horizon</i> | | | | | | | |
| BB×Post | -0.172 (-0.80) | 0.202 (1.49) | 0.019** (2.35) | 0.023** (2.20) | 0.169 (1.59) | 0.024 (1.16) | -0.015 (-1.02) |
| Post | -0.076 (-0.96) | -0.117 (-1.01) | -0.013* (-2.10) | -0.006 (-1.05) | -0.034 (-1.19) | -0.011 (-0.87) | -0.013 (-1.35) |
| Observations | 2,434 | 2,389 | 2,431 | 2,385 | 2,401 | 2,157 | 2,330 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.850 | 0.849 | 0.611 | 0.631 | 0.803 | 0.701 | 0.663 |
| <i>Panel B: Short-term and Long-term horizon</i> | | | | | | | |
| BB×Post-Short | -0.033 (-0.19) | 0.167 (1.14) | 0.016** (2.27) | 0.020** (2.31) | 0.119 (1.13) | 0.024 (1.22) | -0.014 (-0.99) |
| BB×Post-Long | -0.208 (-0.82) | 0.286* (1.77) | 0.024* (2.03) | 0.033** (2.45) | 0.199 (1.57) | 0.035 (1.31) | -0.013 (-0.69) |
| Post-Short | -0.064 (-0.88) | -0.068 (-0.69) | -0.003 (-0.51) | 0.003 (0.51) | -0.051* (-1.83) | -0.015 (-1.34) | -0.009 (-0.89) |
| Post-Long | 0.001 (0.01) | -0.030 (-0.32) | 0.009 (1.11) | 0.013 (1.47) | -0.094** (-2.47) | -0.023 (-1.69) | -0.005 (-0.36) |
| Observations | 2,433 | 2,388 | 2,431 | 2,384 | 2,400 | 2,153 | 2,328 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.855 | 0.848 | 0.612 | 0.559 | 0.804 | 0.698 | 0.628 |

Table 9: Employment and labor productivity. This table measures the impact on employment and labor productivity. Panel A shows the performance of the BB strategies with known exit compared to placebo control strategies over the first three years following the platform acquisition. Panel B includes strategies with up to 4 years to known exit (the short-term strategies) over the first three years following the platform acquisition. Panel C includes strategies that took at least 5 years to exit (the long-term strategies) over the first five years following the platform acquisition. *Post-Short* is a dummy indicator equal to zero for t-1 and equal to one for the periods t+1 to t+3, where t indicates the year of the acquisition. *Post-Long* is a dummy indicator equal to zero for t-1 and t+1 to t+3 and equal to one for the periods t+4 to t+5. For the control samples, *Post* takes on the respective values of the treated company to which the control is matched. *BB* is a dummy indicator for the treated sample. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) ln Employment | (2) Return per Employee | (3) Sales per Employee |
|---|----------------------|-------------------------------|------------------------------|
| <i>Panel A: Strategies with known exit, short-run</i> | | | |
| BB×Post-Short | -0.043 (-0.31) | 0.003 (1.10) | 0.016 (0.90) |
| Post-Short | 0.042 (0.67) | -0.003 (-1.53) | -0.019* (-1.84) |
| Observations | 2,840 | 2,793 | 2,793 |
| Year FE | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ |
| Adj. R ² | 0.877 | 0.643 | 0.836 |
| <i>Panel B: Short-term strategies</i> | | | |
| BB×Post-Short | -0.001 (-0.01) | 0.001 (0.14) | -0.020 (-0.52) |
| Post-Short | 0.197 (1.65) | -0.006* (-2.06) | -0.013 (-1.04) |
| Observations | 1,059 | 1,033 | 1,033 |
| Year FE | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ |
| Adj. R ² | 0.822 | 0.685 | 0.844 |
| <i>Panel C: Long-Term Strategy compared to placebo strategy</i> | | | |
| BB×Post-Short | -0.056 (-0.50) | 0.008*** (3.43) | 0.042** (2.23) |
| BB×Post-Long | 0.055 (0.31) | 0.012** (2.91) | 0.034 (1.20) |
| Post-Short | -0.071 (-0.76) | -0.001 (-0.27) | -0.013 (-0.69) |
| Post-Long | -0.071 (-0.45) | 0.001 (0.44) | 0.005 (0.18) |
| Observations | 2,072 | 2,042 | 2,043 |
| Year FE | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ |
| Adj. R ² | 0.873 | 0.620 | 0.793 |

Table 10: Performance of the longer-period strategies relative to the placebo strategies: Capital intensive strategies

This table shows the performance of the BB strategies compared to placebo control strategies. Panel A includes strategies with 5 years or more to known exit (the long-term strategies) and *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+5, where t indicates the year of the acquisition of the strategy's platform. Panel B includes strategies with up to 4 years to known exit (the short-term strategies) and *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+3, where t indicates the year of the acquisition of the strategy's platform. For the control samples, *Post* dummies take on the respective values of the treated company to which the control is matched. *BB* is a dummy indicator for the treated sample. *K Intensity* is a dummy variable equal to one for strategies of which the platform had a fixed assets to employees ratios that was higher than the sample median in the pre-deal year. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) ln Assets | (2) ln Sales | (3) ROA | (4) ROS | (5) ATR | (6) Leverage | (7) Cash/Assets |
|---------------------------------------|----------------------|--------------------|----------------------|---------------------|----------------------|--------------------|----------------------|
| <i>Panel A: Long-term strategies</i> | | | | | | | |
| BB×Post×K Intensity | -0.914** (-2.67) | -0.454* (-1.83) | 0.056*** (4.52) | 0.074*** (4.50) | 0.307* (1.83) | -0.095* (-2.12) | 0.065** (2.23) |
| BB×Post | 0.290 (1.54) | 0.392* (2.08) | -0.008 (-0.77) | -0.011 (-0.99) | 0.006 (0.04) | 0.071*** (3.53) | -0.038 (-1.76) |
| Post×K Intensity | -0.250*** (-3.25) | -0.090 (-1.21) | 0.017*** (3.67) | -0.002 (-0.36) | 0.202*** (4.47) | -0.004 (-0.24) | 0.004 (0.57) |
| Post | 0.028 (0.31) | -0.084 (-0.73) | -0.020*** (-3.31) | -0.006 (-0.91) | -0.121*** (-3.74) | -0.009 (-0.83) | -0.015 (-1.62) |
| Observations | 2,434 | 2,389 | 2,432 | 2,385 | 2,401 | 2,156 | 2,330 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.860 | 0.856 | 0.614 | 0.564 | 0.807 | 0.702 | 0.628 |
| <i>Panel B: Short-term strategies</i> | | | | | | | |
| BB×Post×K Intensity | -0.263 (-1.05) | 0.085 (0.34) | -0.020 (-1.14) | -0.026 (-1.02) | 0.312* (1.99) | 0.009 (0.20) | -0.021 (-0.65) |
| BB×Post | 0.408** (2.20) | 0.138 (1.07) | 0.032* (1.88) | 0.037** (2.20) | -0.297* (-2.14) | -0.031 (-0.95) | 0.020 (0.94) |
| Post×K Intensity | -0.173 (-1.36) | 0.100 (0.52) | 0.030** (2.69) | 0.013 (1.21) | 0.344*** (5.81) | -0.003 (-0.24) | 0.018 (1.52) |
| Post | 0.009 (0.07) | -0.084 (-0.47) | -0.042*** (-3.67) | -0.027** (-2.92) | -0.119* (-1.80) | 0.023 (0.97) | -0.046*** (-3.26) |
| Observations | 1,236 | 1,236 | 1,235 | 1,233 | 1,235 | 1,097 | 1,177 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.870 | 0.862 | 0.653 | 0.601 | 0.827 | 0.721 | 0.646 |

Table 11: Performance of the longer-period strategies relative to the placebo strategies: Horizontal and vertical strategies. This table shows the performance of BB strategies with known exit compared to placebo control strategies over the first five years following the platform acquisition, depending on product-market relatedness of companies. We focus on the strategies which exit in at least five years after the platform acquisition. *BB* is a dummy indicator for the treated sample. *Horizontal* is the proportion of follow-ons in a given year in the same 4-digit NACE sector as the platform as the ratio of all follow-ons acquired as of this year. *Vertical* is the proportion of follow-ons in a given year outside of the 4-digit NACE sector of the platform as the ratio of all follow-ons acquired as of this year. For the control samples, the relatedness measures take the respective values of the treated company to which the control is matched. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) ln Assets | (2) ln Sales | (3) ROA | (4) ROS | (5) ATR | (6) Leverage | (7) Cash/Assets | (8) ln Empl. | (9) Sales/Empl. |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-------------------|--------------------|
| BB×Horizontal | -0.334 (-0.97) | 0.243 (1.00) | 0.034 (1.58) | 0.028 (1.09) | 0.178 (0.84) | 0.088** (2.25) | 0.003 (0.06) | 0.020 (0.11) | -0.000 (-0.03) |
| BB×Vertical | -0.172 (-1.72) | 0.115 (1.33) | 0.006 (1.32) | 0.009** (2.27) | 0.106** (2.30) | 0.011* (1.93) | 0.002 (0.53) | -0.031 (-0.64) | 0.005** (2.46) |
| Horizontal | 0.084 (1.00) | 0.093 (1.06) | -0.012 (-1.50) | -0.012 (-1.49) | -0.051 (-1.41) | -0.003 (-0.21) | -0.009 (-0.79) | 0.034 (0.30) | -0.004* (-1.80) |
| Vertical | 0.018 (0.63) | -0.000 (-0.01) | 0.001 (0.35) | 0.002 (1.23) | -0.011 (-0.71) | -0.002 (-0.60) | 0.001 (0.55) | 0.015 (0.54) | -0.000 (-0.38) |
| Observations | 2,434 | 2,389 | 2,432 | 2,385 | 2,401 | 2,157 | 2,330 | 2,073 | 2,043 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.852 | 0.850 | 0.613 | 0.562 | 0.805 | 0.702 | 0.630 | 0.874 | 0.624 |

Table 12: Performance of the longer-period strategies relative to the placebo strategies: Product closeness and type of follow-on acquisition This table shows the performance of the BB strategies were exited after five years compared to placebo control strategies over the first five years following the platform acquisition, depending on product-market relatedness of companies. We focus on the strategies which exit in at least five years after the platform acquisition. *BB* is a dummy indicator for the treated sample. *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+5, where t indicates the year of the acquisition of the strategy's platform. *Horizontal* is a dummy indicator equal to one for the years when the strategy acquired an add-on in the same 4-digit NACE sector as the platform. *Close Customer* is a dummy indicator equal to one for the years when the strategy acquired an add-on with customer relation within the 2-digit NACE sector but outside of the 4-digit NACE sector of the platform. *Other Customer* is a dummy indicator equal to one for the years when the strategy acquired an add-on with customer relation but outside of the 2-digit NACE sector of the platform. *Close Supplier* and *Other Supplier* dummies are defined similarly based on supplier relationships. For the control samples, *Post* and relatedness dummies take the respective values of the treated company to which the control is matched. The dummies non-interacted with *BB* are suppressed to save the space. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|----------------------|---------------------|--------------------|-------------------|--------------------|------------------|-------------------|-------------------|-------------------|-------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets | ln Empl. | Sales/Empl. |
| BB×Horizontal | -0.258 (-1.02) | 0.004 (0.01) | 0.024 (1.45) | 0.017 (0.81) | 0.063 (0.40) | 0.058* (1.94) | -0.004 (-0.14) | -0.003 (-0.02) | 0.031 (1.13) |
| BB×Close Supplier | -0.732 (-0.93) | 1.639*** (3.95) | 0.121* (2.09) | 0.176*** (8.63) | 1.199 (1.27) | -0.034 (-0.95) | 0.020 (0.40) | -0.339 (-1.56) | 0.438** (2.95) |
| BB×Close Customer | 0.096 (0.17) | 1.115 (1.08) | -0.034 (-1.27) | -0.031 (-1.30) | 0.112 (0.39) | 0.078 (1.42) | 0.060 (1.66) | 0.063 (0.28) | 0.052 (1.25) |
| BB×Other Supplier | -1.165** (-2.26) | -0.657 (-1.28) | 0.034 (1.06) | 0.027 (0.97) | 0.307 (1.44) | -0.026 (-0.32) | 0.002 (0.06) | -0.588 (-1.54) | 0.036 (1.08) |
| BB×Other Customer | -2.175* (-2.14) | -0.669 (-0.95) | 0.003 (0.15) | -0.010 (-0.71) | 1.174* (1.89) | -0.069 (-0.54) | 0.073 (1.70) | -0.328 (-0.43) | -0.049 (-0.53) |
| BB×Post | 0.130 (0.86) | 0.187 (1.20) | 0.007 (1.07) | 0.013 (1.37) | 0.034 (0.33) | 0.012 (0.50) | -0.022 (-1.66) | 0.077 (0.58) | 0.010 (0.45) |
| Observations | 2,434 | 2,389 | 2,432 | 2,385 | 2,401 | 2,157 | 2,330 | 2,073 | 2,044 |
| Non-interacted terms | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.855 | 0.853 | 0.615 | 0.563 | 0.808 | 0.702 | 0.632 | 0.875 | 0.796 |

A Effects of the Buy-and-builds on Individual Company Performance

In this Appendix we demonstrate the effect of the buy-and-build strategies on individual companies that are acquired, platforms and follow-ons. The purpose of this exercise is to demonstrate the mechanical size effect on the add-ons on financials of the combined entity and motivate the the strategy-level analysis.

In Table A.1 we present the results of estimating the model in Eq. (1) for individual companies that are a part of the buy-and-build strategies. The results are reported for the platforms in panel A and the follow-ons in panel B.⁴⁷ The regressions are estimated in the matched sample described in Section 4.1 and the standard errors are clustered two-ways over the company and year dimension. For consistency with the most of literature on private equity performance we trace what happens to the companies (both treated and controls) over three years after the acquisition; hence, the variable *Post* takes the value of zero at $t - 1$ and one for the period $t + 1$ up to $t + 3$ where t is the company acquisition year. The coefficient of the $Post \times BB$ is our main coefficient of interest, showing the difference in the outcome of the target company relative to the control company during three years after the acquisition. If the strategy brings the synergetic benefits to the target companies compared to the observationally equivalent peers, the coefficient to this interaction would be significant.

Subject to the limitation of the methodology, the results in panel A suggest that BB strategies positively influence the growth of platforms in terms of assets and sales. However, the growth of platforms is not seem to be accompanied by the superior profitability or difference in other outcomes, compared to the comparable industry peers. In contrast, panel B does not show any significant changes in the performance of the follow-ons in the first three years after their acquisition.

[Table A.1 about here]

⁴⁷In our main analysis we use the financial statement, either consolidated or unconsolidated, that provides the most consistent information around the date of the deal. We have rerun the matching procedure and the platform analysis of panel A for unconsolidated accounts. The results are provided in the appendix Table B.1. As a result of using unconsolidated accounts, the number of observations is smaller, but the results are consistent.

A.1 Performance of Strategies: Inorganic growth

While the company-level analysis suggests that BB platforms grow during the first three years after the buyout, our key interest is to see the changes at the level of the strategy, combining the platform company with follow-ons. Table A.2 reports how the strategies perform over three years after the acquisition of the platform, compared to the matched peers of the platform. The results in panel A are similar to what is reported in the previous table: there is no evidence of the significant change of profitability of the strategy over this time horizon but the combined portfolio experiences strong growth of assets and sales, with somewhat larger effect on sales than in case when we look at just the platform. This effect consists of two components: inorganic growth due to adding more companies to the portfolio and organic growth due to realizing the synergies. Panel B of Table A.2 vividly demonstrates the “size” effect of takeovers. When we add a variable that measures the cumulative size of the follow-on acquisitions (measured as the combined asset size of the follow-ons as of a given year) the effect of the strategy on its total sales is largely explained by the size effect (column 2). We can also see this from column 5, in the regression with the assets turnover (ATR), defined as sales over total assets. Meanwhile, the assets of strategies still experience significant growth compared to the stand-alone platform peers, even conditional on the total size of follow-ons, as seen in column 1. This means that the PE company does change the combined entity materially, beyond what is explained by the inorganic growth. But these changes do not manifest themselves in superior sales or profitability.

[Table A.2 about here]

Another way to see the effect of inorganic growth is to trace how changes in size and sales line up over time and compare them to the timing of add-on acquisitions. In Table A.7 we split our *Post* dummy into three binary variables, taking the value of one for one, two, and three years after the platform acquisition. The results compare the strategy performance relative to the matched platform peers, and the separate variable for the size of follow-ons is not included. Column 1 and 2 show that assets and sales start to grow in the second post-acquisition year and the magnitude of these changes increases over time. Figure A.1 shows the distribution of add-on acquisitions over time, where the year zero corresponds to the first year after the platform was acquired ($t=1$ in the tables) because we add the financials of the follow-ons with a lag. As seen, most of follow-ons are added in the first three years following the platform, which is consistent with the results in Table A.7. Evidence so far

implies that in the first three years the strategies grow inorganically, mainly through follow-on acquisitions.

[Table A.7 about here]

Figure A.1: Timing of follow-on acquisitions relative to first acquisition. This figure presents the timing of follow-on acquisitions relative to the first acquisition. The numbers on the horizontal axis present the years after the first deal.

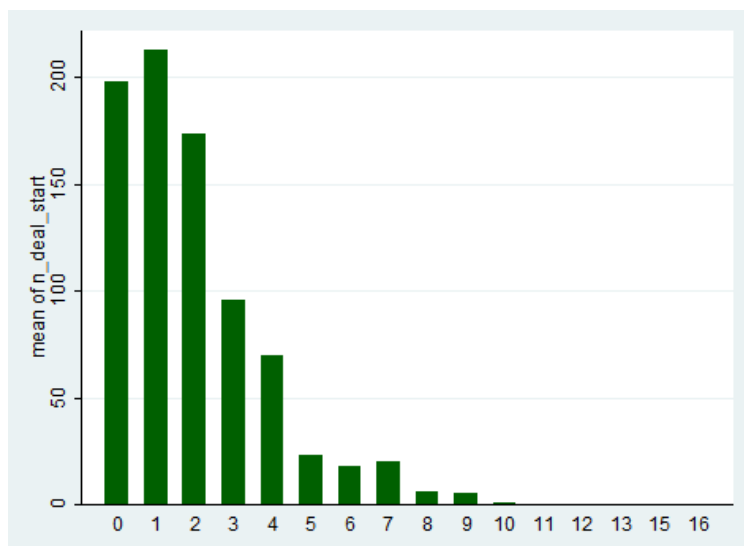


Table A.1: Performance of individual companies that are a part of BB strategy relative to matched peers

This table shows the performance of the individual companies who are the BB targets (treated) relative to the matched industry peers over the first three years following the platform acquisition. Panel A and B show the results for platforms and follow-ons, respectively. Details of the matching procedure are described in Section 4.1. *Post* is a dummy indicator equal to zero for $t-1$ and equal to one for the period $t+1$ up to $t+3$, where t indicates the year of the acquisition. For the control sample, *Post* refers to the values of the treated company to which the control is matched. *BB* is a dummy indicator for the treated sample of the BB targets. ROA stands for the return on assets equal to EBIT over the total assets; ROS is the return on sales defined as EBIT over sales; and ATR is asset turnover equal to sales over total assets. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|----------------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash / Assets |
| <i>Panel A: Platforms</i> | | | | | | | |
| Post | 0.003 (0.11) | -0.013 (-0.41) | -0.006 (-1.40) | -0.002 (-0.41) | -0.006 (-0.29) | -0.007 (-0.80) | -0.015** (-2.29) |
| BB×Post | 0.291*** (4.71) | 0.222** (2.43) | 0.005 (0.77) | 0.006 (0.94) | -0.078 (-1.72) | 0.014 (1.14) | -0.011 (-1.27) |
| Observations | 4,510 | 4,476 | 4,501 | 4,456 | 4,478 | 4,021 | 4,292 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R-Squared | 0.946 | 0.922 | 0.630 | 0.610 | 0.861 | 0.752 | 0.733 |
| <i>Panel B: Follow-ons</i> | | | | | | | |
| Post | 0.054** (2.31) | 0.069 (1.72) | -0.002 (-0.53) | -0.004 (-1.48) | 0.008 (0.35) | 0.007 (1.25) | -0.002 (-0.30) |
| BB×Post | -0.086 (-1.14) | -0.033 (-0.32) | 0.000 (0.05) | 0.004 (0.79) | -0.041 (-0.57) | -0.016 (-1.12) | -0.033** (-2.54) |
| Observations | 5,157 | 5,069 | 5,112 | 5,048 | 5,071 | 4,320 | 4,893 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.944 | 0.902 | 0.582 | 0.606 | 0.822 | 0.760 | 0.722 |

Table A.2: Performance of the strategies relative to matched peers of the platform: The size effect

This table shows the performance of the BB strategy (treated) relative to the matched industry peers of the platform company over the first three years following the platform acquisition. Details of the matching procedure are described in Section 4.1. *Post* is a dummy indicator equal to zero for t-1 and equal to one for the period t+1 up to t+3, where t indicates the year of the acquisition of the strategy's platform. For the control sample, *Post* refers to the values of the treated company (the platform) to which the control is matched. *BB* is a dummy indicator for the treated sample of the BB targets. *Follow-ons size* is the cumulative size of the follow-ons added to the strategy in a given year, measured by the log total assets. ROA stands for the return on assets equal to EBIT over the total assets; ROS is the return on sales defined as EBIT over sales; and ATR is asset turnover equal to sales over total assets. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|-------------------|--------------------|-------------------|-----------------|-------------------|-------------------|---------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets |
| <i>Panel A: BB strategies</i> | | | | | | | |
| BB×Post | 0.180** (2.25) | 0.284*** (3.69) | 0.006 (0.93) | 0.005 (0.78) | 0.012 (0.24) | 0.014 (1.21) | -0.008 (-0.91) |
| Post | 0.014 (0.63) | -0.048 (-1.64) | -0.002 (-0.37) | 0.003 (0.54) | -0.019 (-1.11) | -0.005 (-0.78) | -0.014** (-2.17) |
| Observations | 4,553 | 4,510 | 4,544 | 4,490 | 4,513 | 4,062 | 4,311 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.935 | 0.927 | 0.639 | 0.617 | 0.863 | 0.750 | 0.725 |
| <i>Panel B: Influence of follow-ons</i> | | | | | | | |
| BB×Post | 0.159* (2.02) | 0.137* (1.86) | 0.005 (0.79) | 0.005 (0.73) | -0.025 (-0.54) | 0.011 (0.89) | -0.007 (-0.86) |
| Follow-ons size | 0.005 (0.50) | 0.038*** (4.00) | 0.000 (0.37) | 0.000 (0.16) | 0.009* (1.82) | 0.001 (0.47) | -0.000 (-0.28) |
| Post | 0.019 (0.97) | -0.012 (-0.38) | -0.002 (-0.31) | 0.003 (0.54) | -0.010 (-0.57) | -0.004 (-0.66) | -0.015** (-2.16) |
| Observations | 4,553 | 4,510 | 4,544 | 4,490 | 4,513 | 4,062 | 4,311 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.935 | 0.928 | 0.639 | 0.617 | 0.864 | 0.750 | 0.725 |

Table A.3: Performance of the strategies relative to matched peers of the platform: Cross-Section

This table repeats the analysis in Panel A of Table A.2 using a cross-sectional regression of changes in various outcomes of the BB strategy (treated) over the first three years following the platform acquisition relative to the matched industry peers of the platform company. Details of the matching procedure are described in Section 4.1 The dependent variable is the difference between t+3 and t-1, where t indicates the year of the acquisition of the strategy's platform. For example, $\Delta \ln \text{Assets}$ is calculated as $\ln \text{Assets}_{t+3} - \ln \text{Assets}_{t-1}$. BB is a dummy indicator for the treated sample of the BB targets. $\ln \text{Assets}_{t-1}$ stands for the natural logarithm of total assets in the pre-deal year. ROA_{t-1} stands for the return on assets equal to EBIT over the total assets in the pre-deal year. **In Panel C, $\Delta \text{Follow-on}$ stands for the acquired follow-on assets and is calculate as $\ln \text{Assets}_{fo,t+3} - \ln \text{Assets}_{fo,t-1}$, where t refers to the platform deal. Note Dyaran: For most platform deals this means that the follow-on asset size is zero in the pre-deal year, but not for all. Should be Zero due to calculation strategy level obs.** Deal year and Industry fixed effects are included as indicated. Industry fixed effects are defined on a NACE 2-digit level. Standard errors are clustered over the industry dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|--|----------------------|-----------------------|-----------------------|----------------------|--------------------|---------------------|
| | Dependent variable: Change in outcome ΔX , $X_{t+3} - X_{t-1}$ | | | | | | |
| Outcome | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets |
| <i>Panel A: With Control Variables</i> | | | | | | | |
| BB | 0.263** (2.44) | 0.482*** (5.27) | 0.008 (1.04) | 0.009 (1.15) | 0.042 (0.73) | 0.028 (1.54) | -0.019* (-1.79) |
| $\ln \text{Assets}_{t-1}$ | -0.051*** (-3.54) | -0.042** (-2.20) | 0.001 (0.52) | 0.002* (1.83) | 0.011 (0.91) | 0.003 (0.82) | -0.001 (-0.38) |
| ROA_{t-1} | 1.331*** (5.26) | -1.168*** (-3.77) | -0.531*** (-19.29) | -0.414*** (-12.98) | -1.708*** (-8.58) | 0.154*** (2.78) | -0.102* (-1.99) |
| Adj. R ² | 0.068 | 0.044 | 0.308 | 0.211 | 0.103 | 0.018 | 0.045 |
| <i>Panel B: Without controls</i> | | | | | | | |
| BB | 0.258** (2.31) | 0.463*** (4.90) | 0.007 (0.75) | 0.006 (0.77) | 0.034 (0.52) | 0.029 (1.63) | -0.020* (-1.83) |
| Adj. R ² | 0.028 | 0.029 | 0.024 | 0.039 | 0.020 | 0.013 | 0.041 |
| <i>Panel C: Influence of follow-ons</i> | | | | | | | |
| BB | 0.319*** (3.01) | 0.296** (2.46) | -0.002 (-0.17) | 0.009 (0.76) | -0.091 (-1.47) | 0.033 (1.57) | -0.043** (-2.28) |
| $\Delta \text{Follow-on}$ | -0.007 (-0.53) | 0.020* (1.70) | 0.001 (1.14) | -0.000 (-0.38) | 0.015* (2.00) | -0.000 (-0.27) | 0.003 (1.66) |
| Adj. R ² | 0.031 | 0.034 | 0.024 | 0.038 | 0.026 | 0.012 | 0.044 |
| Observations | 1,126 | 1,111 | 1,121 | 1,101 | 1,113 | 953 | 1,042 |
| Country FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Table A.4: Performance of the individual companies relative to matched peers: Cross-Section

This table replicates the above table (Table A.3) using company level observations. The dependent variable is the difference between t+3 and t-1. For example, $\Delta \ln \text{Assets}$ is calculated as $\ln \text{Assets}_{t+3} - \ln \text{Assets}_{t-1}$. *BB* is a dummy indicator for the treated sample of the BB targets. $\ln \text{Assets}_{t-1}$ stands for the natural logarithm of total assets in the pre-deal year. ROA_{t-1} stands for the return on assets equal to EBIT over the total assets in the pre-deal year. Deal year and Industry fixed effects are included as indicated. Industry fixed effects are defined on a NACE 2-digit level. Standard errors are clustered over the industry dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|--|---------------------|-----------------------|-----------------------|----------------------|-------------------|---------------------|
| | Dependent variable: Change in outcome ΔX , $X_{t+3} - X_{t-1}$ | | | | | | |
| Outcome | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets |
| BB | 0.106* (1.68) | 0.196** (2.38) | 0.014** (2.04) | 0.011 (1.56) | -0.027 (-0.64) | 0.005 (0.44) | -0.027** (-2.26) |
| $\ln \text{Assets}_{t-1}$ | -0.020*** (-2.85) | -0.012 (-0.99) | -0.001 (-0.66) | 0.000 (0.33) | 0.037*** (4.25) | 0.003 (1.45) | 0.000 (0.13) |
| ROA_{t-1} | 0.979*** (7.11) | -0.440** (-2.19) | -0.518*** (-28.00) | -0.323*** (-23.34) | -1.088*** (-9.38) | 0.092** (2.63) | -0.094** (-2.32) |
| Observations | 2,360 | 2,328 | 2,347 | 2,310 | 2,325 | 1,920 | 2,183 |
| Country FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.052 | 0.033 | 0.298 | 0.200 | 0.072 | 0.015 | 0.016 |
| <i>Panel B: Without controls</i> | | | | | | | |
| BB | 0.113* (1.76) | 0.185** (2.29) | 0.007 (0.96) | 0.006 (0.76) | -0.034 (-0.75) | 0.008 (0.60) | -0.029** (-2.43) |
| Observations | 2,360 | 2,328 | 2,347 | 2,310 | 2,325 | 1,920 | 2,183 |
| Country FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.025 | 0.031 | 0.029 | 0.036 | 0.023 | 0.013 | 0.012 |
| <i>Panel C: Influence of follow-ons</i> | | | | | | | |
| BB | -0.056 (-0.59) | 0.050 (0.42) | 0.021 (1.63) | 0.007 (0.69) | 0.016 (0.26) | -0.026 (-1.44) | -0.035** (-2.09) |
| $\Delta \text{Follow-on}$ | 0.022** (2.53) | 0.017* (1.80) | -0.002 (-1.24) | -0.000 (-0.42) | -0.004 (-0.54) | 0.005** (2.05) | 0.002 (1.38) |
| Observations | 2,288 | 2,253 | 2,276 | 2,240 | 2,254 | 1,867 | 2,118 |
| Country FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.026 | 0.032 | 0.029 | 0.039 | 0.022 | 0.016 | 0.010 |

Table A.5: Individual Treatment Effects: Cross-section

This table replicates the above table (Table A.4) using company-level treatment effects. The dependent variable is the difference between t+3 and t-1. For example, $\Delta \ln \text{Assets}$ is calculated as $\ln \text{Assets}_{t+3} - \ln \text{Assets}_{t-1}$. *BB* is a dummy indicator for the treated sample of the BB targets. $\ln \text{Assets}_{t-1}$ stands for the natural logarithm of total assets in the pre-deal year. ROA_{t-1} stands for the return on assets equal to EBIT over the total assets in the pre-deal year. All regressions include country, deal year, and industry fixed effects. Industry fixed effects are defined on a NACE 2-digit level. Standard errors are clustered over the industry dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|--|---------------------|-----------------------|-----------------------|----------------------|-------------------|---------------------|
| | Dependent variable: Change in outcome ΔX , $X_{t+3} - X_{t-1}$ | | | | | | |
| Outcome | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets |
| <i>Panel A: With controls</i> | | | | | | | |
| PL | 0.282*** (4.39) | 0.329*** (3.43) | 0.001 (0.15) | 0.009 (1.07) | -0.087 (-1.57) | 0.035* (1.74) | -0.024* (-1.91) |
| FO | -0.086 (-0.91) | 0.044 (0.38) | 0.029** (2.60) | 0.014 (1.45) | 0.042 (0.74) | -0.029 (-1.58) | -0.032* (-1.84) |
| $\ln \text{Assets}_{t-1}$ | -0.024*** (-3.35) | -0.015 (-1.26) | -0.000 (-0.38) | 0.000 (0.39) | 0.038*** (4.45) | 0.002 (1.03) | 0.000 (0.10) |
| ROA_{t-1} | 0.976*** (7.17) | -0.443** (-2.19) | -0.518*** (-27.77) | -0.324*** (-23.18) | -1.085*** (-9.40) | 0.091** (2.61) | -0.094** (-2.32) |
| Observations | 2,360 | 2,328 | 2,347 | 2,310 | 2,325 | 1,920 | 2,183 |
| Adj. R ² | 0.061 | 0.036 | 0.299 | 0.199 | 0.072 | 0.018 | 0.016 |
| <i>Panel B: Without controls</i> | | | | | | | |
| PL | 0.277*** (4.18) | 0.312*** (3.33) | -0.005 (-0.59) | 0.004 (0.47) | -0.080 (-1.34) | 0.037* (1.86) | -0.025* (-1.97) |
| FO | -0.068 (-0.71) | 0.038 (0.33) | 0.022* (1.73) | 0.008 (0.76) | 0.019 (0.31) | -0.028 (-1.53) | -0.034** (-2.04) |
| Observations | 2,360 | 2,328 | 2,347 | 2,310 | 2,325 | 1,920 | 2,183 |
| Adj. R ² | 0.033 | 0.034 | 0.030 | 0.036 | 0.023 | 0.016 | 0.012 |
| <i>Panel C: Influence of follow-ons</i> | | | | | | | |
| PL | 4.691*** (4.59) | 5.848** (2.38) | -0.305 (-1.24) | -0.214 (-0.92) | -1.266 (-1.18) | 0.479 (1.03) | -0.478 (-1.23) |
| FO | -0.067 (-0.70) | 0.037 (0.31) | 0.022* (1.70) | 0.007 (0.75) | 0.019 (0.31) | -0.028 (-1.49) | -0.034** (-2.04) |
| $\Delta \text{Follow-on}$ | -0.287*** (-4.06) | -0.361** (-2.28) | 0.020 (1.23) | 0.014 (0.94) | 0.080 (1.14) | -0.028 (-0.91) | 0.031 (1.25) |
| Observations | 2,288 | 2,253 | 2,276 | 2,240 | 2,254 | 1,867 | 2,118 |
| Adj. R ² | 0.032 | 0.037 | 0.030 | 0.039 | 0.022 | 0.016 | 0.011 |

Table A.6: Influence of follow-ons: Company-level observations in Panel

Panel A of this table replicates Panel C of Table A.4 using panel data. Panel B of this table replicates Panel C of Table A.5. Standard errors are two-way clustered over the company and year dimension in Panel A and over the industry dimension in Panel B.. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|-----------------------------------|--|-------------------|----------------------|----------------------|-------------------|--------------------|---------------------|
| | Dependent variable: Change in outcome ΔX , $X_{t+3} - X_{t-1}$ | | | | | | |
| Outcome | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets |
| <i>Panel A: BB Treatment</i> | | | | | | | |
| Post | 0.035** (2.45) | 0.025 (1.32) | -0.007*** (-3.36) | -0.004 (-0.79) | -0.015 (-0.97) | -0.008* (-1.93) | -0.007** (-2.72) |
| BB \times Post | 0.064 (1.36) | 0.077 (1.12) | 0.009 (1.47) | -0.026*** (-3.37) | -0.037 (-0.81) | -0.001 (-0.13) | 0.007 (1.26) |
| Follow-on Size | 0.011** (2.22) | 0.016* (2.11) | -0.001 (-1.02) | 0.001 (0.77) | 0.002 (0.62) | 0.002 (1.28) | -0.001 (-1.26) |
| Observations | 11,086 | 10,966 | 11,022 | 10,514 | 10,977 | 9,343 | 10,490 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.957 | 0.920 | 0.613 | 0.733 | 0.859 | 0.755 | 0.638 |
| <i>Panel B: Company Treatment</i> | | | | | | | |
| Post | 0.034** (2.35) | 0.025 (1.28) | -0.007*** (-3.35) | -0.004 (-0.80) | -0.015 (-0.97) | -0.008* (-1.95) | -0.007** (-2.72) |
| PL \times Post | 0.256*** (3.68) | 0.203** (2.58) | 0.004 (0.70) | -0.019* (-2.01) | -0.053 (-1.10) | 0.017 (1.32) | 0.003 (0.57) |
| FO \times Post | -0.071 (-1.10) | -0.014 (-0.17) | 0.012 (1.55) | -0.032*** (-3.05) | -0.026 (-0.39) | -0.015 (-1.21) | 0.009 (1.23) |
| Follow-on Size | 0.004 (0.90) | 0.012* (1.76) | -0.000 (-0.73) | 0.000 (0.39) | 0.003 (0.79) | 0.001 (0.79) | -0.001 (-1.07) |
| Observations | 11,086 | 10,966 | 11,022 | 10,514 | 10,977 | 9,343 | 10,490 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.957 | 0.921 | 0.613 | 0.733 | 0.859 | 0.755 | 0.638 |

Table A.7: Timing of performance changes in BB strategies

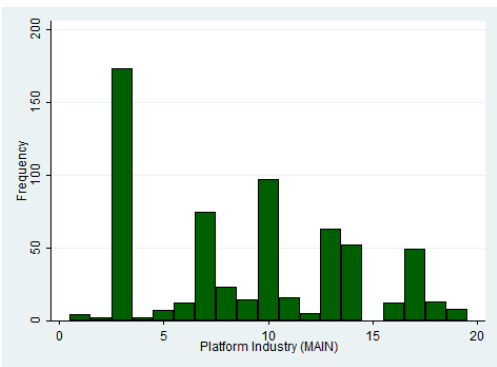
This table shows the performance of the BB strategy (treated) relative to the matched industry peers of the platform company over the first three years following the platform acquisition. Details of the matching procedure are described in Section 4.1. *Post 1*, *2*, and *3* are binary indicators for $t+1$, $t+2$, and $t+3$ respectively, where t indicates the year of the acquisition of the strategy's platform. For the control sample, *Post* dummies refer to the values of the treated company (the platform) to which the control is matched. *BB* is a dummy indicator for the treated sample. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) ln Assets | (2) ln Sales | (3) ROA | (4) ROS | (5) ATR | (6) Leverage | (7) Cash/Assets |
|---------------------|-------------------|--------------------|-----------------|------------------|-------------------|-------------------|---------------------|
| BB×Post 1 | 0.101 (1.39) | 0.108 (1.45) | 0.006 (1.05) | 0.004 (0.65) | 0.007 (0.16) | 0.001 (0.05) | -0.000 (-0.04) |
| BB×Post 2 | 0.220** (2.60) | 0.267*** (3.04) | 0.005 (0.73) | 0.006 (0.74) | -0.027 (-0.46) | 0.021 (1.50) | -0.013 (-1.40) |
| BB×Post 3 | 0.228* (1.90) | 0.496*** (5.38) | 0.006 (0.81) | 0.006 (0.76) | 0.058 (1.00) | 0.023 (1.70) | -0.012 (-1.04) |
| Post 1 | 0.005 (0.10) | 0.035 (1.13) | 0.006 (0.96) | 0.012 (1.60) | 0.009 (0.16) | -0.002 (-0.13) | -0.020** (-2.19) |
| Post 2 | -0.017 (-0.22) | 0.023 (0.55) | 0.011 (1.42) | 0.018* (1.82) | 0.016 (0.20) | 0.001 (0.03) | -0.020 (-1.58) |
| Post 3 | -0.034 (-0.33) | 0.041 (0.82) | 0.015 (1.61) | 0.022 (1.70) | 0.030 (0.27) | -0.002 (-0.08) | -0.023 (-1.36) |
| Observations | 4,553 | 4,510 | 4,544 | 4,490 | 4,513 | 4,062 | 4,311 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.935 | 0.928 | 0.639 | 0.617 | 0.863 | 0.750 | 0.725 |

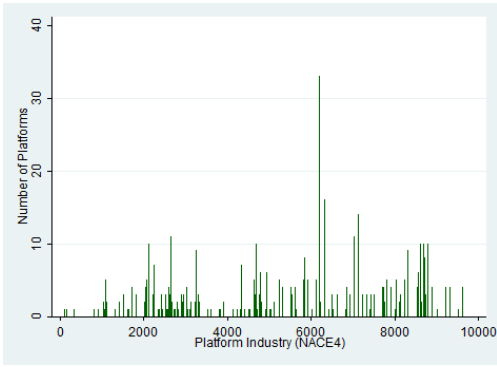
B Additional Tables and Figures

This Appendix contains additional figures and tables, not included in the main analysis.

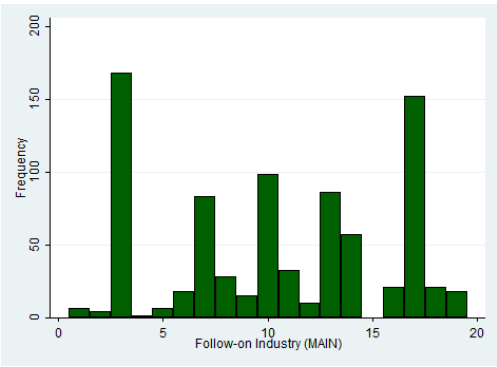
Figure B.1: Deal activity per industry. This figure presents deal count for BB deals by industry sector. In panel A and B the platform deal count are presented for respectively NACE MAIN sectors and NACE 4 digit sectors. In panel C and D the follow-on deal count are presented for respectively NACE MAIN sectors and NACE 4 digit sectors.



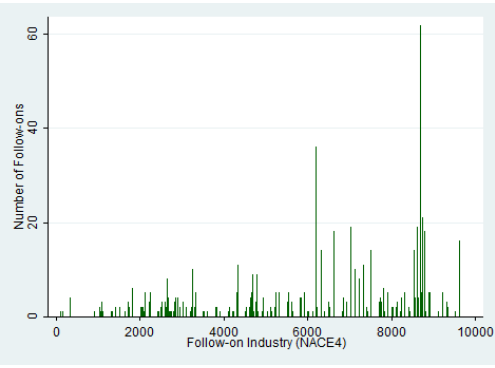
Panel A: Platform MAIN Sectors



Panel B: Platform NACE 4 digit Sectors



Panel C: Follow-on MAIN Sectors



Panel D: Follow-on NACE 4 digit Sectors

Figure B.2: Timing of follow-on acquisitions relative to exit. This figure presents the timing of follow-on acquisitions relative to the exit of the strategy. The numbers on the horizontal axis present the years before the exit.

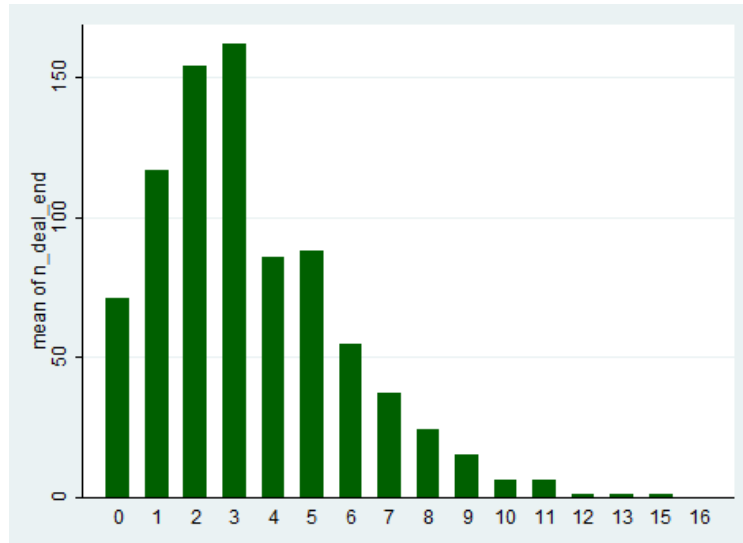


Table B.1: Performance of BB platforms. This table replicates panel A of Table A.1 with preferred accounts. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively. Treated: Platform companies Control: Matched platform controls

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------------------|--------------------|--------------------|-------------------|-------------------|--------------------|-------------------|-------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash / Assets |
| Post | -0.010 (-0.39) | 0.059** (2.69) | -0.002 (-0.55) | -0.001 (-0.61) | 0.047** (2.16) | -0.003 (-0.87) | -0.004 (-1.00) |
| BB×Post | 0.319*** (7.10) | 0.271*** (4.01) | -0.000 (-0.03) | 0.005 (0.90) | -0.066* (-2.06) | 0.030* (2.13) | -0.012 (-1.57) |
| Observations | 6,165 | 6,078 | 6,150 | 6,059 | 6,100 | 5,302 | 5,781 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.947 | 0.935 | 0.647 | 0.640 | 0.861 | 0.786 | 0.713 |

Table B.2: Performance of the strategies with known exit relative to the placebo strategies over the short-run.

This table shows the performance of the BB strategies with known exit compared to placebo control strategies. That is, this table replicates Table 5 excluding the strategies which are still active or with unknown status. *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+3 (or exit, whichever is earlier), where t indicates the year of the acquisition of the strategy's platform. For the control sample, *Post* takes on the respective values of the treated company to which the control is matched. *BB* is a dummy indicator for the treated sample. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------------------|-------------------|--------------------|---------------------|--------------------|-------------------|-------------------|--------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash / Assets |
| Post | -0.057 (-1.36) | -0.094* (-1.76) | -0.012** (-2.24) | -0.010* (-1.91) | 0.019 (0.92) | -0.005 (-0.41) | -0.016* (-1.85) |
| BB×Post | 0.125 (1.51) | 0.156 (1.58) | 0.011 (1.57) | 0.014* (2.12) | -0.043 (-0.75) | 0.005 (0.37) | -0.000 (-0.02) |
| Observations | 3,332 | 3,308 | 3,329 | 3,299 | 3,311 | 2,977 | 3,200 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.893 | 0.890 | 0.630 | 0.593 | 0.834 | 0.732 | 0.704 |

Table B.3: Performance of the longer-period strategies relative to the placebo strategies over short-run and long-run: Capital intensive strategies

This table shows the performance of the BB strategies compared to placebo control strategies. We focus on the strategies which exit in at least five years after the platform acquisition (the long-term strategies). *BB* is a dummy indicator for the treated sample. *Post-Short* is a dummy indicator equal to zero for t-1 and equal to one for the periods t+1 to t+3, where t indicates the year of the acquisition of the strategy's platform. *Post-Long* is a dummy indicator equal to zero for t-1 and equal to one for the periods t+4 to t+5. *K Intensity* is a dummy variable equal to one for strategies of which the platform had a fixed assets to employees ratios that was higher than the sample median in the pre-deal year. For the control samples, *Post* dummies take on the respective values of the treated company to which the control is matched. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) ln Assets | (2) ln Sales | (3) ROA | (4) ROS | (5) ATR | (6) Leverage | (7) Cash / Assets |
|---------------------------|----------------------|--------------------|--------------------|--------------------|----------------------|---------------------|----------------------|
| BB×Post-Short×K Intensity | -0.523** (-2.19) | -0.424 (-1.58) | 0.042*** (3.50) | 0.061*** (3.26) | 0.156 (1.15) | -0.071 (-1.47) | 0.053* (1.85) |
| BB×Post-Long×K Intensity | -1.621*** (-3.37) | -0.510* (-1.87) | 0.083*** (5.04) | 0.098*** (4.19) | 0.590** (2.43) | -0.141** (-2.56) | 0.088** (2.58) |
| BB×Post-Short | 0.204 (1.13) | 0.342* (1.97) | -0.005 (-0.51) | -0.011 (-0.98) | 0.033 (0.23) | 0.058** (2.78) | -0.034 (-1.69) |
| BB×Post-Long | 0.434* (1.78) | 0.475* (2.13) | -0.013 (-0.93) | -0.010 (-0.81) | -0.039 (-0.24) | 0.093*** (3.92) | -0.045* (-1.78) |
| Post-Short×K Intensity | -0.178** (-2.72) | -0.054 (-1.03) | 0.017*** (4.00) | -0.000 (-0.07) | 0.183*** (4.77) | -0.006 (-0.39) | 0.002 (0.27) |
| Post-Long×K Intensity | -0.356*** (-3.68) | -0.145 (-1.30) | 0.018** (2.66) | -0.005 (-0.65) | 0.230*** (3.83) | -0.000 (-0.01) | 0.007 (0.72) |
| Post-Short | 0.014 (0.17) | -0.056 (-0.57) | -0.011 (-1.72) | 0.002 (0.27) | -0.133*** (-4.10) | -0.013 (-1.43) | -0.011 (-1.11) |
| Post-Long | 0.150 (1.61) | 0.016 (0.16) | -0.001 (-0.12) | 0.012 (1.29) | -0.201*** (-4.17) | -0.023* (-1.88) | -0.009 (-0.69) |
| Observations | 2,434 | 2,389 | 2,432 | 2,385 | 2,401 | 2,156 | 2,330 |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R-Squared | 0.866 | 0.856 | 0.616 | 0.566 | 0.809 | 0.703 | 0.628 |

Table B.4: Performance of the longer-period strategies relative to the placebo strategies: Product closeness and type of follow-on acquisition II. This table shows the performance of the BB strategies were exited after five years compared to placebo control strategies over the first five years following the platform acquisition, depending on product-market relatedness of companies. We focus on the strategies which exit in at least five years after the platform acquisition. *BB* is a dummy indicator for the treated sample. *Post* is a dummy indicator equal to zero for t-1 and one for the period t+1 up to t+5, where t indicates the year of the acquisition of the strategy's platform. *Horizontal* is a dummy indicator equal to one for the years when the strategy acquired an add-on in the same 4-digit NACE sector as the platform. *Close Customer* is a dummy indicator equal to one for the years when the strategy acquired an add-on with an I-O relation and whose industry is in the top quartile based on intensity of trading with the platform industry. *Other Customer* is a dummy indicator equal to one for the years when the strategy acquired an add-on with the I-O relation and whose industry is in the top quartile based on intensity of trading with the platform industry. *Close Supplier* and *Other Supplier* dummies are defined similarly based on supplier relationships. For the control samples, *Post* and relatedness dummies take the respective values of the treated company to which the control is matched. The dummies non-interacted with *BB* are suppressed to save the space. All specifications include firm and year fixed effects. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|----------------------|----------------------|----------------------|-------------------|-------------------|--------------------|-------------------|-------------------|----------------------|-------------------|
| | ln Assets | ln Sales | ROA | ROS | ATR | Leverage | Cash/Assets | ln Empl. | Sales/Empl. |
| BB×Horizontal | -0.225 (-0.85) | -0.005 (-0.02) | 0.022 (1.35) | 0.015 (0.74) | 0.034 (0.21) | 0.061* (2.08) | -0.006 (-0.21) | -0.225 (-0.85) | 0.027 (1.03) |
| BB×Close Supplier | -1.295* (-1.93) | 0.321 (0.73) | 0.124** (2.34) | 0.062 (1.73) | 0.969 (1.59) | -0.035 (-1.02) | 0.097 (1.62) | -1.295* (-1.93) | 0.141* (1.80) |
| Close Customer | -0.074 (-0.53) | 0.048 (0.36) | 0.022* (2.08) | 0.020* (1.89) | 0.158 (1.47) | -0.031 (-0.74) | -0.000 (-0.01) | -0.074 (-0.53) | -0.031 (-1.17) |
| BB×Close Customer | -0.308 (-0.62) | 0.958 (1.07) | -0.017 (-0.79) | -0.017 (-0.76) | 0.167 (0.58) | 0.080 (1.32) | 0.058 (1.40) | -0.308 (-0.62) | 0.060 (1.19) |
| BB×Other Supplier | -0.309 (-0.48) | 0.151 (0.13) | 0.003 (0.05) | 0.055 (0.99) | -0.254 (-1.77) | -0.009 (-0.22) | -0.081 (-1.24) | -0.309 (-0.48) | 0.173 (1.11) |
| BB×Other Customer | -3.233*** (-3.30) | -2.074*** (-4.41) | -0.016 (-0.61) | -0.023 (-1.68) | 1.793*** (4.68) | -0.000 (-0.00) | 0.064 (1.26) | -3.233*** (-3.30) | -0.152 (-1.27) |
| BB×Post | 0.042 (0.22) | 0.180 (1.21) | 0.010 (1.46) | 0.016 (1.62) | 0.099 (0.95) | 0.005 (0.26) | -0.018 (-1.39) | 0.042 (0.22) | 0.018 (0.83) |
| Observations | 2,434 | 2,389 | 2,432 | 2,385 | 2,401 | 2,157 | 2,330 | 2,434 | 2,044 |
| Non-interacted terms | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Strategy FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adj. R ² | 0.858 | 0.852 | 0.616 | 0.560 | 0.813 | 0.702 | 0.634 | 0.858 | 0.795 |