Can Private Equity Act as Strategic Buyers? Evidence from Serial (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 or rather are a "window-dressing" for fundraising or are used to justify unspent capital. Using matched-sample difference-in-differences estimations in a large sample of serial private 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: Private Equity, Leveraged Buyouts, Buy-and-Build Strategies, Operating Performance, Synergies

JEL Codes: G24, G34, L2

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1 Introduction

The market for corporate control, or takeover market, is one of the largest financial markets in the world.[1] The key players in this market are strategic and financial buyers. The common view, is that strategic buyers are companies in a related type of business, such as competitors, suppliers, or customers, and buy companies in order to realize long-term operational synergies through integration into acquirer's 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 order to service the acquisition debt. 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).[2] Nowadays, PE companies developed a new hybrid strategy—referred to as the "buy-and-build"—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. Our paper is the first 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 the unspent 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

[1] Michael Jensen and Richard Ruback introduced this term in their 1983 article as "the market in which alternative management teams compete for the right to manage corporate resources" (Jensen and Ruback, 1983). As of end-September 2018, the global M&A activity exceeded the previous high just before the Global financial crisis of 2008-09, reaching $3.3 trillion, with a third accounted for by the mega-deals worth more than $5 billion. See 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-d36dfef1b89a and Figure 3.3 in Bain & Company, (2018).

[2] According 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 can 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 values a typical target more than an average financial bidder. 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.

by acting similarly to strategic buyers.

Because buy-and-builds involve multiple companies, the analysis of their operating performance is more challenging than the analysis of traditional LBOs. First, buy-and-builds 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 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 buy-and-build, 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 with a common goal, completed between 1997 and 2016 in seven major European private equity markets including Denmark, Finland, France, Norway, Spain, Sweden, and the United Kingdom.[3]

Second, endogeneity of acquisitions makes establishing the causal effect of buy-and-builds difficult. While PE companies generally carefully select their targets or focus on sectors with below average performance in particular countries and years, the buy-and-build 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 buy-and-build 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.[4] The difference-in-difference analysis then measures the treatment effect of being a part of the buy-and-build strategy.[5] The novelty of our paper is

[3]We 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).

[4]We 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.

[5]The 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.

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, which has never been done before.

We observe new regularities compared to what is typically seen with the conventional LBOs. We confirm the longer-horizon focus of buy-and-build strategie: the average holding period in our sample is over five years, longer than for a typical LBO. With respect to the sectoral patterns, we find 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 industry and manufacturing. In addition to these horizontal acquisitions, there are also buy-and-build strategies with platforms and follow-ons in vertically related or seemingly unrelated industries.

Our first contribution to existing literature is to focus on strategy-level (multiple connected targets) in contrast to the company-level analysis.[6] 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.[7]

Our second contribution is to verify the arguments from the PE industry that the buy-and-build 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

[6]Focusing 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 growth is due to follow-on acquisitions (the "size effect").

[7]This time horizon is typical in finance literature.

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 ROS, while over five years the increase of the ROS of the long-term strategies is 55 percent.[8]

Next, we explore whether buy-and-build 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. We find that buy-and-build 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 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 buy-and-build strategies with the same time to exit. The former 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 buy-and-build 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 buy-and-build strategies, likely motivated by industry consolidation, bring the operational benefits, or whether the benefits come from

[8]The 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.

the acquisition of suppliers or customers in vertical acquisitions.[9] Following the literature, we identify the relative position of a portfolio company in the production value chain using its 4-digit industry and a detailed input-output (I-O) table from the U.S.[10] We do not find that horizontally related follow-ons significantly change the operating performance of the strategies—these strategies only seem to secure higher leverage. In contrast, profitability increases in the strategies which combine vertically related companies. Longer-term vertical strategies are more efficient by increasing sales-to-assets and labor productivity. Zooming out to closeness 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 the buy-and-build strategies 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.[11]

Our paper is the first to fully identify and analyze the entire buy-and-build strategy, as a series of buyout transactions that have a common goal related to synergetic growth. In a related study, Acharya et al., (2013) differentiate between "inorganic" deals (the deals with

[9]The early paper which suggests that horizontal buy-and-build 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).

[10]We 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.

[11]The 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 buy-and-builds 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.

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).[12] We focus on the serial inorganic deals (buy-and-builds) and are able to separate the transactional and synergetic growth using the 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 existing explanations of serial acquisitions, for instance empire building or learning, are proposed for public entities (Aktas et al., 2013; Laamanen and Keil, 2008) but they do not apply to private equity (Jensen, 1986, 1989). The findings in this paper provide insights on serial acquisitions strategies in general when we focus on those known characteristics of private equity that make them well-equipped for handling serial M&A strategies. For example, PE companies are experienced deal makers that can be beneficial when acquiring multiple companies in a brief period of time (Aktas et al., 2013).The strong management incentives provided by private equity and limited holding period reduce potential empire building (Jensen and Meckling, 1976; Kim et al., 2011). We find that in buy-and-build strategies by PE the growth in size, which is typical in any serial M&A, is accompanied by the profitability and other efficiency improvements.

The rest of paper is organized as follows. In section 2 we discuss the conceptual issues related to value creation in buy-and-build 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

Traditionally, the analysis of value creation by private equity has been focusing on a single company. It has been established 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

[12] Valkama et al., (2013) demonstrate that the inorganic transactions positively influence the internal rate 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.

[13] The 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

restructuring targets (Cressy et al., 2007; Demiroglu and James, 2010), improve corporate governance (Acharya et al., 2013; Cornelli et al., 2013; Nikoskelainen and 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, promote innovation (Lerner et al., 2011), and reallocate labor to the most effective use (Davis et al., 2014).

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

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 and an increase in the total size of the investments. 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 alternative 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]

Schoar, 2005; Korteweg and Sorensen, 2017; Robinson and Sensoy, 2016; Sensoy et al., 2014).

[14]In 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 private equity firms and other asset managers that accumulated unprecedented $162 billion in unused capital, so called "dry powder." See Mark Vandevelde "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/

[15]Perquin 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

[**Figure 1 about here**]

With growing size, the PE market became 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).

[**Figure 2 about here**]

Increased importance of this serial acquisition strategy requires shifting the focus of the deal analysis from individual companies to the portfolio level, which is not common in academic literature. In a recent interview to Financial Times, the director of PE practice at a global management consultancy Bain & Company Brenda Rainey summarizes the essence of this strategy nicely "If I can buy a platform and add on small companies that tend to be sold

$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

[16] A 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).

[17] Buyout 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.

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).[19] In this paper, we investigate which view holds in the data using *strategy-level analysis* in a large sample of European buy-and-builds.

3 Data

Data availability is a major challenge for research on private equity. This is especially the case in buy-and-build 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 buy-and-build strategies.

Facing the data availability issues, the literature typically obtains the company financials and the deal leverage—one of the key determinants of deal returns—by using the data from the capital providers (the limited partners, such as funds-of-funds working with many PE companies) or from the PE companies themselves. This allows measuring the deal leverage precisely, however, the information on the portfolio company is often limited. Measurement

[18] In order to fix ideas, consider an example of a very recent buy-and-build deal in which 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 quadripled 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.

[19] In the context of secondary buyouts (the LBO transactions where both the buyer and seller are private equity funds) 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.

of the 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 rely on the data on the PE deal form the transaction-level database, and identify the real activity of the relevant companies form the accounting data from the linked database of firm financials. Our source also provides ownership structure of the the deal that is crucial for identifying buy-and-build strategies.

3.1 Deal Sample and Identification of Strategies

We collect deals and company financials from Zephyr and Orbis databases by the Bureau van Dijk (BvD), a Moody's company. Zephyr is the database of BvD focusing 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. Deals in Zephyr can be merged to company information in Orbis by a common identifier. Orbis 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.

We begin by collect all follow-on deals from Zephyr.[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 performance of the acquired companies for several years after the deal. Finally, 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 which are purchased to pursue a common strategy to exploit some form of synergetic relationship—as well as the exit, when the larger company is sold. For this

[20]Zephyr uses the sub-deal type "build-up" to refer to the follow-on deals. The exact definition of the "build-up" transaction by Zephyr is "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 companies." 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.

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 buy-and-build 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 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). 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

[21] In 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.

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

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 buy-and-build strategies with unique platforms across seven European countries in which a total of 1,346 follow-on acquisitions were completed.

Table 1 presents the number of platform and follow-on acquisitions by year in our broadest deal sample. Each strategy has a single platform, so that their number coincides. The number of completed buy-and-build 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 buy-and-builds (solid line, right axis). Together with the large volume of these transactions, the uninterrupted upward trend in the buy-and-builds 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 buy-and-build strategy. Most strategies have acquired either 1 or 2 follow-on companies, with an average of 1.7 follow-ons. A few buy-and-build strategies, while designated in deal descriptions as such, have not acquired any follow-on companies yet. Buy-and-build 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]

In our deal sample we have identified 818 strategies of which 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 buy-and-build strategies in our sample is more than 5 years confirming our expectation that buy-and-builds 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 buy-and-build strategy (Bain & Company, 2018; Smit, 2001, see). 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; Lambrecht, 2004; 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 buy-and-build 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

[23]Barrot 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.

[24]Javorcik, (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.

[25]The 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.

[26]Using 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.

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]

3.3 Company Financials

Financial data for target companies comes from BvD Orbis database. We download and clean the financial and ownership data 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.[28]

The existence of holding companies (any entity that lays in ownership structure between the target and the PE firm) complicates measurement of real activity and deal leverage in private equity. In general, the real activity should be reflected in financials of a portfolio company while the deal leverage has to be measured at the holding company level (Boucly et al., 2011). Identifying the correct holding company is not straightforward due to elaborate ownership structures often established for the PE deals. In case of buy-and-builds, the ownership structure is even more complex. If the follow-on companies are subsidiaries of the platform one could identify the financials of the strategy using the consolidated data (the entity and its subsidiaries) of the platform. Often, the platform and follow-on companies are the same level subsidiaries of a separate holding company. In such case, 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 identify the relevant platforms and/or holding companies and collect

[27] Bloom 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.

[28] The 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.

the correct company financials and the deal leverage. In particular, we create strategy-level financials, in addition to financials of platforms and the individual follow-ons. By establishing all entities in the deal and their financials 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 acquisitions on the performance of platforms and strategies. To achieve this goal, our empirical strategy relies on three pillars (see Roberts and Whited, 2013, for a review of empirical approaches aimed at addressing endogeneity problems in firm-level analysis). 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 portfolio companies (treated) with the performance of the comparable stand-alone companies (controls) over time after the acquisition. 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 also differenced away by inclusion of the post-treatment trend variable. Specifically we estimate the following specification:

$$Y_{jt} = \alpha_c + \beta_1 Post_{jt} + \beta_2 Post_{jt} BB_{jt} + \eta_j + \eta_t + \epsilon_{jt}, \tag{1}$$

where c and t denote the company and the year, respectively and Y_{jt} are different company outcomes. $Post_{jt}$ is equal to one for company-year observations after the deal and otherwise zero. For the control firms the $Post_{jt}$ dummy equals one in the years following the acquisition BB_{jt} is our treatment indicator, which equals one for target companies in buy-and-build strategies. β_2 is our difference-in-differences estimate and our coefficient of interest.

Our main outcomes Y_{it} are the natural logarithm of sales and total assets to verify whether portfolio companies of buy-and-build strategies grow faster than their industry

peers past 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 see whether the portfolio companies show a stronger operating performance than their industry peers.[29] 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 estimating the specification above for labor productivity, defined as sales over the number of employees.

PE companies are professional investors who carefully select their acquisition targets. If there are differences between the acquisition targets and other firms prior to the treatment that are unobserved by an econometrician then the regression (1), estimated on the largest possible sample of companies, will not recover the causal effect of buy-and-build strategies. In order to control for selection on unobservable *time-invariant* company-level factors, we include firm fixed effects, η_j. 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 buy-and-build 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 buy-and-build 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, 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 buy-and-build targets.[31] However, it offers an improvement

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

[30] Originally 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.

[31] As 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.

over a simple regression methods, especially in conjunction with controlling for unobserved trends and other checks we perform.

Our analysis involves comparing the performance of either the platform companies or the entire strategy to the corresponding controls. This results in two separate matched control samples, for individual companies (platforms or follow-ons) and for the entire strategy.

4.1 Matched Control Sample for Platforms and Follow-Ons

In order to identify the effect of buy-and-build acquisitions on *platform* performance, we match them 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 (see Roberts and Whited, 2013).[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 buy-and-build strategy guides our choice of the matching company variables. While PE companies traditionally look at firm profitability when selecting the targets, recent claims from the industry suggest that the buy-and-build 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 return on sales, log of total assets, log of total sales, the squares

[32]Similar 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.

[33]We identify the control companies that are within a 0.2 caliper of the propensity score of the platform (with replacement) 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.

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 cash over assets 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. 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.

[Table 4 about here]

As 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. Appendix Table 4 presents the means of the matched treated and control group for the pre-deal year. Overall, the matching was successful except for the sales growth marginally different at 10% level. Appendix **??** presents the regression results in this larger sample that are very similar to those in our preferred matched sample.

4.2 Placebo Control Strategies

In order to identify synergies at the level of strategies, 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, keeping track of acquisition years in actual strategies. 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. Since we retain five matched

[34] 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.

controls for each platform and add-on, each strategy obtains five placebo strategies with randomly assigned controls.

5 Results

5.1 Effects of the buy-and-builds on company performance

In Table 5 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.[35] 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 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 buy-and-build 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 5 about here]

[35] In 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 as well. The results are provided in the appendix Table A.1. As a result of using unconsolidated accounts, the number of observations is smaller, but the results are consistent.

5.2 Performance of strategies over the short-run

While the company-level analysis suggests that buy-and-build 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 6 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 6 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 6 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 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 8 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 7. Evidence so far implies that in the first three years the strategies grow inorganically, mainly through follow-on acquisitions.

[Table 7 about here]

We compared the performance of the strategy to the peers of the platform, conditional on the total size of the follow-ons, to stress the effects of inorganic growth. Often, the PE owners shift assets and sales from the follow-on to the platform while the companies are being integrated. As a result, using the reported financial statements of follow-ons may not entirely separate the effect of size from the organic synergetic growth. The latter is the true value creation we try to identify.

In order to identify synergies at the level of the strategy we proceed by comparing its performance to the *placebo control strategies*, the observationally equivalent portfolios constructed from the matched peers of actual platforms and follow-ons within our strategies as detailed in Section 4.2. We 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. The results are reported in Table 8. None of the coefficients of the interaction variable BB×*Post* are significant once we control for the comparable placebo strategy. This implies that the larger sales and assets of the buy-and-build strategies over the short-term, reported earlier, mostly stem from the "size effect" associated with the follow-on acquisitions and not so much from the synergetic benefits.

[Table 8 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 9 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×*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).[36] 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 9 about here]

In Table 10 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 $BB \times LT$ *strategy* isolates the actual long-term strategy (the treated). Conditional on included variables, the coefficient of the triple interaction $BB \times LT$ *strategy* $\times Post$ 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 $BB \times Post$ 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

[36] The 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*.

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 10 shows that faster growth of assets and superior profitability (ROS) of strategies relative to their placebos seen in panel A of Table 9 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 10 about here]

5.3 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 buy-and-build 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 buy-and-build 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.[37] In panel A of Table 11, 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 cash-to-assets, 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

[37] This is the sample comparable to the one in panel B of Table 10 except in implementing propensity score matching we now require our controls have at least five (instead of three) years of data post-buyout which reduces the sample of long-term strategies from X to Z. The number of observations per strategy increases due to longer time-series and more follow-ons added in the years following the first three.

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 10.

[Table 11 about here]

These effects are economically meaningful. The average pre-treatment ROS in the sample of Table 11 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 the long-term buy-and-build 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 buy-and-build strategies through growth of sales and improvements in the profitability of the combined firm over the long-run.

5.4 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 buy-and-builds, 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, buy-and-build 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 12 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 11, 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 12 about here]

5.5 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 buy-and-build 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.

5.5.1 Capital intensity

One of the claimed sources of value in serial acquisitions, such as buy-and-builds, 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 buy-and-build 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 the 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.[38] 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 buy-and-build 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 13. *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.[39] 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 buy-and-builds 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).[40] These findings are consistent

[38]Gorbenko 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.

[39]We 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.

[40]In appendix Table A.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 13 occur from right after the acquisition and grow over time.

with the assets redeployability hypothesis advanced by Shleifer and Vishny, (1992). PE owners engaging into the longer-term buy-and-build 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 13 about here]

5.5.2 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 productions 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.[41]

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

[41] The input-output coefficients derived from the I-O table record the fraction of its own output that a given 4-digit sector $s4$ 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.

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.[42] The results for longer-term strategeis are reported in Table 14. 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.[43] 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 buy-and-builds are focusing on the multiple expansion as a possible goal of buy-and-builds 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.[44]

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

[42] We verified that the results do not change on inclusion of these terms

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

[44] Studying the exit multiples of these strategies is a possible extension of this paper.

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 15 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 imprve labor productivity. Interactions with horizontal or customer dummies are not significant.[45]

6 Conclusion

In this paper we identify a new value driver in private equity investments. Through follow-on acquisitions private equity investors grow and improve the profitability of portfolio companies in the long-run. The market for these strategies has increased tremendously and comprises around 30% of the European private equity deal market, however our understanding on these strategies is limited.

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 "window-dressing" for raising new capital and used to justify investments from unused funds. However, buy-and-build strategies also offer potential synergies such as economies of scale or increased market power. On the other hand, to generate positive returns, private equity can also simply focus on multiple arbitrage and debt repayments.

We test these conflicting views using data on 818 buy-and-build strategies with a total of 1,346 follow-on acquisitions, completed between 1997 and 2016 in seven major European private equity markets. The data is collected from Zephyr and Orbis and is supplemented by a newly developed method for identifying serial acquisition strategies. By forensically investigating the disclosed rationale and ownership structure of every deal we are able to better identify platform, related follow-on acquisitions, combine them in well-defined strategies, and find exits. Our empirical strategy to establish a causal relation between follow-on activity and the performance of portfolio companies is the combination of propensity score

[45] As robustness reported in appendix Table A.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 industies 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.

matching with a difference-in-differences analysis. To rule out 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.

Our findings show that this new investment strategy focuses more on growth and synergies from serially related acquisitions and less on value creation from traditional value drivers in leveraged buyouts, such as tax shields and restructuring. Longer-term strategies, taking at least 5 years to exit are especially successful to grow sales and improve profitability of the entire portfolio. They also improve productivity of labor without sacrificing employment. We also discover the importance of heterogeneity of within this investment strategy along several dimensions. 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 often discussed aim of horizontal industry consolidation does not seem to provide superior operating results. We conjecture, but not test, that these strategies are more focused on eliminating small firm discount and increasing market power, as seen anecdotally from the industry (see, for example, Bain & Company, 2018).

These findings confirm the positive view on private equity in which private equity is able to improve the performance of its portfolio companies rather than the strategy being merely "window-dressing." It shows that synergies are an important component of the strategy and that private equity investors are able to capture these through serial acquisition strategies. Moreover, this paper shows that for these longer-term strategies it is necessary to measure the performance in the long-run in addition to the short-run.

It seems that private equity firms are expanding their line of business. Next to their traditional value drivers, private equity firms nowadays also try to add value by growing portfolio firms through acquisitions. Within buy-and-build strategies, the added value depends on the time frame and the type of follow-on acquisition. This newly developed strategy will shape the role of private equity in future transactions. The optimal characteristics of the private equity firm and the management will depend on the aim of the strategy. For example, operational knowledge on which companies to integrate and how to integrate differs greatly from operational knowledge on cost-reductions.

Our findings bear important implications for how the private equity industry operates and how investors should think about private equity investments. It appears, that private equity firms are targeting longer-term investment opportunities, which evidently will delay

the delivery date of returns to fund investors. For the investors of private equity, these strategies provide a diversification opportunity for their private equity portfolio provided that they are willing to "wait and grow" their portfolios.

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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-d36dfef1b89a.

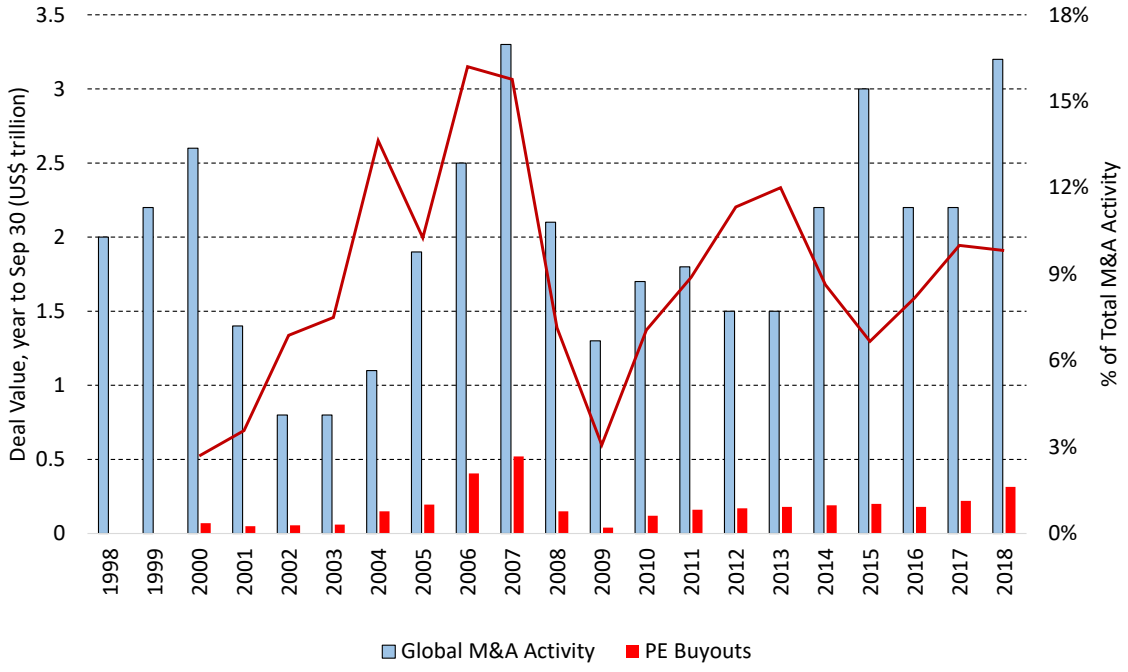


Figure 2: Buy-and-build and standalone deals and over time. This figure presents the deal count (left vertical axis) of standalone private equity deals (light-blue area) and buy-and-build deals, including both platforms and follow-ons (dark-blue area). The ratio (right vertical axis) presents the percentage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

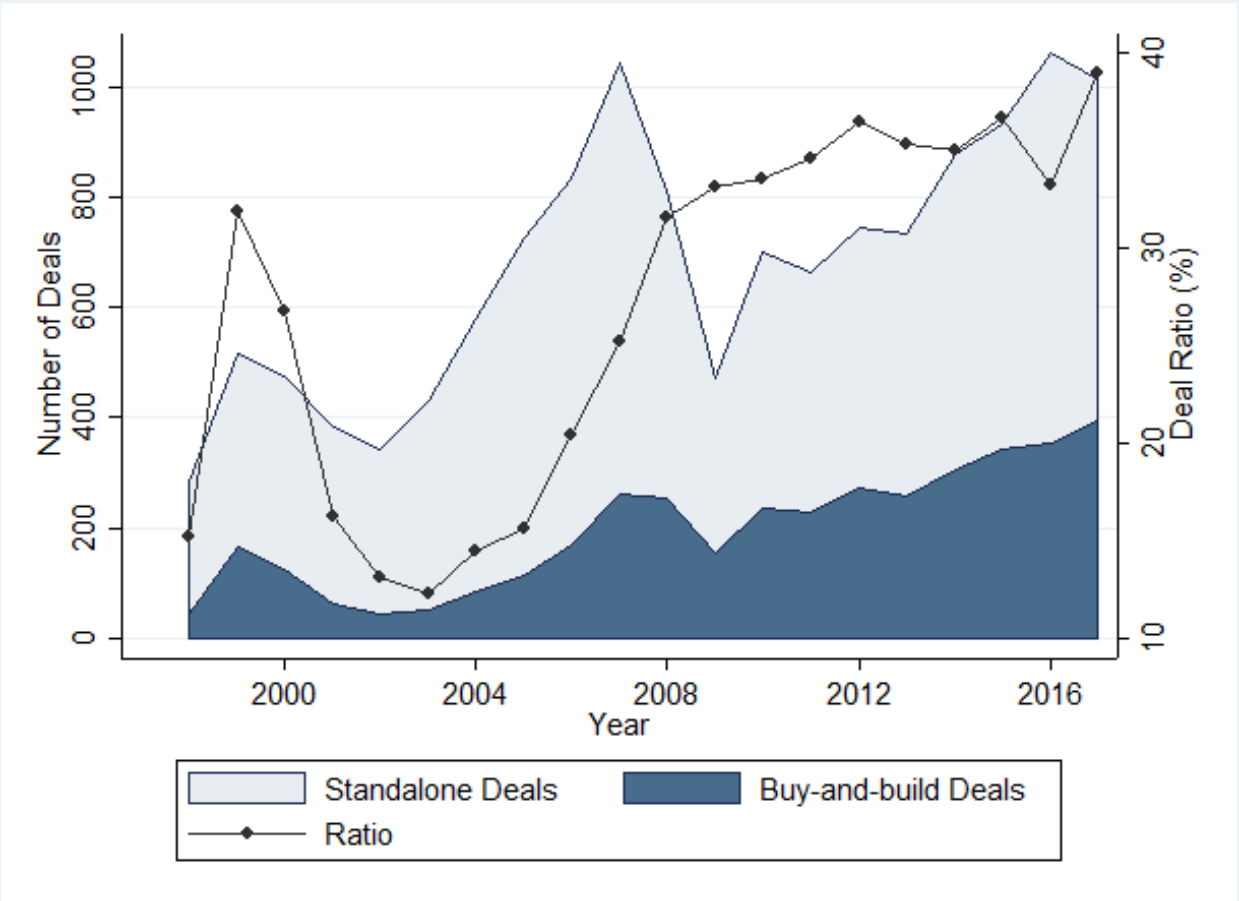


Figure 3: Ownership structures. This figure provides an overview of several examples of ownership structures. Panel A shows a simple ownership structure in which it is easy to identify the platform from the follow-ons. Panel B and C show more complex structures. In each figure the "Holding Company" can also exist out of several holding companies as in panel D.

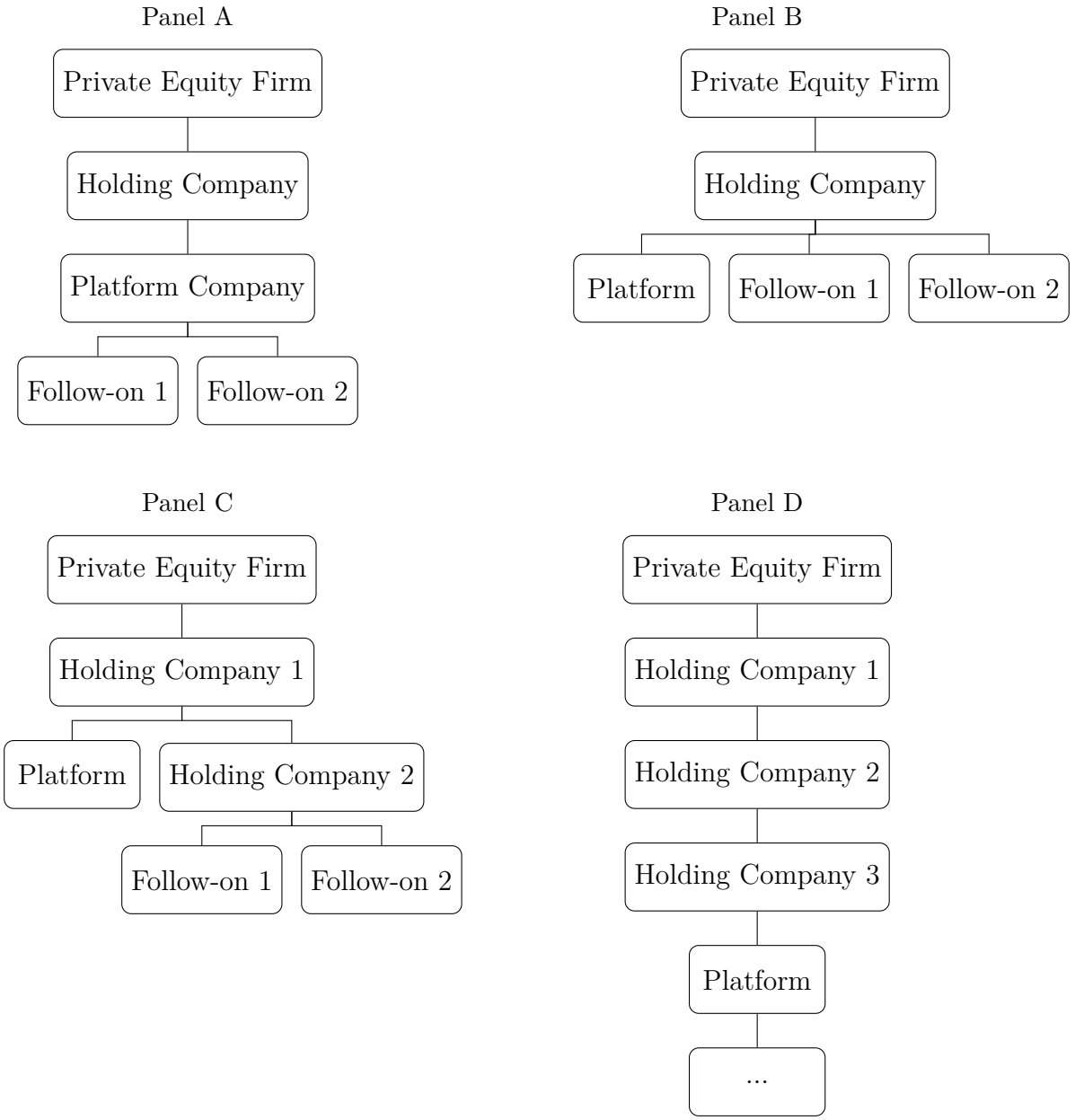


Figure 4: Specifications. This figure provides an overview of the different specifications that are used in order to measure the impact of buy-and-build strategies on target companies. The platform analyses compares platforms with industry matched peers. The same goes for the follow-on analyses. A strategy is the combination of the platform company and corresponding follow-ons. The strategy analyses compares the performance of the strategy with the industry peers of the platform. Finally, a placebo control strategy consists of random matches of the 5 nearest neighbour of corresponding platforms and follow-ons. The placebo control strategy therefore compares the performance between the buy-and-build strategy and placebo control strategies. The strategy and platform analyses measure both growth and performance improvements due to follow-ons and actual synergies. The placebo control strategy only captures the synergies.

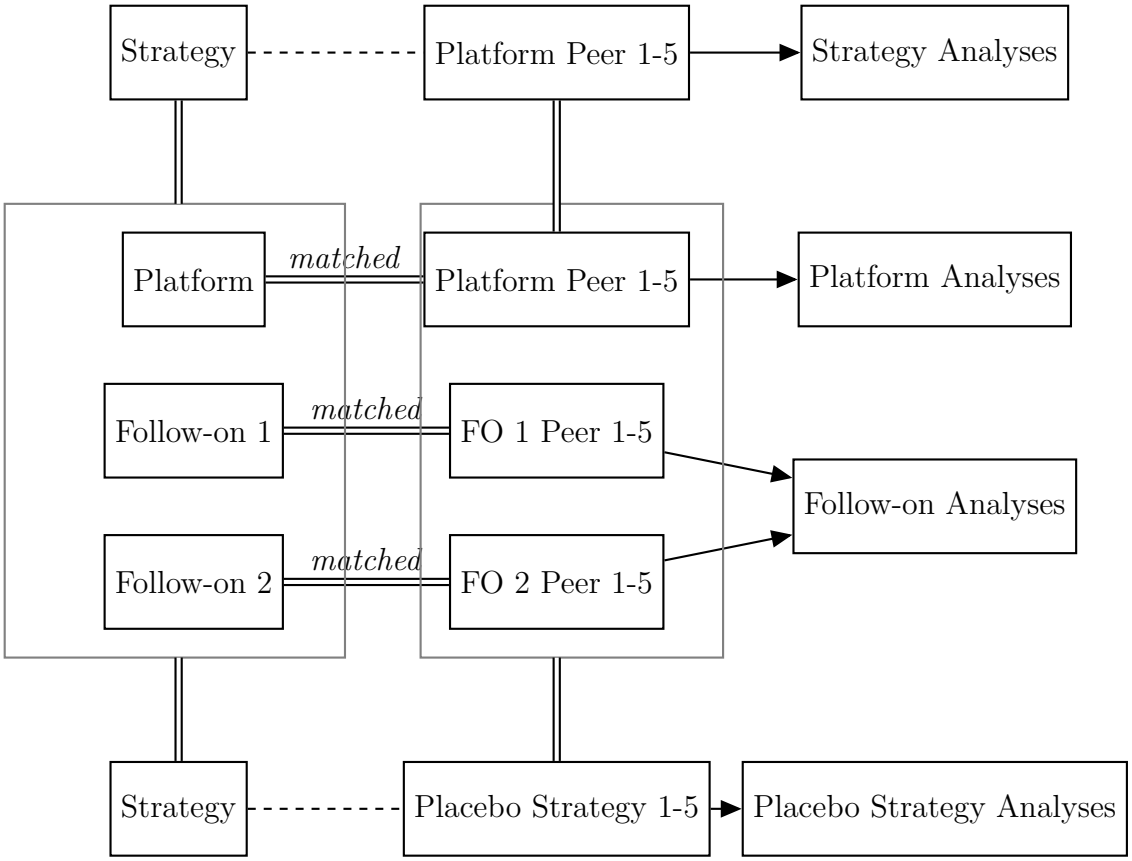
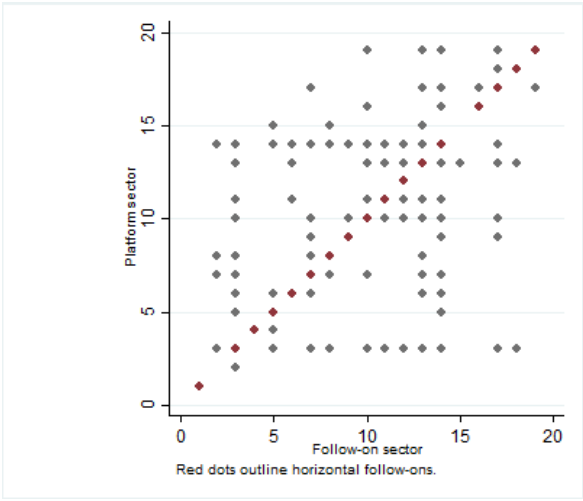
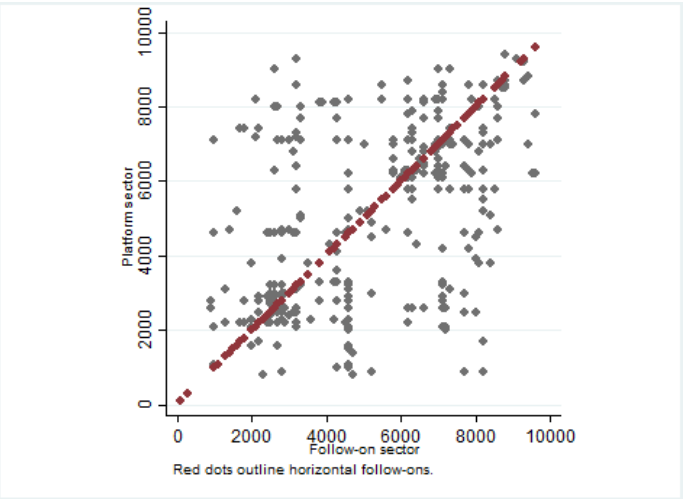


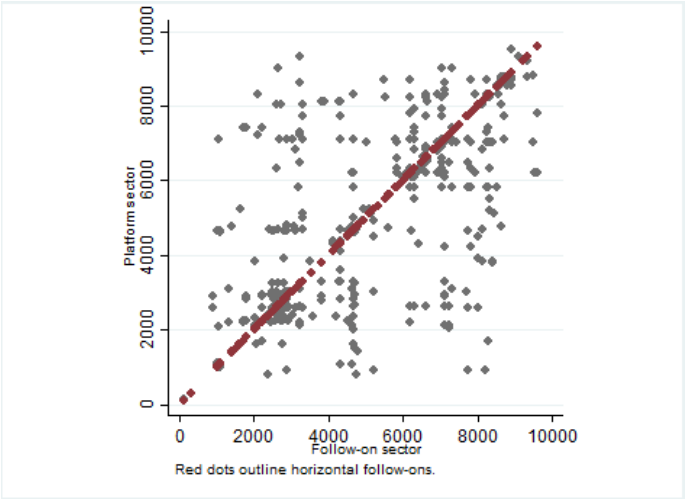
Figure 5: Industry combinations. This figure plots the sector of main activity of the platform on the vertical axis against the sector of its follow-ons on the horizontal axis, using three levels of sector classification: a large 1-digit sectors in panel A, 2-digit NACE revision 2 sectors in panel B, 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

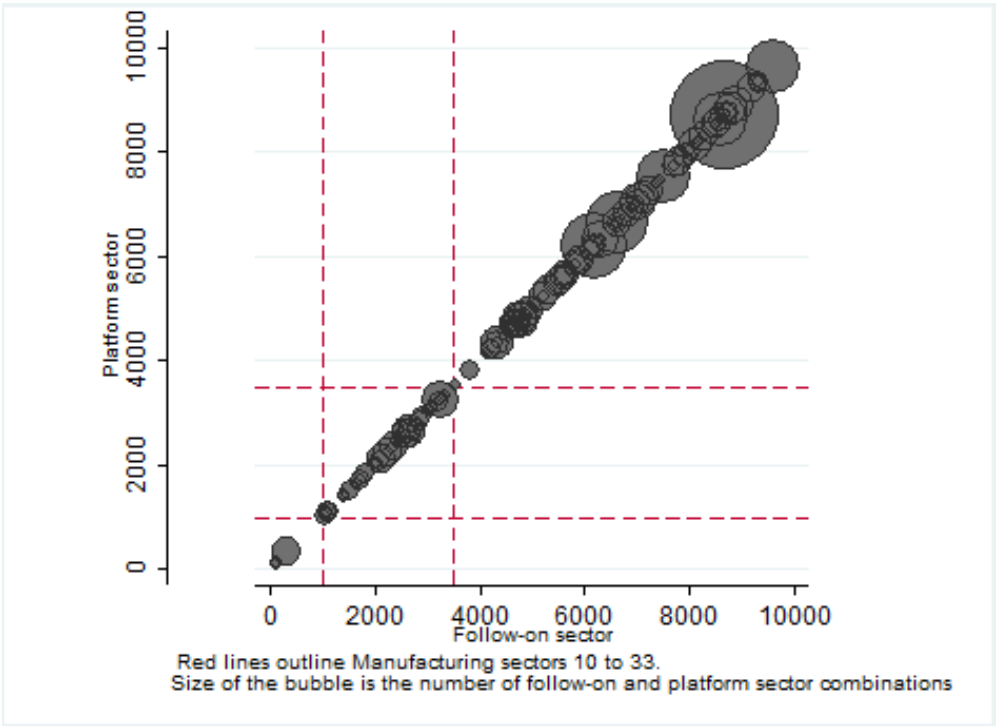


Panel B: NACE 2 digit Sectors

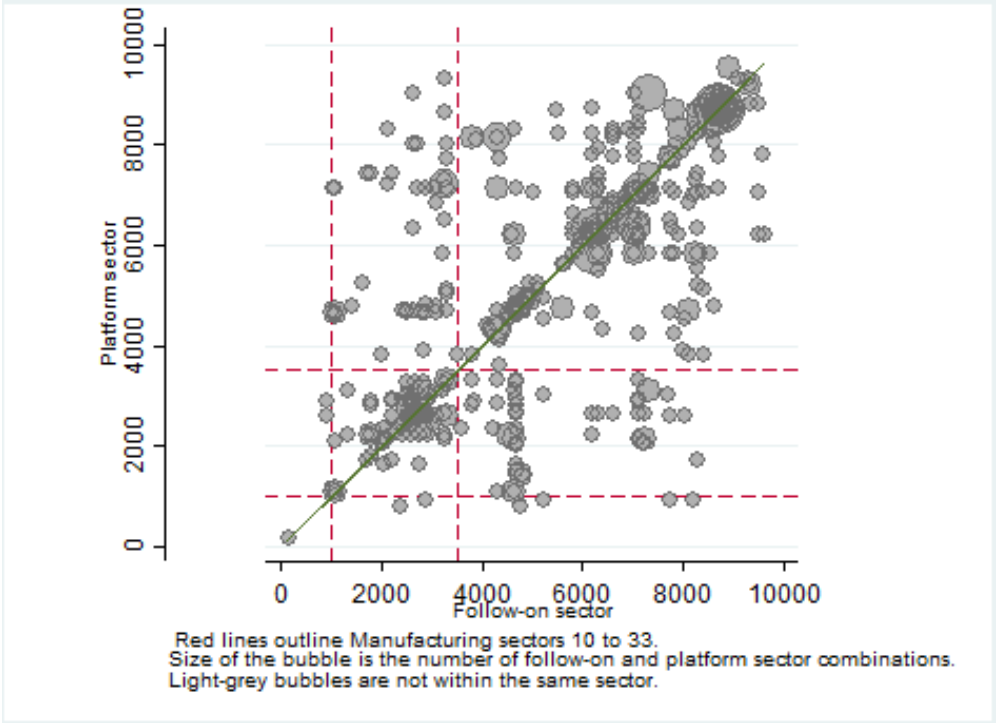


Panel C: NACE 4 digit Sectors

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 sectoros. 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.

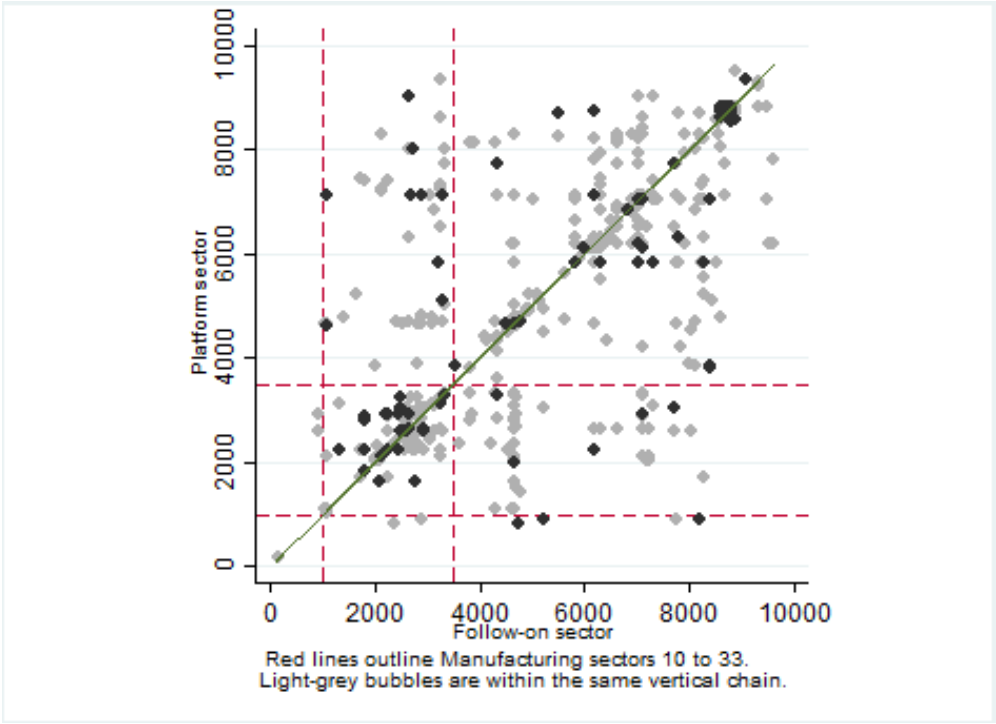
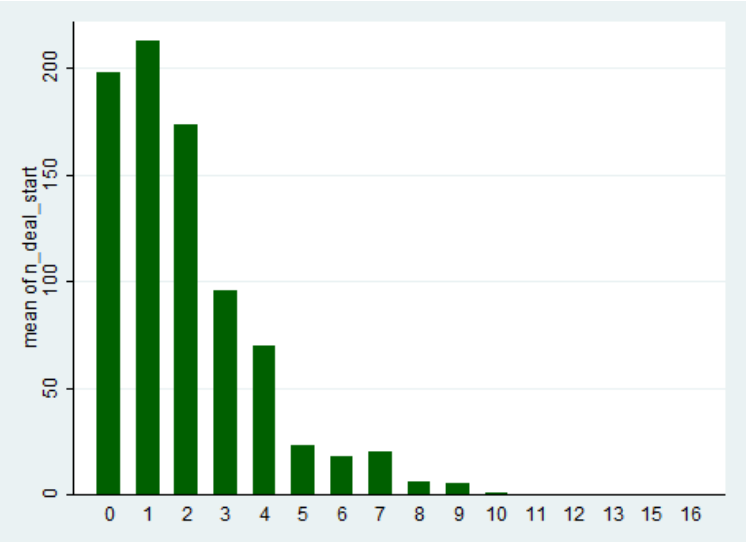


Figure 8: Timing of follow-on acquisitions relative to first acquisition. This figure presents the timing of follow-on acquisitions relative to the first acquisition. The numbers on the horizontal axis present the years after the first deal.



Tables

Table 1: Buy-and-build acquisitions by year. This table provides an overview of the buy-and-build 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 buy-and-build 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: Buy-and-build characteristics. This table provides characteristics of the buy-and-build strategies in our deal sample.

Length	
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)
Panel A: Platforms				
Matching variables				
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)
Other outcomes				
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)
Panel B: Follow-ons				
Matching variables				
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)
Other outcomes				
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 individual companies that are a part of buy-and-build strategy relative to matched peers

This table shows the performance of the individual companies who are the buy-and-build 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 buy-and-build 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) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash / Assets
Panel A: Platforms							
Post	0.003	-0.013	-0.006	-0.002	-0.006	-0.007	-0.015**
	(0.11)	(-0.41)	(-1.40)	(-0.41)	(-0.29)	(-0.80)	(-2.29)
BB×Post	0.291***	0.222**	0.005	0.006	-0.078	0.014	-0.011
	(4.71)	(2.43)	(0.77)	(0.94)	(-1.72)	(1.14)	(-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
Panel B: Follow-ons							
Post	0.054**	0.069	-0.002	-0.004	0.008	0.007	-0.002
	(2.31)	(1.72)	(-0.53)	(-1.48)	(0.35)	(1.25)	(-0.30)
BB×Post	-0.086	-0.033	0.000	0.004	-0.041	-0.016	-0.033**
	(-1.14)	(-0.32)	(0.05)	(0.79)	(-0.57)	(-1.12)	(-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 6: Performance of the strategies relative to matched peers of the platform: The size effect

This table shows the performance of the buy-and-build 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 buy-and-build 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) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash/Assets
Panel A: Buy-and-build strategies							
BB×Post	0.180**	0.284***	0.006	0.005	0.012	0.014	-0.008
	(2.25)	(3.69)	(0.93)	(0.78)	(0.24)	(1.21)	(-0.91)
Post	0.014	-0.048	-0.002	0.003	-0.019	-0.005	-0.014**
	(0.63)	(-1.64)	(-0.37)	(0.54)	(-1.11)	(-0.78)	(-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
Panel B: Influence of follow-ons							
BB×Post	0.159*	0.137*	0.005	0.005	-0.025	0.011	-0.007
	(2.02)	(1.86)	(0.79)	(0.73)	(-0.54)	(0.89)	(-0.86)
Follow-ons size	0.005	0.038***	0.000	0.000	0.009*	0.001	-0.000
	(0.50)	(4.00)	(0.37)	(0.16)	(1.82)	(0.47)	(-0.28)
Post	0.019	-0.012	-0.002	0.003	-0.010	-0.004	-0.015**
	(0.97)	(-0.38)	(-0.31)	(0.54)	(-0.57)	(-0.66)	(-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 7: Timing of performance changes in buy-and-build strategies
This table shows the performance of the buy-and-build 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 indicates 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	0.108	0.006	0.004	0.007	0.001	-0.000
	(1.39)	(1.45)	(1.05)	(0.65)	(0.16)	(0.05)	(-0.04)
BB×Post 2	0.220**	0.267***	0.005	0.006	-0.027	0.021	-0.013
	(2.60)	(3.04)	(0.73)	(0.74)	(-0.46)	(1.50)	(-1.40)
BB×Post 3	0.228*	0.496***	0.006	0.006	0.058	0.023	-0.012
	(1.90)	(5.38)	(0.81)	(0.76)	(1.00)	(1.70)	(-1.04)
Post 1	0.005	0.035	0.006	0.012	0.009	-0.002	-0.020**
	(0.10)	(1.13)	(0.96)	(1.60)	(0.16)	(-0.13)	(-2.19)
Post 2	-0.017	0.023	0.011	0.018*	0.016	0.001	-0.020
	(-0.22)	(0.55)	(1.42)	(1.82)	(0.20)	(0.03)	(-1.58)
Post 3	-0.034	0.041	0.015	0.022	0.030	-0.002	-0.023
	(-0.33)	(0.82)	(1.61)	(1.70)	(0.27)	(-0.08)	(-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

Table 8: Performance of the strategies relative to the placebo strategies: Synergies over the short-run.

This table shows the performance of the buy-and-build 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) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash/Assets
BB×Post	0.053	0.087	0.005	0.005	0.008	0.007	-0.009
	(0.65)	(1.13)	(0.63)	(0.83)	(0.17)	(0.55)	(-1.01)
Post	-0.024	-0.034	-0.005	-0.002	0.003	-0.006	-0.016*
	(-0.79)	(-0.78)	(-0.99)	(-0.39)	(0.13)	(-0.80)	(-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 9: 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 buy-and-build strategies with known exit compared to placebo control strategies. That is, panel replicates Table 8 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
Panel A: Strategies with known exit							
BB×Post	0.125	0.156	0.011	0.014*	-0.043	0.005	-0.000
	(1.51)	(1.58)	(1.57)	(2.12)	(-0.75)	(0.37)	(-0.02)
Post	-0.057	-0.094*	-0.012**	-0.010*	0.019	-0.005	-0.016*
	(-1.36)	(-1.76)	(-2.24)	(-1.91)	(0.92)	(-0.41)	(-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
Panel B: Non-exited strategies							
BB×Post	-0.145	-0.140	-0.016	-0.021*	0.175*	0.021	-0.035*
	(-1.37)	(-1.10)	(-1.20)	(-1.94)	(2.01)	(0.52)	(-2.10)
Post	0.048	0.097	0.016	0.022*	-0.076	-0.017	-0.008
	(0.71)	(0.99)	(1.72)	(2.03)	(-1.44)	(-1.04)	(-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 10: 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 buy-and-build 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
Panel A: Short-term strategies							
BB×Post	0.240**	0.139	0.017	0.022*	-0.166*	-0.025	0.011
	(2.38)	(1.14)	(1.46)	(2.11)	(-1.79)	(-1.27)	(0.56)
Post	-0.076	-0.036	-0.025**	-0.019**	0.069	0.022	-0.033***
	(-0.81)	(-0.25)	(-2.75)	(-2.23)	(1.32)	(0.96)	(-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
Panel B: Long-term strategies							
BB×Post	0.066	0.187	0.007	0.008	0.043	0.027	-0.006
	(0.58)	(1.53)	(0.80)	(0.98)	(0.56)	(1.59)	(-0.37)
Post	-0.075	-0.171**	-0.006	-0.005	-0.015	-0.016	-0.005
	(-1.28)	(-2.72)	(-0.98)	(-0.80)	(-0.62)	(-1.54)	(-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
Panel C: Short-term and long-term strategies							
BB×LT strategy×Post	-0.152	0.068	-0.012	-0.014	0.209	0.055*	-0.020
	(-0.98)	(0.43)	(-0.80)	(-1.06)	(1.70)	(2.00)	(-0.71)
BB×Post	0.215*	0.115	0.018	0.022**	-0.169*	-0.028	0.012
	(2.06)	(0.92)	(1.52)	(2.17)	(-1.81)	(-1.39)	(0.62)
Post	-0.076	-0.036	-0.025**	-0.019**	0.069	0.022	-0.033***
	(-0.81)	(-0.25)	(-2.75)	(-2.23)	(1.32)	(0.96)	(-3.33)
LT strategy×Post	-0.057	-0.100	0.002	0.000	0.011	-0.008	0.010
	(-1.16)	(-1.36)	(0.34)	(0.11)	(0.40)	(-0.77)	(1.15)
LT strategy	0.043	0.010	-0.019	-0.009	-0.107	0.035*	-0.026
	(0.54)	(0.11)	(-1.61)	(-1.02)	(-0.95)	(1.84)	(-1.41)
BB×LT strategy	0.366	-0.012	0.027	0.021	-0.099	-0.032	0.033
	(0.91)	(-0.04)	(1.70)	(1.72)	(-0.59)	(-0.69)	(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 11: Performance of the longer-period strategies relative to the placebo strategies: Synergies over the long-run.

This table shows the performance of the buy-and-build 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) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash/Assets
Panel A: Long-term horizon							
BB×Post	-0.172	0.202	0.019**	0.023**	0.169	0.024	-0.015
	(-0.80)	(1.49)	(2.35)	(2.20)	(1.59)	(1.16)	(-1.02)
Post	-0.076	-0.117	-0.013*	-0.006	-0.034	-0.011	-0.013
	(-0.96)	(-1.01)	(-2.10)	(-1.05)	(-1.19)	(-0.87)	(-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
Panel B: Short-term and Long-term horizon							
BB×Post-Short	-0.033	0.167	0.016**	0.020**	0.119	0.024	-0.014
	(-0.19)	(1.14)	(2.27)	(2.31)	(1.13)	(1.22)	(-0.99)
BB×Post-Long	-0.208	0.286*	0.024*	0.033**	0.199	0.035	-0.013
	(-0.82)	(1.77)	(2.03)	(2.45)	(1.57)	(1.31)	(-0.69)
Post-Short	-0.064	-0.068	-0.003	0.003	-0.051*	-0.015	-0.009
	(-0.88)	(-0.69)	(-0.51)	(0.51)	(-1.83)	(-1.34)	(-0.89)
Post-Long	0.001	-0.030	0.009	0.013	-0.094**	-0.023	-0.005
	(0.01)	(-0.32)	(1.11)	(1.47)	(-2.47)	(-1.69)	(-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 12: Employment and labor productivity. This table measures the impact on employment and labor productivity. Panel A shows the performance of the buy-and-build 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 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
Panel A: Strategies with known exit, short-run			
BB×Post-Short	-0.043	0.003	0.016
	(-0.31)	(1.10)	(0.90)
Post-Short	0.042	-0.003	-0.019*
	(0.67)	(-1.53)	(-1.84)
Observations	2,840	2,793	2,793
Year FE	✓	✓	✓
Strategy FE	✓	✓	✓
Adj. R^2	0.877	0.643	0.836
Panel B: Short-term strategies			
BB×Post-Short	-0.001	0.001	-0.020
	(-0.01)	(0.14)	(-0.52)
Post-Short	0.197	-0.006*	-0.013
	(1.65)	(-2.06)	(-1.04)
Observations	1,059	1,033	1,033
Year FE	✓	✓	✓
Strategy FE	✓	✓	✓
Adj. R^2	0.822	0.685	0.844
Panel C: Long-Term Strategy compared to placebo strategy			
BB×Post-Short	-0.056	0.008***	0.042**
	(-0.50)	(3.43)	(2.23)
BB×Post-Long	0.055	0.012**	0.034
	(0.31)	(2.91)	(1.20)
Post-Short	-0.071	-0.001	-0.013
	(-0.76)	(-0.27)	(-0.69)
Post-Long	-0.071	0.001	0.005
	(-0.45)	(0.44)	(0.18)
Observations	2,072	2,042	2,043
Year FE	✓	✓	✓
Strategy FE	✓	✓	✓
Adj. R^2	0.873	0.620	0.793

Table 13: Performance of the longer-period strategies relative to the placebo strategies: Capital intensive strategies

This table shows the performance of the buy-and-build 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
Panel A: Long-term strategies							
BB×Post×K Intensity	-0.914**	-0.454*	0.056***	0.074***	0.307*	-0.095*	0.065**
	(-2.67)	(-1.83)	(4.52)	(4.50)	(1.83)	(-2.12)	(2.23)
BB×Post	0.290	0.392*	-0.008	-0.011	0.006	0.071***	-0.038
	(1.54)	(2.08)	(-0.77)	(-0.99)	(0.04)	(3.53)	(-1.76)
Post×K Intensity	-0.250***	-0.090	0.017***	-0.002	0.202***	-0.004	0.004
	(-3.25)	(-1.21)	(3.67)	(-0.36)	(4.47)	(-0.24)	(0.57)
Post	0.028	-0.084	-0.020***	-0.006	-0.121***	-0.009	-0.015
	(0.31)	(-0.73)	(-3.31)	(-0.91)	(-3.74)	(-0.83)	(-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
Panel B: Short-term strategies							
BB×Post×K Intensity	-0.263	0.085	-0.020	-0.026	0.312*	0.009	-0.021
	(-1.05)	(0.34)	(-1.14)	(-1.02)	(1.99)	(0.20)	(-0.65)
BB×Post	0.408**	0.138	0.032*	0.037**	-0.297*	-0.031	0.020
	(2.20)	(1.07)	(1.88)	(2.20)	(-2.14)	(-0.95)	(0.94)
Post×K Intensity	-0.173	0.100	0.030**	0.013	0.344***	-0.003	0.018
	(-1.36)	(0.52)	(2.69)	(1.21)	(5.81)	(-0.24)	(1.52)
Post	0.009	-0.084	-0.042***	-0.027**	-0.119*	0.023	-0.046***
	(0.07)	(-0.47)	(-3.67)	(-2.92)	(-1.80)	(0.97)	(-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 14: Performance of the longer-period strategies relative to the placebo strategies: Horizontal and vertical strategies. This table shows the performance of buy-and-build 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.

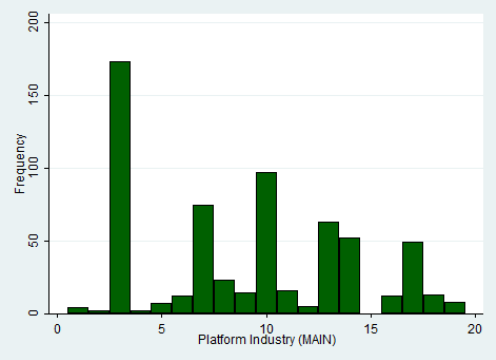
	(1) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash/Assets	(8) ln Empl.	(9) Sales/Empl.
BB×Horizontal	-0.334	0.243	0.034	0.028	0.178	0.088**	0.003	0.020	-0.000
	(-0.97)	(1.00)	(1.58)	(1.09)	(0.84)	(2.25)	(0.06)	(0.11)	(-0.03)
BB×Vertical	-0.172	0.115	0.006	0.009**	0.106**	0.011*	0.002	-0.031	0.005**
	(-1.72)	(1.33)	(1.32)	(2.27)	(2.30)	(1.93)	(0.53)	(-0.64)	(2.46)
	(-2.30)	(0.82)	(0.89)	(1.88)	(2.57)	(2.74)	(-0.63)	(-1.51)	(2.26)
Horizontal	0.084	0.093	-0.012	-0.012	-0.051	-0.003	-0.009	0.034	-0.004*
	(1.00)	(1.06)	(-1.50)	(-1.49)	(-1.41)	(-0.21)	(-0.79)	(0.30)	(-1.80)
Vertical	0.018	-0.000	0.001	0.002	-0.011	-0.002	0.001	0.015	-0.000
	(0.63)	(-0.01)	(0.35)	(1.23)	(-0.71)	(-0.60)	(0.55)	(0.54)	(-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 15: Performance of the longer-period strategie s relative to the placebo strategies: Product closeness and type of follow-on acquisition I. This table shows the performance of the buy-and-build 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.

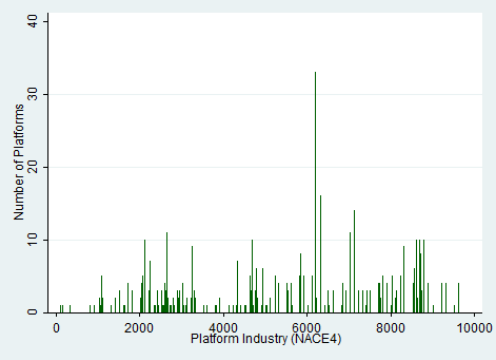
	(1) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash/Assets	(8) ln Empl.	(9) Sales/Empl.
BB×Horizontal	-0.258	0.004	0.024	0.017	0.063	0.058*	-0.004	-0.003	0.031
	(-1.02)	(0.01)	(1.45)	(0.81)	(0.40)	(1.94)	(-0.14)	(-0.02)	(1.13)
BB×Close Supplier	-0.732	1.639***	0.121*	0.176***	1.199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

Appendix: Additional Tables and Figures

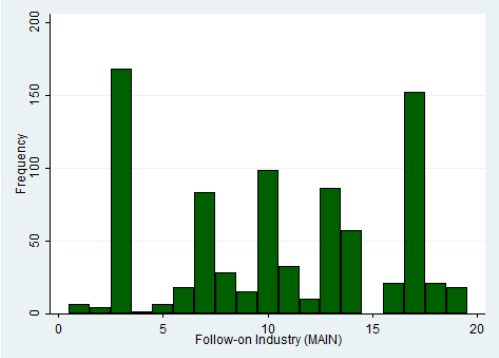
Figure A.1: Deal activity per industry. This figure presents deal count for buy-and-build deals by industry sector. In panel A and B the platform deal count are presented for respectively NACE MAIN sectors and NACE 4 digit sectors. In panel C and D the follow-on deal count are presented for respectively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



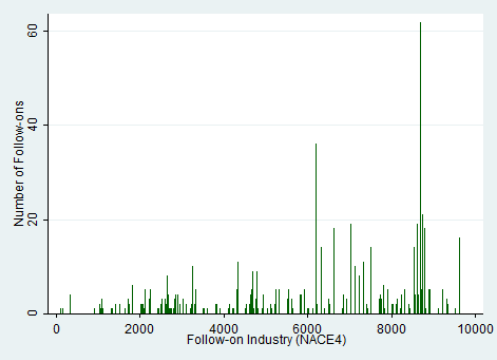
Panel A: Platform MAIN Sectors



Panel B: Platform NACE 4 digit Sectors



Panel C: Follow-on MAIN Sectors



Panel D: Follow-on NACE 4 digit Sectors

Figure A.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.

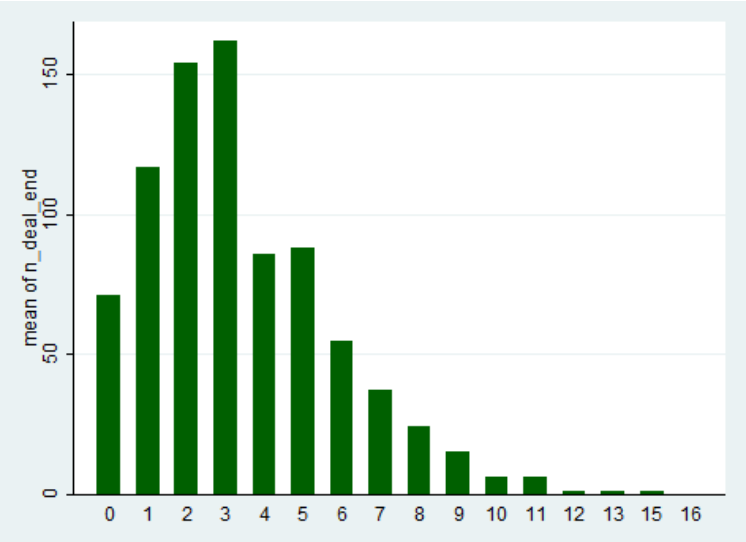


Figure A.3: Timing of company financials for strategy-level analysis. To be written

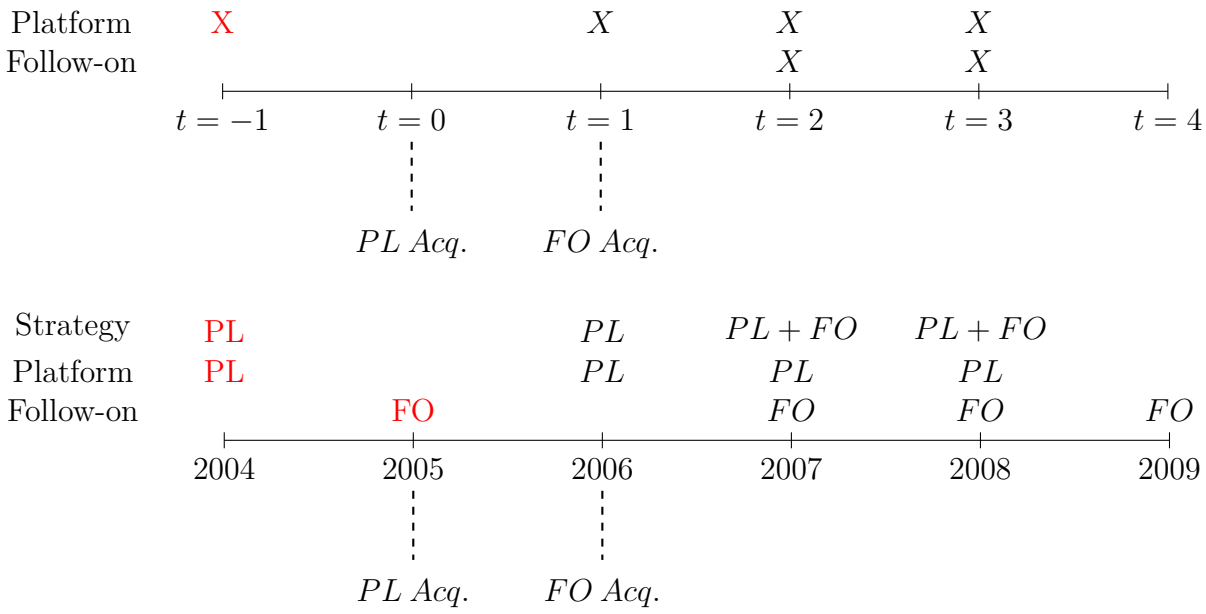


Table A.1: Performance of buy-and-build platforms. This table replicates panel A of Table 5 with preferred accounts. Standard errors are clustered two-ways over the company and year dimension. *, **, and *** stand for a 10%, 5%, and 1% significance level, respectively.
Treated: Platform companies Control: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

	(1) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash / Assets
Post	-0.010	0.059**	-0.002	-0.001	0.047**	-0.003	-0.004
	(-0.39)	(2.69)	(-0.55)	(-0.61)	(2.16)	(-0.87)	(-1.00)
BB×Post	0.319***	0.271***	-0.000	0.005	-0.066*	0.030*	-0.012
	(7.10)	(4.01)	(-0.03)	(0.90)	(-2.06)	(2.13)	(-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 A.2: Performance of the strategies with known exit relative to the placebo strategies over the short-run.
This table shows the performance of the buy-and-build strategies with known exit compared to placebo control strategies. That is, this table replicates Table 8 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) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash / Assets
Post	-0.057	-0.094*	-0.012**	-0.010*	0.019	-0.005	-0.016*
	(-1.36)	(-1.76)	(-2.24)	(-1.91)	(0.92)	(-0.41)	(-1.85)
BB×Post	0.125	0.156	0.011	0.014*	-0.043	0.005	-0.000
	(1.51)	(1.58)	(1.57)	(2.12)	(-0.75)	(0.37)	(-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 A.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 buy-and-build 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**	-0.424	0.042***	0.061***	0.156	-0.071	0.053*
	(-2.19)	(-1.58)	(3.50)	(3.26)	(1.15)	(-1.47)	(1.85)
BB×Post-Long×K Intensity	-1.621***	-0.510*	0.083***	0.098***	0.590**	-0.141**	0.088**
	(-3.37)	(-1.87)	(5.04)	(4.19)	(2.43)	(-2.56)	(2.58)
BB×Post-Short	0.204	0.342*	-0.005	-0.011	0.033	0.058**	-0.034
	(1.13)	(1.97)	(-0.51)	(-0.98)	(0.23)	(2.78)	(-1.69)
BB×Post-Long	0.434*	0.475*	-0.013	-0.010	-0.039	0.093***	-0.045*
	(1.78)	(2.13)	(-0.93)	(-0.81)	(-0.24)	(3.92)	(-1.78)
Post-Short×K Intensity	-0.178**	-0.054	0.017***	-0.000	0.183***	-0.006	0.002
	(-2.72)	(-1.03)	(4.00)	(-0.07)	(4.77)	(-0.39)	(0.27)
Post-Long×K Intensity	-0.356***	-0.145	0.018**	-0.005	0.230***	-0.000	0.007
	(-3.68)	(-1.30)	(2.66)	(-0.65)	(3.83)	(-0.01)	(0.72)
Post-Short	0.014	-0.056	-0.011	0.002	-0.133***	-0.013	-0.011
	(0.17)	(-0.57)	(-1.72)	(0.27)	(-4.10)	(-1.43)	(-1.11)
Post-Long	0.150	0.016	-0.001	0.012	-0.201***	-0.023*	-0.009
	(1.61)	(0.16)	(-0.12)	(1.29)	(-4.17)	(-1.88)	(-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 A.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 buy-and-build 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 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) ln Assets	(2) ln Sales	(3) ROA	(4) ROS	(5) ATR	(6) Leverage	(7) Cash/Assets	(8) ln Empl.	(9) Sales/Empl.
BB×Horizontal	-0.225	-0.005	0.022	0.015	0.034	0.061*	-0.006	-0.225	0.027
	(-0.85)	(-0.02)	(1.35)	(0.74)	(0.21)	(2.08)	(-0.21)	(-0.85)	(1.03)
BB×Close Supplier	-1.295*	0.321	0.124**	0.062	0.969	-0.035	0.097	-1.295*	0.141*
	(-1.93)	(0.73)	(2.34)	(1.73)	(1.59)	(-1.02)	(1.62)	(-1.93)	(1.80)
Close Customer	-0.074	0.048	0.022*	0.020*	0.158	-0.031	-0.000	-0.074	-0.031
	(-0.53)	(0.36)	(2.08)	(1.89)	(1.47)	(-0.74)	(-0.01)	(-0.53)	(-1.17)
BB×Close Customer	-0.308	0.958	-0.017	-0.017	0.167	0.080	0.058	-0.308	0.060
	(-0.62)	(1.07)	(-0.79)	(-0.76)	(0.58)	(1.32)	(1.40)	(-0.62)	(1.19)
BB×Other Supplier	-0.309	0.151	0.003	0.055	-0.254	-0.009	-0.081	-0.309	0.173
	(-0.48)	(0.13)	(0.05)	(0.99)	(-1.77)	(-0.22)	(-1.24)	(-0.48)	(1.11)
BB×Other Customer	-3.233***	-2.074***	-0.016	-0.023	1.793***	-0.000	0.064	-3.233***	-0.152
	(-3.30)	(-4.41)	(-0.61)	(-1.68)	(4.68)	(-0.00)	(1.26)	(-3.30)	(-1.27)
BB×Post	0.042	0.180	0.010	0.016	0.099	0.005	-0.018	0.042	0.018
	(0.22)	(1.21)	(1.46)	(1.62)	(0.95)	(0.26)	(-1.39)	(0.22)	(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