Pricing and Value Creation in Private Equity-backed Buy-and-Build Strategies

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Abstract

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JEL Classification: G23, G24, G32, G34

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1. Introduction

Private equity (PE)-backed buy-and-build (B&B) strategies have attracted considerable public attention in recent years. This is not only because they account for a large share of the PE market (Hammer et al., 2017), but also because they contrast many stylized facts about PE investing. For example, it is commonly accepted that PE firms prefer investments in low-growth, mature targets with few investment needs. This allows for levering up the portfolio company, resolving agency conflicts, and restructuring the business (Axelson et al., 2013; Fidrmuc et al., 2012; Renneboog et al., 2007). In B&B strategies, none of these traditional value creation motives applies. Instead, the objective is to scale up a platform company ("platform") through smaller add-on acquisitions ("add-ons") during the holding period. This allows PE owners to create a dominant market leader and reap the benefits of economies of scale and scope (Castellaneta et al., 2019; Wright et al., 2001). The extant literature suggests that B&B strategies boost returns (Acharya et al., 2013; Cohn et al., 2022; Hammer et al., 2022; Nikoskelainen & Wright, 2007; Valkama et al., 2013). Yet little is known about how price setting and value creation in B&B strategies actually work. The aim of this paper is to fill this gap using large-scale empirical evidence for a sample of 3,399 buyouts between 1997-2020, hand-collected and proprietary data on buyout returns, and evidence from the field.

Despite the popularity of B&B strategies, anecdotal evidence suggests they are difficult to execute (MacArthur et al., 2019). Finding the right platform acquisition is particularly critical for success, because (1) the platform can open up opportunities for geographic or product market expansion, and provide a foothold in a particular sector (Smit, 2001). Such a foothold is frequently needed to act as an industry consolidator. Hence, the platform can be seen as an anchor point generating the option for follow-on acquisitions and setting the path for a chain of interrelated investment opportunities (Smit, 2001). (2) The platform has relatively rare characteristics that are

in short supply, but are essential for the successful execution of a B&B strategy. These comprise a sizable market position, scalable competitive advantage, robust information technology infrastructure, strong balance sheet, experienced management team, consistent free cash flow, and a business model with a low risk of disruption (MacArthur et al., 2019). As a result, platform's management may use its strategic importance as a bargaining chip during buyout negotiations with the PE firm. This creates power asymmetry with the PE investor (Ahlers et al., 2016), and may lead to a seller's market.

For the above reasons, we expect PE-backed B&B platforms to be associated with significant price premiums compared to PE-backed non-B&B deals. This conjecture is consistent with the real option framework presented in Smit & Moraitis (2010). It suggests that platforms derive a significant part of their value from growth opportunities through follow-on acquisitions. Thus, the value of a platform to a B&B investor may be considerably higher than its stand-alone value. What appears to be an expensive investment on a stand-alone basis can turn out to be a high-return deal once the marginal value from subsequent add-on acquisitions is considered.

Using a comprehensive and up-to-date sample of 3,399 global PE buyout multiples between 1997 and 2020, we provide evidence consistent with price premiums for B&B platforms. Our results indicate that PE investors pay up to 28% higher enterprise value-to-sales (EV/sales) multiples if the target serves as the platform for a B&B strategy compared to a non-B&B target. This finding cannot be explained by cross-sectional variation in PE firm's skill, and is robust to various endogeneity tests such as propensity score matching and two-stage instrumental variable regressions. We interpret our findings as being consistent with the notion that PE firms price in real

option value from add-on acquisitions, and that sellers capture part of it because of the strategic importance of the platform for the B&B strategy.[1]

The high transaction multiples for PE-backed B&B platforms, however, raise several key questions. We first address how transaction multiples for PE-backed B&B platforms compare to those paid by strategic acquirers for similar targets. Stylized facts suggest that strategic acquirers may pay higher prices in the market for corporate control vis-á-vis financial investors because synergistic value with the target provides additional room for negotiation (Bargeron et al., 2008; Dittmar et al., 2012; Gorbenko & Malenko, 2014). As a result, there is consensus in the literature that PE firms cannot compete evenly, and they therefore focus on different types of firms, i.e., those characterized by restructuring needs rather than growth opportunities (Fidrmuc et al., 2012; Hege et al., 2018). We argue that B&B strategies have the potential to change this paradigm. The idea behind B&B strategies is to assemble a new entity worth more than the sum of its parts (Smit, 2001). We note that the way B&B investors achieve value-added for their platforms may not be entirely the same as through strategic acquisitions. But it is reasonable to assume that the pricing advantages of strategic acquirers will be mitigated, if not obviated, if B&B investors can price in their platform's future valuation uplift from add-on acquisitions.

To investigate prices paid by PE firms vis-à-vis strategic acquirers, we match our buyout transactions with a comprehensive sample of strategic acquisitions along various target and deal characteristics. Consistent with the stylized fact that PE firms pay less than strategic acquirers, we find that transaction multiples in PE buyouts are significantly lower on average. However, this effect is driven by PE-backed non-B&B deals. Once we compare PE-backed B&B platforms to

[1] Further results (not depicted for brevity) suggest that the B&B premium increases if a PE investor faces competitive pressure for deals. This is in line with the predictions in Ahlers et al. (2016) who identify PE firm's competitive pressure as being favorable for the vendor owing to relative bargaining power. We also find support for the notion that PE investors pay less in management buyout deals (i.e., including management participation) because incentives between PE investors and management are strongly aligned.

their matched strategic peers, transaction multiples are insignificantly different from zero or even slightly higher (depending on the number of matches). While the exact size of the premiums paid to target shareholders should be interpreted with caution,[2] our results demonstrate that stylized facts about strategic versus financial bidders are no longer universally true. One implication of this result is that PE firms may even outbid strategic acquirers at times if they rely on a B&B strategy.[3]

We also address further questions that arise from our baseline findings: (1) do PE-backed B&B strategies outperform PE-backed non-B&B buyout types despite the relatively higher entry multiples, and (2) if so, what drives returns? To this end, we complement our PE buyout sample with hand-collected and proprietary information from a European PE fund-of-funds (FoF). The data contains validated information on buyout performance that is collected directly from PE firms' investment memoranda. Such detailed and reliable information is not available in commercial databases, and it allows for a unique investigation of the sources of value creation in PE-backed B&B strategies.

We find that PE-backed B&B strategies have significantly higher internal rates of returns (IRRs) on invested equity than PE-backed non-B&B buyouts. When decomposing the sources of value creation, it turns out that B&B strategies are associated with significantly higher sales growth and multiple expansion during the holding period. They are not associated with greater margin

[2] Whereas the PE owner considers valuation uplifts of the B&B platform due to several smaller add-ons, the strategic acquirer merges the target with itself. This could lead to different consolidated firm sizes and thus to different market power. For example, if a platform with an enterprise value of $100 million acquires five add-ons, each having an enterprise value of $10 million, then the consolidated entity is worth a total of $150 million. In contrast, if a strategic acquirer with a firm size of $100 million acquires a target of similar size, then the merged entity ($200 million) draws on a higher market share and greater economies of scale than the PE portfolio company. As a consequence, the total value at stake, i.e., the reservation price, is not necessarily the same.

[3] Anecdotal evidence supports this notion. For example, consider the PE fund Cinven, which, in competition with the PE fund EQT and a strategic investor Unilabs, was bidding a relatively high EBITDA multiple of 12 for the platform company Synlab in the fragmented European laboratory industry. The high purchase price was justified by the significant growth potential that resulted from the merger with another Cinven-owned laboratory firm in France as well as with several smaller add-ons in the laboratory market. Due to this priced-in growth potential, Cinven outbid the strategic investor (see https://uk.reuters.com/article/us-cinven-m-a-idUKKBN0P51TZ20150625).

improvements or stronger deleveraging. In fact, the combination of high sales growth and multiple expansion is consistent with a strategy called "multiple arbitrage" (MacArthur et al., 2019). The idea is to capitalize on the market's tendency to assign large companies with higher valuations than smaller ones due to differing risk perceptions (e.g., Ben-Zion & Shalit, 1975). For example, in our sample, the average EV/sales transaction multiple of large-cap buyouts (3.05) is almost three times higher than the one of small-cap buyouts (1.15). Thus, the mere additive increase in sales through add-on acquisitions serves to reposition the platform to a more attractively priced market segment. Such a strategy is considered "arbitrage-like" because the multiple expands even in the absence of synergy gains.[4]

Finally, to back up our conclusions from the empirical analyses, and to shed light on B&B decision-making, we present evidence from the field. We conduct interviews with 32 seasoned PE professionals from 28 different funds representing more than $425 billion of assets under management. We provide novel field evidence on B&B rationale, B&B valuation, pricing and value creation, B&B acquisition processes and B&B execution. The survey responses confirm our theoretical predictions and are in line with our empirical results. They have important implications for the interpretation of our empirical findings.

First, our argumentation that platforms command a price premium rests on the assumption that PE firms pay for anticipated real option value from future add-ons. For this to be true, it is necessary that (1) PE firms have a higher reservation price because their financial model takes future add-ons into account, even if concrete targets are unknown ex ante, (2) PE firms disclose their intention to pursue a B&B strategy to the target during the negotiation processes[5], and (3) platform

[4] There is also preliminary evidence that pursuing such "multiple arbitrage" is economical for the PE owner. This is because add-ons are much smaller than platforms, and thus relatively cheaper. In our sample, the average add-on enterprise value is only one-tenth of the average platform enterprise value, and EV/EBITDA multiples are 22% lower.
[5] While the PE firm is not required to disclose the intended value creation strategy during negotiations, it can still be sensible to disclose it to ensure winning the deal. This is especially true if the target is private, i.e., it is not forced to

management capitalizes on this information because of its strategic importance for the B&B strategy. The survey results confirm that all three assumptions are met.

Second, while the responses suggest that both multiple arbitrage and synergy realization are important for B&B, interviewees state that bottom-line synergies are hard to achieve and realization requires time. These responses go hand in hand with the description of add-ons as small firms with inferior financial performance. Since add-ons have weaker operating performance than platforms, their acquisition is unlikely to result in instantaneous profitability improvements. This might explain why we do not detect any significant impact of B&B on EBITDA margin growth (at least for the primary buyout). In contrast, interviewees state that top-line synergies are relatively easy to achieve, which suggests they could be captured by our positive and statistically significant coefficient of B&B on sales growth.

Our empirical findings are primarily related to three streams of literature. First, we add to prior studies on determinants of buyout pricing (Achleitner et al., 2011; Axelson et al., 2013; Arcot et al., 2015; Guo et al., 2011; Hammer et al., 2021). To the best of our knowledge, we are the first to document a significant relationship between B&B strategies and entry pricing. Second, we add to the extant literature on strategic versus financial buyers in takeover processes (Bargeron et al., 2008; Dittmar et al., 2012; Fidrmuc et al., 2012; Gorbenko & Malenko, 2014). Our findings contradict the stylized view that financial buyers pay less than strategic buyers. They are consistent with future value from anticipated add-on acquisitions being priced in at entry by the PE firm. Third, we add to prior studies on value creation and returns in B&B strategies (Acharya et al., 2013;

sell, and if it is contested, i.e., it has viable alternatives to walk away from the deal. Capasso et al. (2014) provide a framework for deal closure in the PE landscape. They argue that both target's equity-worthiness and equity-willingness are important to closing the deal. From the PE firm's perspective, target's equity-willingness can be improved by disclosing the value creation strategy as it signals commitment to the deal and builds trust. Another benefit is that the seller management can be used as an ex ante sounding board to validate the investment hypothesis and thereby improves the likelihood of a successful deal closure.

Bansraj et al., 2020; Cohn et al., 2022; Hammer et al., 2017; Hammer et al., 2022; Heisig et al., 2022; Nikoskelainen & Wright, 2007; Smit, 2001; Smit & Moraitis, 2010; Valkama et al., 2013; Wright et al., 2001). We also believe we are the first to disentangle the sources of value creation, and show that top-line growth as well as multiple expansion explain significantly higher IRRs. In combination, these findings are consistent with PE firms not only drawing on possible synergy realization in B&B strategies, but also, and perhaps more importantly, on "multiple arbitrage."

Regarding the sources of value creation, we note that our focus is on the three traditional PE value creation levers, i.e., operating improvements, multiple expansion and deleveraging (Achleitner et al., 2011). Bansraj et al. (2020) provide complementary analyses which serve to identify sales and/or cost synergies. They use counterfactuals to estimate a hypothetical sum of the parts, and then interpret any incremental return on sales (RoS) in B&B strategies as synergistic gains. Their difference-in-differences estimates suggest that B&B strategies significantly improve RoS in comparison to matched placebo firms. We acknowledge that their panel setup is more suitable for the investigation of synergies, and it provides a valuable addition to our cross-sectional analysis of pricing and (drivers of) equity returns.

Finally, our field results add to prior literature on decision-making in the PE domain. While the focus of Gompers et al. (2016) and Gompers et al. (2022) is on general PE firm practices, as well as how Covid-19 has affected decision-making, we specifically focus on B&B strategies. Survey responses help us better understand the rationale, valuation practices, pricing, value creation levers, acquisition processes and execution of B&B strategies. This is important, given that practitioners refer to B&B as the single most important operational value creation strategy in PE (Brigl et al., 2012).

The remainder of this paper is organized as follows. Section 2 outlines the sample construction process. Section 3 discusses our empirical results and robustness tests. Section 4 outlines the survey design and survey results. Section 5 concludes.

2. Data

2.1 The Buyout sample

To construct a global sample of PE buyouts, we follow prior literature and use Bureau van Dijk's (BvD) Zephyr database (e.g., Bansraj et al., 2020; Hammer et al., 2017; Hammer et al., 2022; Rigamonti et al., 2016; Tykvová & Borell, 2012; Wang, 2012). Zephyr is known to have good coverage of private firm acquisitions (Erel et al., 2015). In addition, it shares a common identifier with Orbis which makes matching with accounting data more convenient.

First, we select all institutional buyouts, PE-backed management buyouts, management buy-ins, and buy-in management buyouts completed between 1 January 1997 and 31 December 2020, for which financing is labelled as "private equity" or "leveraged buyout." We limit the sample to completed buyouts with majority stakes, and we exclude deals without a financial institution as an equity sponsor. This leaves us with 37,580 global PE transactions.[6] We record deal-related information, such as entry date, industry, country, deal enterprise value (EV), management participation, type and number of equity sponsors, as well as the entry channel (private-to-private, public-to-private, divisional, financial, receivership, privatization). We identify exits for these transactions by manually reviewing the Zephyr deal history of the PE portfolio companies.

Second, for each portfolio company, we pull the entire acquisition history from Zephyr for 1 January 1997 through 31 December 2021. We record a total of 41,226 acquisitions. We retain

[6] The sampling strategy, except for the time period, is similar to that in Hammer et al. (2017). They present a detailed benchmarking of the representativeness of 9,548 buyouts from 1997-2010, in comparison to the samples of Strömberg (2008) and Axelson et al. (2013).

acquisitions before the buyout to construct a control variable for the portfolio firm's pre-buyout acquisition experience. Post-buyout acquisitions help us identify B&B strategies. In principle, we follow Hammer et al. (2017) and classify all buyouts with add-on acquisition(s) as B&B. However, some acquisitions may be driven by motives other than B&B.[7] So we validate our classification as follows: (1) we screen LexisNexis for news about "buy-and-build," "add-on," "bolt-on," or "tuck-in"; (2) we check whether a PE firm refers to itself as a "buy-and-build" investor on its website; (3) for a sub-sample of observations, we validate the deal strategy using proprietary information from investment memoranda provided by a European FoF. There are some observations for which we cannot fully validate the existence of a B&B strategy. We retain those if we record multiple add-ons over a short time period, because this indicates a B&B strategy.

To address our first research question (i.e., whether PE-backed B&B strategies are associated with a premium on the transaction multiple in comparison with PE-backed non-B&B deals), we supplement our sample with data about portfolio firms' sales and EBITDA in the buyout year. This information comes from BvD Orbis. After excluding incomplete datasets and data cleansing, our sample comprises 3,399 buyouts with 2,637 add-ons. To the best of our knowledge, this is the most comprehensive and up-to-date sample on buyout pricing in the literature.[8] We complete our sample construction for the first research question by adding data from BofA Merrill Lynch on the option-adjusted high yield spread, measured on a monthly basis, as a proxy for economywide credit conditions.

[7] Acharya et al. (2013) note that single acquisitions could be endogenously determined by the observed deal performance, i.e., are the result of opportunistic "window-dressing". There could also be single, transformative acquisitions which are meant to reposition the portfolio firm towards a completely new sector. Both opportunistic and transformative acquisitions are at odds with the value creation motives in B&B strategies.

[8] Achleitner et al. (2011) draw on 1,980 buyouts for the period 1986-2010, Arcot et al. (2015) on 1,373 buyouts for 1980-2010, Axelson et al. (2013) on 1,023 buyouts for 1986-2008, Guo et al. (2011) on 192 buyouts for 1990-2006, and Hammer et al. (2021) on 1,149 for 1997-2010.

— Insert Table 1 about here —

Table 1 presents the sample distribution along various dimensions. As Panel A shows, most observations fall into the 2013-2019 period. The time series illustrates the cyclical nature of the buyout market. We first observe a rise in buyout activity through 2000, a slight drop thereafter, a second rise until 2007, a subsequent drop during the global financial crisis, and a third rise until Covid-19 struck in 2020. We record B&B strategies for 1,148 of the 3,399 PE buyouts, which represents a 34% B&B market share. This is higher than the 26% reported by Hammer et al. (2017) for 1997-2010, which indicates that B&B strategies have further increased in popularity in recent years. The sample split shows that B&B deals exhibit similar cyclicality as the overall buyout market. Panel B reports the sample distribution across countries. We cover a total of 65 countries, and the B&B distribution is very similar to the overall sample distribution. Most observations come from the U.K. This is because transaction multiples require accounting information that is more frequently available for U.K. firms due to strict disclosure regulations (Wang, 2012). The opposite holds true for U.S. firms, which arguably are underrepresented in our sample. We address this issue in the robustness section. Panel C presents our coverage across industries. "Personal and business services" (21.6%) account for the largest group of observations. We note that B&B deals occur relatively more frequently in "personal and business services" and in "healthcare, medical equipment, pharmaceutical products."

2.2 Matched control group of strategic acquisitions

To address our second research question (i.e., how PE-backed B&B transaction multiples compare to those paid by strategic acquirers), we construct a control group of strategic (i.e., non-PE-backed) acquisitions. We obtain this data from Thomson Reuters' "Eikon" database. We source all completed M&A transactions between 1 January 1996 and 31 December 2021 with acquired

stakes of at least 50%. This is to ensure that the acquirer pays for majority control, similarly to acquisitions in a PE context. We exclude all deals where the one-digit SIC code indicates an acquirer from finance, insurance or real estate. To construct valuation multiples, we restrict the control group to all transactions for which the deal EV and net sales over the last twelve months prior to the deal are available for the target company. This leaves us with a pool of 14,716 strategic acquisitions that we use for our matching procedure.

The matching procedure is as follows: We require M&A deals to (1) be completed within a band of +/- 365 days around the buyout entry date, (2) fall into a similar size category ($0-$100 million, $100-$250 million, $250-$500 million and > $500 million), and (3) involve a target from the same region, and with the same one-digit SIC code as the PE portfolio firm. We retain up to five matches that are closest in terms of the EV. This leaves us with 13,287 matched strategic acquisitions for 3,132 buyouts.

2.3 Proprietary data on buyout performance

To address our third research question (i.e., what drives equity returns in PE-backed B&B strategies compared to PE-backed non-B&B deals), we need information on equity IRRs and their drivers. Such data is not available in commercial databases. We therefore follow previous literature (e.g., Braun et al., 2017; Robinson & Sensoy, 2016; Lopez-de-Silanes et al., 2015) and approach a large European FoF to pull data manually from investment memoranda. PE firms compile these documents for fundraising purposes, and the FoF collects the data as part of its regular market screening and due diligence process. The data do not come solely from PE firms in which the FoF is invested, but also from rejected investment opportunities. This is important to avoid selection bias. We note that proprietary data from FoFs is especially valuable because it contains first-hand information and audited financials.

We require information on the equity IRR as well as for the following four variables:

- Sales growth from entry to exit ($CAGR_{Sal}$), which captures the effect of top-line operating improvements,
- EBITDA margin expansion from entry to exit ($CAGR_{Mar}$), which captures the effect of bottom-line operating improvements,
- EBITDA multiple expansion from entry to exit ($CAGR_{Mul}$), which captures the relative increase in market valuation, and
- Equity ratio growth from entry to exit ($CAGR_{1-Lev.}$), which captures the effect of deleveraging.

This allows us to disentangle the drivers of equity returns as suggested by Gottschalg et al. (2004). The idea is that the equity IRR of firm *i* can be expressed as a product of the four growth rates, so that:

$$(1 + IRR_i)^T = \left[\left(1 + CAGR_{Sal_i}\right) \cdot \left(1 + CAGR_{Mar_i}\right) \cdot \left(1 + CAGR_{Mul_i}\right) \cdot \left(1 + CAGR_{(1-Lev)_i}\right)\right]^T \quad (1)$$

where $CAGR$ represents the compounded annual growth rate of sales, EBITDA margin, EBITDA multiple and $(1 - leverage\ ratio)$ for holding period T, respectively. Versions of this decomposition framework are frequently used in the literature (e.g., Achleitner et al., 2011; Acharya et al., 2013).[9] Note that implementation of this framework requires the use of EV/EBITDA multiples. Thus, to answer the third research question, we replace EV/sales with EV/EBITDA multiples. Data is consistently available for 123 B&B platforms. We match up to five non-B&B deals to create a control group. Matching is done within +/- 365 days around the buyout date, and within the same size category. We are left with 562 non-B&B buyouts.

[9] Achleitner et al. (2011) combine the value creation drivers sales growth and EBITDA margin expansion into one driver named changes in operative performance.

Table 2 presents summary statistics for the main variables used in our regression models (see Appendix A1 for details on variable construction, definitions, and sources). The mean (median) EV/sales multiple in our sample is 2.19 (1.48), and the mean (median) EV/EBITDA multiple is 11.63 (9.68). The vast majority of deals (80%) come from the small and mid-cap segment, with mean EV amounting to $468 million. Furthermore, Table 2 shows that "private-to-private" and "divisional" are the most common entry channels. Buyout return data are available for a sub-sample of 685 buyouts. We record a median IRR of 27% which is roughly similar to that in Lopez-de-Silanes et al. (2015). The mean CAGRs on sales, EBITDA margin, EV/EBITDA multiple, and the equity ratio amount to 14%, 1%, 11% and 8%, respectively.

— Insert Table 2 about here —

3. Empirical results

3.1 Baseline results

3.1.1 Are B&B strategies associated with a price premium?

In Table 3, we investigate our first research question (i.e., whether PE-backed B&B strategies are associated with a premium on the transaction multiple in comparison with PE-backed non-B&B deals). We follow Arcot et al. (2015) and use the *EV/sales* multiple as a measure of buyout pricing because it is more frequently available than the *EV/EBITDA* multiple. However, we also discuss the *EV/EBITDA* multiple as an alternative dependent variable in the robustness section. Panel A of Table 3 presents mean comparison tests of the entry *EV/sales* multiples across PE-backed B&B and PE-backed non-B&B deals. The results indicate that B&B deals are associated with a 29% higher *EV/sales* multiple than non-B&B deals. The difference is statistically significant at the 1% level. Hence, univariate results suggest that acquisitions of B&B platform companies require a substantially higher EV/sales multiple than traditional buyout targets.

To formally address the relationship between B&B and entry pricing, we specify the following baseline regression model:

$$\frac{EV}{sales_i} = \alpha + \beta_1 \, x \, B\&B_i + \beta_2 \, x \, \overrightarrow{CONTROLS_i} + SPONSOR + COUNTRY + IND + YEAR + \epsilon_i \quad (2)$$

where $\overrightarrow{CONTROLS_i}$ is a vector of control variables which, in its full version, is comprised of *LN (prev. acq. exp.)*, *mid cap*, *large cap*, *public-to-private*, *divisional*, *financial*, *receivership*, *privatization*, *management participation*, *syndicate*, *competitive pressure* and *LN (high-yield spread)*. *SPONSOR*, *COUNTRY*, *IND*, and *YEAR* represent PE sponsor, country, industry, and entry year fixed effects, respectively. We note that PE sponsor fixed effects control for any time-constant heterogeneity across PE firms and thus absorb latent (and time-constant) effects at the PE firm level.

— Insert Table 3 about here —

Panel B of Table 3 presents OLS estimates for our baseline regression model with different sets of control variables. Standard errors are clustered by world regions and industries. The results in columns (1) to (5) provide strong support for elevated pricing levels in B&B platform acquisitions. We find that coefficient estimates of the *B&B* indicator are positive and statistically significant at the 1% level across all regressions. The magnitude of the estimated coefficients is large, and indicates that entry EV/sales multiples of B&B deals exceed those of non-B&B deals by 0.38 to 0.48. Using the predicted non-*B&B* entry multiple as a benchmark, these estimates suggest a 19%-24% B&B premium. Buyout size turns out to be the most important control variable for our coefficient estimates. Once we add dummies for *mid cap* and *large cap* to the regressions, or the continuous version of these dummies *LN (enterprise value)*, the B&B coefficient shrinks from 0.48 to 0.38. It remains at approximately 0.38 regardless of further control variables. The positive and statistically significant coefficient on *LN (enterprise value)* suggests that transaction multiples

increase with firm size. This effect is well documented in the literature. It is usually attributed to differences in risk perceptions across size classes (e.g., Ben-Zion & Shalit, 1975).

3.1.2 How do transaction multiples for PE-backed B&B platforms compare to those paid by strategic acquirers for similar targets?

In Table 4, we address our second research question (i.e., how PE-backed B&B transaction multiples compare to those paid by strategic acquirers). We turn to the matched sample of strategic acquisitions. Panel A of Table 4 tests for mean differences in the entry *EV/sales* multiple for the full sample of 3,132 matched firm pairs. We compare PE transaction multiples (column 1) to the aggregate multiple of all matched strategic M&A deals (column 2) and to the transaction multiple of the nearest neighbor (column 3), which we determine on the basis of the deal EV. The mean *EV/sales* multiple of PE buyouts is lower than for the control group regardless of the number of matches. One-sample *t*-tests are significant at the 1% level.

Panel B of Table 4 repeats the analysis for the sub-sample of *non-B&B* deals and matched strategic acquisitions. The differences in transaction multiples between non-B&B deals (column 1) and their matched peers (columns 2 and 3) are more negative than for the full sample. Differences in means are statistically significant at the 1% level.

In Panel C, we restrict the sample to B&B platforms and their matched strategic peers. The mean *EV/sales* multiple of B&B deals is slightly higher than for all matched peers, with the difference being significant at the 10% level, and roughly similar to the mean *EV/sales* multiple of the nearest neighbor. In sum, these univariate tests suggest that PE firms pay less than strategic acquirers on average, and that this effect is driven by the group of deals without a B&B strategy (about two-thirds of observations). However, once we restrict the sample to B&B deals, transaction multiples are very similar to those paid by strategic acquirers for similar targets.

To test whether these univariate results hold in a multivariate framework, we run the following OLS regression model on the matched sample:

$$\frac{EV}{sales_i} = \alpha + \beta_1 x\, PE - backed_i + COUNTRY + IND + YEAR + \epsilon_i \quad (3)$$

where *PE-backed* is a binary indicator that equals one if firm *i* is acquired by a PE investor, and zero for all matched firms acquired by corporates. *COUNTRY*, *IND*, and *YEAR* represent industry, country, and transaction year fixed effects, respectively. Standard errors are clustered by firm-pair indicators to account for the correlation resulting from the matching process. We present estimates for the full sample in column (1). We report results separately for all matched strategic acquisitions and the nearest neighbor. Columns (2) and (3) present subsample regressions for non-B&B firms and B&B platforms, as well as their respective peers.

— Insert Table 4 about here —

Panel D of Table 4 reports the results. We find that the coefficients on *PE-backed* are negative in column (1). When restricting the control group to the nearest neighbor, the coefficient is statistically significant at the 1% level, and insignificant otherwise. The coefficients for the subsample of *non-B&B* deals in column (2) are negative and statistically significant throughout both regressions. The coefficients for the subsample of *B&B* deals in column (3) are positive. Size and significance vary depending on the size of the control group. Overall, there is evidence for the stylized fact that PE firms pay less than strategic acquirers, but only for the subsample of non-B&B buyouts, which cannot price in valuation uplifts from inorganic growth during the holding period. We find no evidence for this stylized fact for the subsample of B&B buyouts. In fact, prices paid for B&B platforms are very similar to those paid by strategic acquirers for comparable targets, if not higher. Thus, there are two forces working in opposite directions, which is reflected by the negative, yet partly insignificant, coefficient on *PE-backed* for the entire sample.

3.1.3 What drives equity returns in PE-backed B&B strategies?

In Table 5, we examine our third research question (i.e., what drives equity returns in PE-backed B&B strategies compared to PE-backed non-B&B deals). Panel A of Table 5 presents a univariate comparison of the equity IRR and its four drivers between PE-backed B&B (column 1) and PE-backed non-B&B deals (columns 2 and 3). For non-B&B buyouts, we report aggregate metrics for all available deals, as well as metrics for the nearest neighbor according to the EV. B&B deals display up to 10pp higher *equity IRRs* than their nearest neighbors in the non-B&B group. The difference is significant at the 5% level. Decomposing the *equity IRR* into its four drivers helps illuminate where the outperformance comes from. As Panel A of Table 5 shows, the s*ales CAGR* for B&B deals is up to 10pp higher than for non-B&B deals, with the difference being significant at the 1% level. *EBITDA margin CAGRs* are similar for B&B and non-B&B deals. *EV/EBITDA multiple CAGRs* of B&B deals are up to 5pp higher than those of the nearest neighbor in the non-B&B group. This difference is highly statistically significant. Finally, B&B deals exhibit less deleveraging during the holding period, i.e., the CAGR on the equity ratio is 4pp less than for non-B&B deals, with the difference being significant at either the 5% or 1% level.

Next, we specify the following OLS regression models:

$$IRR_i = \alpha + \beta_1 \, x \, B\&B_i + \beta_2 \; x \, \overrightarrow{CONTROLS_i} + COUNTRY + IND + YEAR + \epsilon_i \quad (4)$$

$$IRR\ Driver_i = \alpha + \beta_1 \, x \, B\&B_i + \beta_2 \; x \, \overrightarrow{CONTROLS_i} + COUNTRY + IND + YEAR + \epsilon_i \quad (5)$$

where $IRR\ Driver_i$ represents any of the four variables $CAGR_{Sal}$, $CAGR_{Mar}$, $CAGR_{Mul}$, or $CAGR_{1-Lev}$. $\overrightarrow{CONTROLS_k}$ is a vector of control variables similar to that in equation (2), plus *LN (Holding period)*. *COUNTRY*, *IND*, and *YEAR* represent country, industry, and entry year fixed effects,

respectively.[10] We present estimates for all available buyouts and the nearest neighbor on the basis of the EV. Standard errors are clustered by firm-pair indicators.

— Insert Table 5 about here —

Overall, the results in columns (1) to (5) confirm most of the findings of the univariate assessment. In columns (1) and (2), we find that B&B deals are associated with higher *equity IRRs* and *sales CAGRs*. Coefficients are significant at a 1% level. Column (3) indicates that the coefficient on *B&B* is insignificantly different from zero for *EBITDA margin CAGRs*. Column (4) shows that B&B deals display a 3-5pp higher *EV/EBITDA multiple CAGR* than non-B&B deals. The effect varies in significance between 1% for the nearest neighbor and 10% for the average of all matches. The coefficient on *B&B* for the *equity ratio CAGR* is negative yet insignificant.

The coefficient estimates for the control variables are largely as expected. For the sake of brevity, we focus our discussion on the most important results. We detect a negative and statistically significant relationship for our portfolio firm size indicators and the dependent variables *equity IRR*, *sales CAGR*, and *EV/EBITDA multiple CAGR*. Portfolio firm size has a positive and significant relationship with the *equity ratio CAGR.* Hence, and in line with the findings of Lopez-de-Silanes et al. (2015), investment size leads to underperformance in three of our five dependent variables. *Public-to-private* buyouts have significantly lower *equity IRRs,* mainly due to lower *EV/EBITDA multiple CAGRs* during the holding period. Finally, and similarly to the results in Lopez-de-Silanes et al. (2015), we find that short holding periods are associated with outperformance across all of our performance metrics, except for *EBITDA margin CAGR*.

Overall, the results suggest that higher IRRs in B&B strategies are driven by a combination of higher sales growth and multiple expansion relative to the non-B&B control group. We note that

[10] In contrast to the buyout pricing regression model, we do not include sponsor fixed effects. This is because there are fewer degrees of freedom for the buyout performance sample.

profitability improvements are not evident in our sample, but this could be attributable to the rather short holding period of a PE buyout. It is well documented in the M&A literature that profitability improvements take time to unfold due to lengthy post-merger integration processes (Feldman & Hernandez, 2022). Thus, it may be that B&B strategies lead to profitability improvements in the long run, but our observational period is too short to detect them.

The fact that the relative valuation of the platform increases in the absence of profitability improvements is noteworthy. One possible explanation is that PE firms capitalize on relative pricing differences across size classes. Practitioners refer to this effect as "multiple arbitrage" (MacArthur et al., 2019). Because the market perceives cash flows of large firms as less risky than those of small firms, the relative valuation improves. This effect is also observable in our sample. As Appendix A2 shows, the average EV/sales transaction multiple of large-cap buyouts (3.05) is almost three times higher than the one of small-cap buyouts (1.15). Thus, as add-on acquisitions increase sales, they serve to reposition the platform to a more attractively priced market segment. We note that practitioners refer to this as "arbitrage" because it works through the mere addition of sales, and it persists even if operations do not greatly improve. Furthermore, we note that such a strategy may be costly to implement if add-ons require premiums similar to those of platforms. However, descriptive statistics suggest that this is not the case (not depicted for brevity). The average add-on EV in our sample is approximately one-tenth of the average platform EV, and EV/EBITDA multiples are 22% lower. Thus, because add-ons are available at relatively lower prices, PE firms may make up for the high entry premiums.

3.2 Extensions and robustness tests

In this section, we carry out several additional analyses to test for the robustness of our estimates. First, we use alternative model specifications where we include various combinations of fixed effects in the spirit of Acharya et al. (2018) and Goetz et al. (2013). The rationale here is to address the possibility of spurious results due to time-varying shocks to a country and/or industry, as well as due to time-invariant industry characteristics in a specific geographic context. Thus, we sequentially add *country x industry FE*, *country x entry year FE*, *industry x entry year FE*, and *country x industry x entry year FE* to our baseline regression model. Table 6 shows the results. Despite losing many degrees of freedom, statistical significance remains largely unaffected. The size of the *B&B* coefficients is comparable to our previous estimates. Results suggest a 23%-28% B&B premium (for columns 5 through 8).[11]

— Insert Table 6 about here —

Next, we use a counterfactual research design and a propensity score matching (PSM) estimator to address the concern that observable characteristics are jointly correlated with the implementation of a B&B strategy and the entry multiple. We model treatment assignment (here: the implementation of a B&B strategy) using a probit regression with similar control variables and fixed effects as in our baseline regression model, except for sponsor fixed effects. Conditional on these results, the PSM estimator imputes the missing potential outcome (here: the counterfactual entry multiple, i.e., the entry multiple had the portfolio firm not realized a B&B strategy) using similar observations that did not pursue a B&B strategy. Consequently, if any significant treatment

[11] Note that we cannot replicate this robustness test for research question three because we have estimation problems for the smaller sample.

effect is evident, it cannot be explained by the observable characteristics used in the treatment assignment model.

Table 7 gives the results of the PSM estimation. The matching diagnostics in Panel A indicate that our treatment assignment model performs well in explaining cross-sectional variation in B&B probability before matching. The model's McFadden pseudo R^2 drops by roughly 90% (from 15.1% to 1.1%), and the covariates are sufficiently balanced after matching. In Panel B, we present the average treatment effects on the treated (ATET)[12] using robust Abadie-Imbens standard errors and a varying number of nearest neighbors. We find that the estimated ATET is statistically significant at the 1% level. Coefficients suggest that implementing a *B&B* strategy is associated with a 0.45 to 0.50 greater EV/sales multiple at entry. Using the average of the imputed counterfactual EV/sales multiples as a benchmark, the coefficients correspond to a 22% to 25% B&B premium. The size of the *B&B* coefficients is comparable to our baseline OLS estimates.

— Insert Table 7 about here —

The presented treatment effects are consistent estimates for the B&B premium as long as correlation occurs on the basis of observable attributes. However, we could still have an endogeneity problem if unobserved factors are jointly correlated with *B&B* and the entry EV/sales multiple. Smit (2001) describes platforms of B&B strategies as sizable market leaders with strong competitive advantage. These firms may have achieved competitive advantage due to managerial talent, which in turn may be correlated with higher buyout prices. To ensure that such self-selection does not bias our estimates, we utilize exogenous variation in the suitability of B&B strategies across markets and years. The idea here is that B&B strategies are not equally attractive across all markets; they depend on an industry's degree of fragmentation, competitive environment and

[12] We focus on the ATET rather than on the average treatment effect (ATE), because it requires fewer identifying assumptions.

consolidation pressure (Hammer et al., 2017; Smit, 2001). These factors are exogenous to both the portfolio firm and the PE sponsor. Thus, the possibility of self-selection of firms with high-performing managers to B&B strategies is restricted to target firms located in B&B-friendly markets.

To construct a measure of a B&B-friendly market, we first define local market indicators using the interaction of the buyout's entry year, target firm's country and target firm's industrial classification code. For each indicator, we calculate the share of *B&B* deals,[13] and use the variable *local market B&B share* as an instrument in the first stage of an endogenous treatment regression model. We believe the instrument satisfies both the relevance and exclusion conditions. On the one hand, it is likely that B&B probability correlates with the B&B friendliness of the local market. On the other hand, there is no obvious reason why the distribution of aggregated B&B market shares should affect deal pricing.

Note that the idea of our instrument is not new, and it has had various applications in the literature. Ozmel & Guler (2015) use the availability of VCs in a venture's local geographic market as an instrumental variable to address the non-randomness of the match between VCs and their ventures. Brander et al. (2015) use local market averages of government-sponsored VC funding to instrument for the backing of a government-sponsored VC firm. Bottazzi et al. (2008) use average local market business experience to instrument for a VC's business experience. Hammer et al. (2017) apply a similar instrument in a PE context. Hellmann et al. (2008) use geographic and temporal market shares of bank VC firms to instrument for bank VC backing. Finally, Siming (2014) uses the number of financial advisors in a local market to instrument for a PE firm manager's previous employment with a financial advisor.

[13] The basis for local market share calculations are all institutional buyouts between 1997 and 2020 in BvD Zephyr, where deal financing is labelled as "leveraged buyout" or "private equity" (37,580 global buyouts).

Table 8 presents the results. Second-stage OLS regressions are estimated using the baseline model without sponsor fixed effects. *B&B* is treated as an endogenous variable. In the first-stage probit, we include our instrument *local market B&B share* as an additional explanatory variable to predict the probability of implementing a B&B strategy. The results of the first-stage provide strong support for instrument validity, both in terms of economic and statistical significance. Moreover, tests of instrument strength do not point to a weak instrument problem.[14] The second-stage regression shows that the *B&B* indicator remains positive and highly statistically significant. The size of the *B&B* coefficient is comparable to our baseline estimates. Note that the null of uncorrelated error terms between the first and second-stage regressions cannot be rejected (p-value 0.7287). This indicates that our previous results are not subject to endogeneity.

— Insert Table 8 about here —

The effectiveness of endogenous treatment regressions depends on the non-testable exclusion restriction, so it is worth addressing alternative explanations for our results in Table 9. First, in Panel A, we investigate reverse causality. The idea is that PE firms that overpay may consider the implementation of a B&B strategy as a reaction. If this is true, high multiples would lead to B&B strategies and not vice versa. To check whether such reverse causality is at play, we compute average buyout multiples in the portfolio firm's industry for each buyout year. We then exclude the upper twentieth percentile of all observations. This leaves us with a subsample of buyouts with relatively low valuations. Even after excluding potentially overpriced deals, we continue to find significantly higher EV/sales multiples for B&B deals. Second, we exclude all non-European deals

[14] We are unaware of any formal weak instrument test in an endogenous treatment regression framework where the first stage is a non-linear probit model. Therefore, we run a 2SLS IV regression as an approximation, ignoring the binary nature of the B&B indicator (results are not reported here for brevity). The test statistics show that our model easily passes the critical values suggested by Stock & Yogo (2005), with a F-statistic of 1,271.59. Durbin-Wu-Hausman diagnostics indicate that the estimates obtained by least squares are consistent.

and run a subsample regression. These deals are underrepresented in our sample, so bias could arise from their selected (non-random) observability. As Panel A of Table 9 shows, coefficient estimates of *B&B* are unaffected in terms of sign, size, and significance. Third, in Panel B of Table 9, we explore the sensitivity of our results to alternative dependent variables. We re-estimate the baseline regression model using the EV/EBITDA multiple and its natural logarithm as alternative dependent variables. Confirming our previous estimates, we detect a positive and statistically significant relationship between *B&B* and deal pricing.

— Insert Table 9 about here —

To check for robustness of results regarding our second research question, we utilize an alternative matching procedure on the basis of two-digit SIC (not depicted for brevity). All results remain intact. Finally, for the buyout performance regressions, we re-estimate results from Table 5 using non-annualized performance metrics (not depicted for brevity). All results remain unchanged.

4. Evidence from the Field

4.1 Survey sample and design

We conduct interviews with numerous PE professionals to unravel some of the decision-making processes in B&B strategies. This helps us understand the channels behind our results, and address questions that cannot be answered empirically. We use an interview guide that comprises a combination of survey and open questions. A first draft was revised after a trial interview with one PE professional in the beginning of 2022. The revised guide contains 26 questions and is available in the online appendix.[15]

[15] Please see online appendix for the complete interview guide.

To construct a representative sample of interview respondents, we contacted 51 carefully selected PE professionals via e-mail in the beginning of 2022, and invited them to participate in our interview. Selection criteria included (a) B&B experience at the PE firm level, (b) PE professional's tenure in PE, (c) PE firm's average deal size, as well as (d) PE firm's location. While (a) is a must-have criterion for our survey, we ensure there is sufficient variation regarding (b)-(d) so as to prevent undue clustering. Of the 51 PE professionals, 32 participated in a 30-minute online interview. The participants come from 28 different PE firms with combined assets under management of more than $425 billion. The response rate of 63% is higher than in previous literature (e.g. 47% in Gompers et al., 2016; 23% in Gompers et al., 2022; 14% in Da Rin & Phalippou, 2017).

Table 10 presents various survey respondent characteristics. Panel A shows they have considerable experience in the PE industry, with an average tenure of 11 years. 16 of the 32 (50%) respondents hold the title of partner or managing director. Note that, regardless of their position, all PE investment professionals confirmed they have full access to deal-related information. Panel B shows that the average transaction size is €372 million or $417 million[16] for our respondents' PE firms. This is well in line with our empirical sample discussed in the data section where the average transaction size amounts to $468 million. Panel C documents that 100% of the associated PE firms pursue B&B strategies, as this was required for inclusion in our survey. Panel D reports the interview sample distribution across PE firm home countries. We cover a total of nine countries throughout Europe, North America and Asia. The majority of PE firms are headquartered in Europe (87%), particularly in Germany. Note that all interviewees stated that their investment focus is pan-European or global. This implies that the universe of deals for which interviewees are responsible

[16] Using the average EUR/USD closing exchange rate for Q1 2022, the time of the field interviews, to convert the EUR-denominated figures from Table 10, Panel B into USD.

for, is rather international than limited to the country the PE firm is headquartered in. We acknowledge, however, that interviewees' deal experience may not perfectly mirror our empirical sample of buyouts.

— Insert Table 10 about here —

The survey consists of five sections: (1) respondent characteristics, (2) B&B rationale, (3) B&B valuation, pricing and value creation, (4) B&B acquisition processes and (5) B&B execution. We discuss the full set of results for survey sections (2) to (5) in section 4.2. We assume that the interview respondents' answers are correct and free of bias. PE professionals participated in the survey under the premise that neither their names nor affiliations would be disclosed, and that only aggregate responses would be reported in the paper. This limits any incentive to provide misleading responses. Similar to prior PE literature using survey data (Gompers et al., 2016), we recognize that some interviewees may respond overly positively or negatively to some questions in order to cast a better light on themselves or the PE industry. We discuss how such behavior might affect our results in section 4.3.

4.2 Field results

Table 11 gives our results for survey section (2) on B&B rationale. Panel A of Table 11 presents the sub-section on B&B return levers. PE acquirers typically create value via a combination of operative performance improvements, multiple expansion and leverage. We find that both operative performance improvements and multiple expansion are perceived as the key value creation levers for B&B strategies; leverage is categorized as unimportant.

— Insert Table 11 about here —

Panel B of Table 11 documents which B&B platform characteristics are desirable for PE acquirers. The most important ones are high financial performance and the ability to generate high

cash flows, as well as high management quality. High financial performance and cash generation are important to ensure a solid baseline for the B&B strategy, and to partially finance upcoming add-on acquisitions. Respondents indicate that a high-quality platform management is required for the smooth execution of a B&B strategy. Strong corporate governance, and previous B&B or PMI experience of the platform firm, are less important. Consistent with Hammer et al. (2022), PE professionals note that considerable knowledge is held by the PE owners, who can transfer it to portfolio companies if need be. PE professionals also consider hiring M&A-experienced managers for their portfolio companies in case of missing M&A expertise at the platform level. Finally, a high platform market share is not regarded as necessary by PE professionals. Respondents state that the platform should be large enough to accommodate an industry roll-up, but that overly large platforms are not beneficial.

Panel C in Table 11 shows which add-on characteristics are desirable to PE acquirers. We find they do not require add-ons to have strong financial performance, high cash generation, high market share, high management quality, or good corporate governance. Respondents indicate that "empire building" in the sense of industrial diversification is generally not a desirable strategy. Add-ons should largely operate in the same industry as the platform company or provide a good strategic fit. This means they can be attractive even if small, poorly managed, or marginally profitable, as long as there is a strategic fit with the platform. Respondents also emphasize that the above characteristics can easily be improved by the acquiring platform and by PE firms sharing their best practices.

Finally, Panel D of Table 11 summarizes desirable B&B industry characteristics. It shows that industry fragmentation is crucial for the execution of a B&B strategy, more so than industry growth itself. This is well in line with the large-scale empirical evidence in Hammer et al. (2017).

— Insert Table 12 about here —

Table 12 presents our results on interview section (3) regarding B&B valuation, pricing, and value creation. Panel A shows that PE professionals expect to pay more for a platform acquisition than for a conventional portfolio company. In Panel B, respondents indicate that a platform acquisition requires a 13% premium over a conventional acquisition, holding industry and firm characteristics constant. Panel C of Table 12 provides a technical explanation for the higher valuations of platform acquisitions. 78% of respondents say they include add-ons when modeling the returns of the platform acquisition in an LBO model. Both synergies and multiple arbitrage are frequently included in the LBO model. This increases the acquirer's return (and reservation price) vis-à-vis a conventional buyout where these value levers are not applied. Respondents also note that acquiring a platform serves as an entry ticket into the industry, and that these platforms provide significant real option value to buyers.

Panels D and E in Table 12 provide information on add-on pricing. On average, PE professionals expect to acquire add-ons at a 28% lower transaction multiple than that of the platform. They indicate that this phenomenon can be explained by the smaller size of add-ons combined with less attractive company characteristics (e.g., less digitized than the platform company). This result aligns well with our proprietary FoF dataset which records 22% lower EV/EBITDA multiples for add-ons on average (not depicted for brevity).

Panels F and G show that PE professionals expect B&B strategies to result in a 26% higher valuation multiplier at exit. Respondents argue the reason is twofold. First, the B&B strategy significantly increases firm size, which is associated with a new set of buyers at exit paying higher valuation multiples. Second, add-ons make the merged entity more attractive to future buyers (e.g., due to new geographies, product markets, or supply chain integration).

Panels H and I indicate that B&B deals have a lower senior management retention rate on day one than non-B&B deals (63% vs. 75%). Respondents state that this is attributable to the fact that the execution of a B&B strategy requires strong senior managers, i.e., there is little tolerance for

underperforming managers in a B&B strategy. Panel J shows that an experienced management team is worth paying higher prices.

Panel K shows that PE acquirers consider the realization of synergies in a B&B deal to be very important. They note that this is generally true for both top-line and bottom-line synergies. However, respondents also indicate that top-line synergies can be achieved relatively quickly, while bottom-line synergies take more time to materialize. The most frequently cited top-line synergies are cross-selling, pricing harmonization and joint branding. Cost-synergies comprise process alignment, headquarter rationalization, and procurement harmonization. The identification of these synergies often requires external consultants. Subsequent implementation crucially depends on monitoring.

— Insert Table 13 about here —

In Table 13, we present the results of survey section (4) which features B&B acquisition processes. Panel A indicates that it is noticeably harder for PE firms to find a suitable platform target as compared to add-ons. Panel B shows that 100% of PE acquirers share their investment thesis (e.g., a B&B strategy) with both the target's management team (i.e., the platform firm for a B&B strategy) and the target's vendor ex ante of the acquisition. Panel C documents that this information is disclosed even though the PE acquirer knows it is likely to result in a higher transaction multiple. Respondents indicate that the advantages of sharing the investment thesis ex ante of the acquisition outweigh the disadvantages of potentially paying an elevated entry valuation. The investment thesis is typically communicated at the beginning of the due diligence phase when a non-binding offer is made or when a letter of intent is issued. They mention that this is not only true for primary buyouts, i.e., where the management team and seller are usually the same party, but also for secondary and tertiary deals.

Respondents provide four main advantages of sharing the investment thesis ex ante of the acquisition. First, PE firms use the target management team and/or vendor as a sounding board to validate their investment thesis. Second, by doing so, the PE firms probe whether the existing management team is able to execute the B&B investment strategy. Third, PE firms disclose their investment thesis to convince the vendors to sell. Vendors of private firms are usually interested in knowing what will happen to their firm and employees during the PE holding period. Fourth, sharing the investment thesis can help align interests. Transactions are often structured in a way that the management team and/or the vendor receives a minority equity share in the target. PE buyers share their investment thesis to increase the attractiveness of the minority equity share and align the interests of the involved parties. Respondents state that the disadvantage of potentially paying an elevated entry valuation is reduced by the fact that the commercial and/or financial advisors are likely to have informed the vendor of possible investment theses from all possible buyer groups. Therefore, add-ons are likely already priced into the vendor's valuation model to determine the possible exit price to a PE firm. This limits the incremental impact of sharing the investment thesis on the purchase price.

— Insert Table 14 about here —

Table 14 presents the results of the last survey section (5) on B&B execution. Panel A shows that only 38% of acquired add-ons are on an existing add-on target list of the PE ex ante of the platform company acquisition, whereas 62% of add-ons are generic. Panel B shows that the acquisition of generic add-ons is possible at any point in time during the holding period. Panel C shows that only 25% of add-ons are transformative, while 75% are tuck-in.[17]

[17] We define add-ons as "transformative" if they have an EV of more than 50% of the platform. Tuck-ins, in contrast, are assumed to have an EV of less than 50% of the platform.

Panels D through E in Table 14 show that PE acquirers are actively managing and executing the B&B strategy. Panel D shows that 63% of add-on sourcing is managed by the PE acquirer, either through its investment team or by engaging M&A advisors to perform target searches. Panel E shows that 68% of decision-making authority for add-ons lies with the PE acquirer. Acquisition decisions are often made hand-in-hand with the platform company's management, but the ultimate decision-making power almost always lies with the PE acquirer. In some rare cases, the platform company's management is granted the right to make acquisition decisions for very small add-ons.

4.3 Discussion

First, the field results confirm our empirical observation regarding the first research question: PE professionals indicate that acquiring a B&B platform commands a price premium. The stated premium of 13% is somewhat lower than in our empirical results. One possible explanation for this is that PE respondents may have understated how much they pay to not compromise themselves. PE managers are typically praised for their ability to "buy low" and "sell high." Thus, they may feel constrained in revealing the actual premiums paid to not create the impression of overpaying.

Interview responses also help unraveling channels behind the price premium. Consistent with our theoretical predictions, results suggest that: (1) Platforms entail considerable real option value. (2) This real option value is not limited to synergies with add-ons, but also includes anticipated multiple expansion due to the repositioning to a more attractively priced market segment (explicitly referred to as "multiple arbitrage" by most respondents). (3) PE firms explicitly model the incremental value from B&B strategies for platform acquisitions, which leads to a higher reservation price. (4) For a successful B&B strategy, a detailed add-on target list is not needed ex ante, because add-on targets are more or less interchangeable and frequently available in fragmented markets. (5) It is inevitable to disclose the intended B&B strategy during the acquisition process in order to evaluate whether the targeted platform is capable of acquiring and integrating

add-ons, and to convince the vendor of a sale. (6) Vendors capitalize on this information owing to the strategic importance of the platform for the success of the B&B strategy. (7) The vendor can assert a price premium, because high quality management and strong financial performance are crucial for the success of the B&B strategy, and these characteristics are in short supply.

Second, the field results confirm our empirical observation that PE-backed B&B strategies lead to outperformance over PE-backed non-B&B deals and generate above-average returns for investors. A similar caveat applies: Interview partners may wish to cast themselves in a positive light or afflicted by overconfidence. The fact that B&B experience (at the PE firm level) was a necessary condition to be included in our survey, implies that interviewees work for PE firms deliberately choosing to use the B&B strategy. This could make them overly positive towards B&B. Although we cannot rule out such bias completely, we note that respondents' average tenure in PE amounts to 11 years. This ensures that each interview partner had some kind of exposure to other value creation strategies during his/her career.

The field results are also helpful for the interpretation of some of our empirical results. While the responses suggest that both multiple expansion and synergy realization are important for B&B strategies, interviewees admit that especially bottom-line synergies are hard to achieve and take time. These responses go hand in hand with the description of add-ons as small firms with inferior financial performance. Since these firms typically have lower margins than platforms, their acquisition is unlikely to result in instantaneous profitability improvements of the consolidated entity. This might explain why no significant differences in EBITDA margin growth are observable between B&B and non-B&B deals in our regression models. In contrast, interviewees state that top-line synergies are relatively easy to achieve. Although our methodological setup does not allow for the identification of synergies, this response at least indicates that the significantly higher sales growth for B&B deals may be partly due to revenue synergies. Finally, despite managerial talent

at the platform level being perceived as important, there is evidence that PE firms support their platform firms during the holding period. PE firms actively source add-ons and are responsible for most of the decision-making regarding add-ons. This suggests that, in line with Hammer et al. (2022), PE firms do not simply select high quality platforms, but transfer knowledge to make the B&B strategy successful.

5. Conclusion

This paper investigates acquisition prices and value creation in PE-backed B&B strategies using (1) large-scale and up-to-date empirical evidence for the period 1997-2020, (2) a matched control group of strategic acquisitions, (3) proprietary data on buyout performance and (4) field results from interviews with 32 PE professionals. We provide evidence consistent with the idea that B&B platforms are acquired by PE investors at a price premium compared to PE-backed non-B&B targets, because they possess a rare set of characteristics that equip the PE investor with real option value. Because PE firms can incorporate future valuation uplifts from add-on acquisitions, they can pay prices similar to those in matched strategic M&A deals. This finding is important as it contrasts the stylized view that strategic acquirers can always pay more than financial investors due to synergies. Despite the premium paid by PE investors at entry, PE-backed B&B strategies are still outperforming PE-backed non-B&B deals. That is because they achieve above-average top-line growth and benefit from multiple expansion. In combination, these findings suggest that PE firms leverage on a strategy referred to as "multiple arbitrage," which uses M&A activity during the holding period to reposition the portfolio platform firm to a more attractively priced market segments.

Survey results from interviews with 32 seasoned PE professionals shed light on B&B rationale, valuation, pricing, value creation, acquisition processes and execution. The responses substantiate our theoretical predictions and are in line with our main empirical findings. On top of that, they

provide important insights into the decision-making processes in B&B strategies. While interviewees confirm the idea of multiple arbitrage, they also state that synergy realization is generally important. We note that our results are indicative of top-line synergies, but the empirical design in this study does not allow for the concrete identification of synergistic gains. We therefore call for future research on this topic. Especially for the identification of bottom-line synergies in B&B strategies, a longer observational period might be needed which also covers potential secondary buyouts. Because the integration of add-on acquisitions takes time, it is possible that PE investors in the primary buyout do not realize the full value creation potential to not prolong the holding period and jeopardize the IRR. This would create an interesting investment case for a secondary buyout investor. The creation of market power in PE-backed B&B strategies is another fruitful research area, especially vis-à-vis corporate M&A activity. It would be interesting to explore how the acquisition of several smaller add-ons compares to a merger of equals, and whether PE firms are quicker in consolidating industries due to their deal-making capabilities and expertise. Finally, more research is warranted on strategic versus financial bidders in auctions. Our matched sample analysis does not cover bidding contests, but it would be interesting not only to examine whether B&B strategies help PE firms outbid corporate acquirers, but also the determinants of the entry premium paid by B&B strategy following PE firms, such as platform management's M&A experience related to a vertical, horizontal and international acquisition track record.

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Table 1

Sample distribution

This table presents the sample distribution for our global sample of PE buyouts across buyout entry years (Panel A), countries of origin (Panel B) and industries (Panel C).

Panel A: Distribution by entry year

	Total sample		B&B		Non-B&B	
Entry year	N	%	N	%	N	%
1997	18	0.5	5	0.4	13	0.6
1998	40	1.2	17	1.5	23	1.0
1999	63	1.9	14	1.2	49	2.2
2000	68	2.0	22	1.9	46	2.0
2001	65	1.9	22	1.9	43	1.9
2002	59	1.7	18	1.6	41	1.8
2003	96	2.8	28	2.4	68	3.0
2004	109	3.2	51	4.4	58	2.6
2005	72	2.1	23	2.0	49	2.2
2006	151	4.4	68	5.9	83	3.7
2007	187	5.5	80	7.0	107	4.8
2008	117	3.4	52	4.5	65	2.9
2009	65	1.9	22	1.9	43	1.9
2010	78	2.3	37	3.2	41	1.8
2011	143	4.2	66	5.7	77	3.4
2012	157	4.6	59	5.1	98	4.4
2013	201	5.9	73	6.4	128	5.7
2014	229	6.7	73	6.4	156	6.9
2015	237	7.0	72	6.3	165	7.3
2016	261	7.7	81	7.1	180	8.0
2017	252	7.4	76	6.6	176	7.8
2018	264	7.8	83	7.2	181	8.0
2019	271	8.0	65	5.7	206	9.2
2020	196	5.8	41	3.6	155	6.9
Total	3,399	100.0	1,148	100.0	2,251	100.0

Table 1

Sample distribution—*continued*

Panel B: Distribution by country

	Total sample		B&B		Non-B&B	
Country	N	%	N	%	N	%
Austria	17	0.5	4	0.3	13	0.6
Australia	84	2.5	33	2.9	51	2.3
Belgium	56	1.6	21	1.8	35	1.6
Bulgaria	5	0.1	2	0.2	3	0.1
Bermuda	15	0.4	3	0.3	12	0.5
Brazil	17	0.5	1	0.1	16	0.7
Canada	14	0.4	9	0.8	5	0.2
Switzerland	12	0.4	7	0.6	5	0.2
China	43	1.3	7	0.6	36	1.6
Czech Republic	22	0.6	10	0.9	12	0.5
Germany	145	4.3	62	5.4	83	3.7
Denmark	27	0.8	11	1.0	16	0.7
Estonia	8	0.2	4	0.3	4	0.2
Egypt	4	0.1	1	0.1	3	0.1
Spain	235	6.9	88	7.7	147	6.5
Finland	52	1.5	20	1.7	32	1.4
France	385	11.3	149	13.0	236	10.5
United Kingdom	1,047	30.8	362	31.5	685	30.4
Greece	4	0.1	0	0.0	4	0.2
Hungary	6	0.2	2	0.2	4	0.2
Ireland	14	0.4	4	0.3	10	0.4
Israel	17	0.5	2	0.2	15	0.7
India	115	3.4	30	2.6	85	3.8
Italy	209	6.1	67	5.8	142	6.3
Japan	63	1.9	17	1.5	46	2.0
Korea, Republic Of	189	5.6	26	2.3	163	7.2
Lithuania	8	0.2	1	0.1	7	0.3
Luxembourg	5	0.1	0	0.0	5	0.2
Malaysia	21	0.6	4	0.3	17	0.8
Netherlands	56	1.6	18	1.6	38	1.7
Norway	54	1.6	22	1.9	32	1.4
New Zealand	8	0.2	1	0.1	7	0.3
Peru	4	0.1	0	0.0	4	0.2
Poland	51	1.5	8	0.7	43	1.9
Portugal	24	0.7	3	0.3	21	0.9
Romania	18	0.5	4	0.3	14	0.6
Russian Federation	9	0.3	3	0.3	6	0.3
Sweden	136	4.0	61	5.3	75	3.3
Singapore	28	0.8	3	0.3	25	1.1
Slovenia	5	0.1	1	0.1	4	0.2
Thailand	3	0.1	0	0.0	3	0.1
Turkey	5	0.1	0	0.0	5	0.2
United States	124	3.6	67	5.8	57	2.5
Rest of World	35	1.0	10	0.9	25	1.1
Total	3,399	100.0	1,148	100.0	2,251	100.0

Table 1

Sample distribution—*continued*

Panel C: Distribution by industry

	Total sample		B&B		Non-B&B	
Industry	N	%	N	%	N	%
Food Products	122	3.6	48	4.2	74	3.3
Beer & Liquor	20	0.6	8	0.7	12	0.5
Recreation	90	2.6	39	3.4	51	2.3
Printing and Publishing	60	1.8	23	2.0	37	1.6
Consumer Goods	87	2.6	18	1.6	69	3.1
Apparel	44	1.3	8	0.7	36	1.6
Healthcare, Medical Equipment, Pharmaceutical Products	214	6.3	103	9.0	111	4.9
Chemicals	77	2.3	25	2.2	52	2.3
Textiles	24	0.7	5	0.4	19	0.8
Construction and Construction Materials	227	6.7	56	4.9	171	7.6
Steel Works Etc	41	1.2	15	1.3	26	1.2
Fabricated Products and Machinery	123	3.6	32	2.8	91	4.0
Electrical Equipment	43	1.3	8	0.7	35	1.6
Automobiles and Trucks	35	1.0	8	0.7	27	1.2
Aircraft, ships, and railroad equipment	21	0.6	7	0.6	14	0.6
Precious Metals, Non-Metallic, and Industrial Metal Mining	7	0.2	4	0.3	3	0.1
Coal	1	0.0	0	0.0	1	0.0
Petroleum and Natural Gas	21	0.6	5	0.4	16	0.7
Utilities	91	2.7	18	1.6	73	3.2
Communication	109	3.2	48	4.2	61	2.7
Personal and Business Services	734	21.6	313	27.3	421	18.7
Business Equipment	129	3.8	46	4.0	83	3.7
Business Supplies and Shipping Containers	73	2.1	20	1.7	53	2.4
Transportation	159	4.7	46	4.0	113	5.0
Wholesale	151	4.4	63	5.5	88	3.9
Retail	226	6.7	57	5.0	169	7.5
Restaurants, Hotels, Motels	123	3.6	28	2.4	95	4.2
Banking, Insurance, Real Estate, Trading	252	7.4	75	6.5	177	7.9
Everything Else	94	2.8	22	1.9	73	3.2
Total	3,399	100.0	1,148	100.0	2,251	100.0

Table 2

Summary statistics

This table presents summary statistics for the dependent and independent variables used during the analyses in this paper. All variables are defined in Appendix A1.

	N	Mean	S.D.	Q1	Median	Q3
EV/Sales	3,399	2.19	2.14	0.73	1.48	2.91
EV/EBITDA	2,201	11.63	8.12	5.96	9.68	15.41
B&B	3,399	0.34	0.47	0.00	0.00	1.00
Previous acquisition experience (# of acq.)	3,399	1.62	4.78	0.00	0.00	1.00
Small-cap	3,399	0.21	0.40	0.00	0.00	0.00
Mid-cap	3,399	0.64	0.48	0.00	1.00	1.00
Large-cap	3,399	0.16	0.36	0.00	0.00	0.00
Enterprise value	3,399	468.19	1,743.22	32.13	101.41	322.65
Management participation	3,399	0.13	0.34	0.00	0.00	0.00
Syndicate	3,399	0.22	0.42	0.00	0.00	0.00
Public-to-private	3,399	0.10	0.30	0.00	0.00	0.00
Divisional	3,399	0.23	0.42	0.00	0.00	0.00
Financial	3,399	0.13	0.34	0.00	0.00	0.00
Receivership	3,399	0.01	0.10	0.00	0.00	0.00
Privatization	3,399	0.01	0.09	0.00	0.00	0.00
Private-to-private	3,399	0.52	0.50	0.00	1.00	1.00
Competitive pressure	3,399	0.07	0.25	0.00	0.00	0.00
High-yield spread (bps)	3,399	504.18	189.30	375.00	457.23	586.82
Equity IRR	685	0.38	0.38	0.12	0.27	0.54
Sales CAGR	685	0.14	0.17	0.04	0.10	0.19
EBITDA margin CAGR	685	0.01	0.12	-0.05	0.00	0.05
EV/EBITDA multiple CAGR	685	0.11	0.14	0.01	0.08	0.17
Equity ratio CAGR	685	0.08	0.19	0.00	0.06	0.13

Table 3

The relationship between PE-backed B&B platforms and PE buyout pricing

This table presents results on the relationship between PE-backed B&B platforms and PE buyout pricing at entry. Panel A presents a univariate comparison of the mean of the entry EV/Sales multiple for PE-backed B&B platforms and PE-backed non-B&B transactions. Panel B presents OLS regressions where the dependent variable is the EV/Sales multiple. All variables are defined in Appendix A1. Omitted categories are private-to-private for the entry channels and small-cap for the portfolio firm size. The constant is included. Standard errors are clustered by world regions and industries and reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Panel A: Univariate analysis of PE-backed B&B platforms and PE buyout pricing

	(1) PE-backed B&B	(2) PE-backed non-B&B	Diff. (1) vs. (2)
Mean	2.57	1.99	0.58***
N	1,148	2,251	3,399

Panel B: Multivariate analysis of PE-backed B&B platforms and PE buyout pricing

	Dependent variable: EV/Sales				
	(1)	(2)	(3)	(4)	(5)
B&B	0.480***	0.381 ***	0.382 ***	0.380 ***	0.380***
	(0.12)	(0.11)	(0.11)	(0.11)	(0.12)
LN (Prev. acq. exp.)		-0.123	-0.186	-0.107	-0.107
		(0.13)	(0.13)	(0.13)	(0.13)
Mid cap		1.123 ***		1.117 ***	1.117***
		(0.20)		(0.22)	(0.22)
Large cap		1.851 ***		1.858 ***	1.858***
		(0.32)		(0.33)	(0.33)
LN (Enterprise value)			0.416 ***		
			(0.05)		
Public-to-private				-0.365	-0.365
				(0.24)	(0.24)
Divisional				0.065	0.064
				(0.20)	(0.20)
Financial				0.017	0.017
				(0.14)	(0.14)
Receivership				0.120	0.12
				(0.64)	(0.65)
Privatization				-0.009	-0.011
				(0.64)	(0.63)
Management participation				-0.095	-0.094
				(0.23)	(0.23)
Syndicate				-0.149	-0.148
				(0.14)	(0.14)
Competitive pressure					0.015
					(0.10)
LN (High-yield spread)					-0.046
					(0.40)
Sponsor FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Entry year FE	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes
N	3,399	3,399	3,399	3,399	3,399

Table 4

Valuation multiples of PE buyouts and matched strategic acquisitions

This table compares entry EV/Sales multiples paid by PE firms with those paid by strategic acquirers for comparable targets. Comparable targets are identified via matching of the deal characteristics year, size, industry and region. Panels A-C present one-sample t-tests for mean differences in the EV/sales multiple. We compare the PE-backed multiple (1) to either the average paid for all matched targets (up to 5 matched targets) (2) or the multiple of the nearest neighbour (NN) in terms of enterprise value (3). Panel A compares the multiple for all PE transactions with those of matched targets. Panel B compares the multiple of non-B&B transactions with those of matched targets. Panel C compares the multiple of B&B transactions with those of matched targets. Panel D presents estimates of OLS regressions where the dependent variable is the EV/Sales multiple for all PE transactions (1) and the non-B&B (2) and B&B (3) subsamples (previously presented in Panels A-C). The constant is included. Standard errors are clustered by firm-pair indicators and reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Panel A: Univariate analysis of matched firm pairs for all PE buyouts and strategic acquisitions

	N	(1) All PE deals	(2) Strategic Acquirers: All	(3) Strategic Acquirers: NN	Diff (1) vs. (2)	Diff (1) vs. (3)
EV/Sales	3,132	2.15	2.27	2.38	-0.12***	-0.24***

Panel B: Univariate analysis of matched firm pairs for PE non-B&B buyouts and strategic acquisitions

	N	(1) PE-backed non-B&B	(2) Strategic Acquirers: All	(3) Strategic Acquirers: NN	Diff (1) vs. (2)	Diff (1) vs. (3)
EV/Sales	2,069	1.96	2.22	2.32	-0.26***	-0.36***

Panel C: Univariate analysis of matched firm pairs for PE B&B buyouts and strategic acquisitions

	N	(1) PE-backed B&B	(2) Strategic Acquirers: All	(3) Strategic Acquirers: NN	Diff (1) vs. (2)	Diff (1) vs. (3)
EV/Sales	1,063	2.50	2.37	2.49	0.12*	0.01

Panel D: Multivariate analysis of all PE buyouts, non-B&B buyouts and B&B buyouts

	Dependent variable: EV/Sales					
	(1) All PE deals and matched peers		(2) PE-backed non-B&B and matched peers		(3) PE-backed B&B and matched peers	
	All	NN	All	NN	All	NN
PE-backed	-0.017	-0.197***	-0.137**	-0.313***	0.185**	0.014
	(0.05)	(0.07)	(0.06)	(0.08)	(0.08)	(0.12)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Entry year FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
N	16,419	6,264	10,854	4,138	5,565	2,126

Table 5

The relationship between PE-backed B&B strategies and equity return drivers

This table compares the equity return drivers for a subsample of PE-backed B&B deals as well as for matched PE-backed non-B&B deals. All variables are defined in Appendix A1. The matching procedure is performed via matching of the deal characteristics year and size. We compare B&B deals to the average for all matched non-B&B deals (up to 5 matched targets) and the nearest neighbour (NN) non-B&B acquisition in terms of enterprise value. Panel A presents a univariate comparison via one-sample t-tests for mean differences of the indicators. Panel B presents OLS regressions of the indicators for B&B and matched non-B&B deals. Omitted categories are private-to-private for the entry channels and small-cap for the portfolio firm size. The constant is included. Standard errors are clustered by firm-pair indicators and reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Panel A: Univariate analysis of PE-backed B&B strategies and equity return drivers

	N	(1) PE-backed B&B	(2) PE non-B&B: All	(3) PE non-B&B: NN	Diff (1) vs. (2)	Diff (1) vs. (3)
Equity IRR	123	0.43	0.37	0.33	0.06	0.10**
Sales CAGR	123	0.21	0.13	0.11	0.08***	0.10***
EBITDA margin CAGR	123	0.02	0.01	0.02	0.01	-0.00
EV/EBITDA multiple CAGR	123	0.13	0.10	0.08	0.02**	0.05***
Equity ratio CAGR	123	0.05	0.10	0.09	-0.04***	-0.04**

Panel B: Multivariate analysis of PE-backed B&B strategies and equity return drivers

	(1) Equity IRR		(2) t/o Sales CAGR		(3) t/o EBITDA margin CAGR		(4) t/o EV/EBITDA multiple CAGR		(5) t/o Equity ratio CAGR	
	All	NN	All	NN	All	NN	All	NN	All	NN
B&B	0.119***	0.122***	0.112***	0.124***	0.003	-0.009	0.027*	0.048***	-0.017	-0.02
	(0.04)	(0.05)	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
LN (Prev. acq. exp.)	0.011	0.001	-0.021**	-0.025	0.008	0.000	0.008	0.000	0.008	0.023
	(0.02)	(0.04)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Mid cap	-0.172***	-0.15***	-0.04**	-0.102**	-0.012	0.012	-0.093***	-0.067***	0.011	0.026
	(0.03)	(0.05)	(0.02)	(0.04)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Large cap	-0.16**	-0.012	-0.126***	-0.141**	-0.025	0.021	-0.037	-0.037	0.066	0.149**
	(0.07)	(0.09)	(0.03)	(0.06)	(0.02)	(0.03)	(0.02)	(0.03)	(0.05)	(0.06)
Public-to-private	-0.105**	-0.161	-0.02	-0.053	-0.01	-0.004	-0.071***	-0.039	0.019	-0.024
	(0.04)	(0.10)	(0.02)	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)	(0.02)	(0.04)
Divisional	0.062*	0.056	0.049***	0.032	0.019	0.024	0.002	-0.01	-0.021	0.003
	(0.04)	(0.06)	(0.02)	(0.03)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)
Financial	0.08*	0.013	0.028	-0.015	0.01	-0.009	0.015	0.03	0.003	0.008
	(0.04)	(0.07)	(0.02)	(0.04)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)
Receivership	0.092	0.56	0.212	0.494	-0.099*	-0.01	0.041	0.034	-0.048	-0.127**
	(0.36)	(0.61)	(0.28)	(0.51)	(0.05)	(0.07)	(0.03)	(0.06)	(0.05)	(0.06)
Privatization	-0.095	-0.122	-0.056	-0.056	0.025	-0.039	0.012	0.056	0.003	0.023
	(0.11)	(0.12)	(0.11)	(0.12)	(0.03)	(0.05)	(0.05)	(0.06)	(0.02)	(0.03)
Mgmt. participation	-0.01	0.023	-0.033*	-0.027	0.035**	0.025	0.007	0.008	-0.021	0.027
	(0.03)	(0.07)	(0.02)	(0.05)	(0.01)	(0.04)	(0.02)	(0.03)	(0.02)	(0.03)
Syndicate	-0.043	-0.067	0.013	0.013	-0.023*	-0.053**	-0.002	0.001	0.001	-0.007
	(0.03)	(0.05)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Competitive pressure	0.122***	0.072	0.004	0.019	-0.02	-0.064**	0.042***	0.057***	0.059***	0.054**
	(0.03)	(0.05)	(0.02)	(0.03)	(0.01)	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)
LN (HY-spread)	-0.024	0.143	0.023	0.125*	-0.017	-0.024	0.007	-0.022	-0.035	0.043
	(0.07)	(0.12)	(0.04)	(0.07)	(0.02)	(0.04)	(0.03)	(0.04)	(0.03)	(0.05)
LN (Holding period)	-0.455***	-0.514***	-0.102***	-0.127***	-0.022	0.02	-0.095***	-0.138***	-0.191***	-0.192***
	(0.04)	(0.07)	(0.03)	(0.05)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.04)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Entry year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	685	246	685	246	685	246	685	246	685	246

Table 6

Robustness: alternative model specifications

This table presents OLS regressions on the relationship between PE-backed B&B platforms and PE buyout pricing at entry. The dependent variable is the entry EV/Sales multiple. Specifications (5) through (8) where controls are included use the set of control variables as specified in the baseline pricing regression. The constant is included. Standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

	Dependent variable: EV/Sales							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
B&B	0.565***	0.687***	0.662***	0.687***	0.454***	0.549***	0.514***	0.565***
	(0.12)	(0.13)	(0.16)	(0.19)	(0.12)	(0.13)	(0.16)	(0.19)
Controls included	No	No	No	No	Yes	Yes	Yes	Yes
Sponsor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Entry year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country x Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country x Entry year FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry x Entry year FE	No	No	Yes	Yes	No	No	Yes	Yes
Country x Industry x Entry year FE	No	No	No	Yes	No	No	No	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3,399	3,399	3,399	3,399	3,399	3,399	3,399	3,399

Table 7

Robustness: matching diagnostics and estimators

This table presents probit regressions on the unmatched and matched sample of PE buyouts in Panel A as well as the average treatment effect on the treated (ATET) for propensity score matching (PSM) estimators in Panel B. We use varying numbers of nearest neighbors (NN). In Panel A, the dependent variable is the B&B indicator. Omitted categories are private-to-private for the entry channels and small-cap for the portfolio firm size measures. The constant is included. Robust standard errors are reported in parentheses. In Panel B, the dependent variable is the EV/Sales multiple. Robust Abadie-Imbens standard errors are reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Panel A: Matching diagnostics

	Dependent variable: B&B	
	Before matching	After matching
LN (prev. acq. exp.)	0.389***	-0.006
	(0.04)	(0.04)
Mid cap	0.429***	0.022
	(0.07)	(0.08)
Large cap	0.676***	0.009
	(0.09)	(0.10)
Public-to-private	-0.186*	-0.012
	(0.10)	(0.10)
Divisional	-0.140**	-0.019
	(0.06)	(0.07)
Financial	-0.021	-0.011
	(0.08)	(0.08)
Receivership	-0.904**	0.062
	(0.39)	(0.41)
Privatization	-0.254	-0.178
	(0.29)	(0.32)
Management participation	-0.028	-0.024
	(0.08)	(0.09)
Syndicate	0.114*	0.028
	(0.06)	(0.07)
Competitive pressure	-0.065	-0.037
	(0.07)	(0.07)
LN (High-yield spread)	-0.083	0.038
	(0.15)	(0.16)
Sponsor FE	No	No
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
Constant	Yes	Yes
N	3,399	3,399

Table 7

Robustness: matching diagnostics and estimators—*continued*

Panel B: Treatment effects	
	Dependent Variable: EV/Sales
ATET with NN = 1	0.448***
	(0.10)
ATET with NN = 2	0.494***
	(0.09)
ATET with NN = 3	0.492***
	(0.09)
ATET with NN = 4	0.502***
	(0.09)
ATET with NN = 5	0.473***
	(0.09)
ATET with NN = 10	0.476***
	(0.08)
ATET with NN = 15	0.476***
	(0.08)
ATET with NN = 25	0.467***
	(0.08)

Table 8

Robustness: endogenous treatment regression

This table presents estimates of a linear regression with endogenous treatment for all PE buyouts. In this first stage, we run a probit regression on the *B&B* indicator where we include *local market B&B share* as an instrument. The second stage is an OLS regression on the entry EV/Sales multiple. Controls are as specified in the baseline pricing regression. The constant is included. Standard errors are clustered by world regions and industries and reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

	Dependent variable 1st stage: B&B	Dependent variable 2nd stage EV/Sales
Local market B&B share	4.436***	
	(0.20)	
B&B		0.409***
		(0.13)
Rho		0.013
		(0.04)
Controls included	Yes	Yes
Sponsor FE	No	No
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
Constant	Yes	Yes
N	3,399	3,399

Table 9

Robustness: subsample regressions and alternative dependent variables

This table presents robustness tests using subsample regressions and alternative dependent variables for the analysis of PE-backed B&B and PE buyout pricing. Panel A presents OLS regressions on subsamples that either exclude overpriced deals or non-European deals. The dependent variable is the entry EV/Sales multiple. Panel B presents OLS regressions on the entry EV/EBITDA multiple and on the log of the entry EV/EBITDA multiple using the full sample for which this information is available. Controls are as specified in the baseline pricing regression. The constant is included. Standard errors are clustered by world regions and industries and reported in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Panel A: Subsample regressions

	Dependent variable: EV/Sales	
	No overpriced deals	No non-European deals
B&B	0.194*	0.451***
	(0.10)	(0.11)
Controls included	Yes	Yes
Sponsor FE	Yes	Yes
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
Constant	Yes	Yes
N	2,655	1,563

Panel B: Alternative dependent variables

	Dependent variable: EV/EBITDA	Dependent variable: LN (EV/EBITDA)
B&B	1.250*	0.108*
	(0.71)	(0.06)
Controls included	Yes	Yes
Sponsor FE	Yes	Yes
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
Constant	Yes	Yes
N	2,201	2,201

Table 10

Survey respondent characteristics

This table presents the respondent characteristics of our survey sample. Respondents were asked to provide their PE work experience in years (Panel A), average EV at entry of their PE firm in EURm (Panel B), whether their PE firm does B&B acquisitions (Panel C) and the location of their PE firm headquarter (Panel D). For yes or no questions, a "yes" is categorized as a score of 1, and a "no" as a 0.

Panel A: Respondent experience

Question: Please state your number of years of experience within the Private Equity field

	N	Mean	S.D.	Q1	Median	Q3
Respondent experience in years	32	11.3	7.8	4.8	9.5	17.0

Panel B: PE firm average deal size

Question: Please state the average deal size (Enterprise Value in EURm) of your PE firm

	N	Mean	S.D.	Q1	Median	Q3
PE firm average deal size (EV in EURm)	32	372.0	672.5	40.0	87.5	250.0

Panel C: PE firm and B&B strategies

Question: Please state whether your PE firm typically pursues Buy-and-Build strategies

	N	Mean	S.D.	Q1	Median	Q3
PE firm and B&B strategies	32	1.0	0.0	1.0	1.0	1.0

Panel D: PE firm headquarter country

Question: Please state in which country your PE firm is headquartered in

Location of HQ	N	%
China	1	3.1
France	1	3.1
Germany	18	56.3
Italy	1	3.1
Netherlands	1	3.1
Sweden	2	6.3
Switzerland	1	3.1
United Kingdom	4	12.5
United States	3	9.4
Total	32	100.0

Table 11

Survey results on B&B rationale

This table presents the survey answers regarding return levers in a B&B strategy (Panel A), ideal platform characteristics (Panel B), ideal add-on characteristics (Panel C) and ideal B&B industry characteristics (Panel D). The answers were recorded on a 7 Point Likert Scale ranging from 1 (very unimportant) to 7 (very important).

Panel A: B&B return levers

Question: Please rate the importance of the 3 traditional PE value levers for B&B strategies specifically. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	Answer distribution (%)							Statistics		
	1	2	3	4	5	6	7	N	Mean	S.D
Strategy & operative performance	0.0	0.0	0.0	9.4	18.8	40.6	31.3	32	5.9	0.9
Multiple expansion	0.0	3.1	3.1	3.1	28.1	37.5	25.0	32	5.7	1.2
Leverage	9.4	3.1	34.4	18.8	21.9	12.5	0.0	32	3.8	1.4

Panel B: Platform characteristics

Question: We will now list platform characteristics and ask you to rate the importance of these characteristics for a platform company from 1-7. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	Answer distribution (%)							Statistics		
	1	2	3	4	5	6	7	N	Mean	S.D
High financial performance	0.0	0.0	9.4	9.4	21.9	50.0	9.4	32	5.4	1.1
High cash generation	0.0	0.0	6.3	18.8	40.6	31.3	3.1	32	5.1	0.9
High market share	6.3	9.4	18.8	31.3	18.8	15.6	0.0	32	3.9	1.4
High quality of management	0.0	3.1	0.0	6.3	15.6	31.3	43.8	32	6.0	1.2
Strong corporate governance	6.3	3.1	31.3	34.4	12.5	9.4	3.1	32	3.8	1.3
Previous B&B experience	6.3	6.3	31.3	15.6	18.8	18.8	3.1	32	4.0	1.6
Previous PMI experience	6.3	0.0	28.1	21.9	18.8	25.0	0.0	32	4.2	1.4

Panel C: Add-on characteristics

Question: We will now list add-on characteristics and ask you to rate the importance of these characteristics for an add-on company from 1-7. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	Answer distribution (%)							Statistics		
	1	2	3	4	5	6	7	N	Mean	S.D
High financial performance	0.0	6.3	15.6	40.6	15.6	18.8	3.1	32	4.3	1.2
High cash generation	0.0	3.1	21.9	46.9	25.0	3.1	0.0	32	4.0	0.9
High market share	6.3	37.5	34.4	18.8	3.1	0.0	0.0	32	2.8	1.0
High quality of management	6.3	6.3	34.4	25.0	18.8	9.4	0.0	32	3.7	1.3
Strong corporate governance	9.4	15.6	43.8	12.5	18.8	0.0	0.0	32	3.2	1.2
Same country as platform	3.1	15.6	12.5	50.0	12.5	6.3	0.0	32	3.7	1.2
Same industry as platform	0.0	0.0	0.0	25.0	15.6	46.9	12.5	32	5.5	1.0
Same place in industry value chain	0.0	3.1	15.6	62.5	9.4	6.3	3.1	32	4.1	1.0
Willingness of getting acquired	3.1	3.1	6.3	3.1	34.4	37.5	12.5	32	5.3	1.4

Table 11

Survey results on B&B rationale—*continued*

Panel D: B&B industry characteristics

Question: We will now list B&B industry characteristics and ask you to rate the importance of these characteristics for a B&B investment from 1-7. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	Answer distribution (%)							Statistics		
	1	2	3	4	5	6	7	N	Mean	S.D
Strong growth prospects	0.0	0.0	3.6	14.3	46.4	32.1	3.6	28	5.2	0.9
High level of fragmentation	0.0	0.0	0.0	0.0	17.9	57.1	25.0	28	6.1	0.7
Mature (i.e., not nascent)	0.0	14.3	28.6	32.1	14.3	10.7	0.0	28	3.8	1.2

Table 12

Survey results on B&B valuation, pricing and value creation

This table presents the survey answers regarding the pricing of B&B platforms (Panels A-B), platform valuation techniques (Panel C), pricing of add-ons (Panels D-E), exit pricing (Panel F-G), the propensity to keep management teams in place for non-B&B and B&B deals (Panels H-I), the impact of an experienced platform management team on the platform acquisition multiple (Panel J) as well as whether the realization of synergies between the platform and add-ons is important in a B&B deal or not (Panel K). In Panel C the answer "yes" is scored as 100%, "no" as 0%.

Panel A: Platform pricing (qualitative assessment)

Question: Please comment whether it is necessary to pay a premium in the acquisition of a platform company vs. in the acquisition of a conventional buy-out. There are five answer categories ranging from a lot less to a lot more.

	Answer distribution (%)					Statistics		
	-2 A lot less	-1 Less	0 Similar	1 More	2 A lot more	N	Mean	S.D
Platform vs. conventional buyout (qualitative)	0.0	3.1	18.8	59.4	18.8	32	0.9	0.7

Panel B: Platform pricing (quantitative assessment)

Follow-up question: How much more or less in (% delta in valuation multiple) would one pay for the acquisition of a platform company vs. in the acquisition of a conventional buy-out?

	N	Mean	S.D.	Q1	Median	Q3
Platform vs. conventional buyout (quantitative)	32	13%	12%	10%	13%	20%

Panel C: Technical modelling of platform deals

Question: Does your company include add-ons, synergies and/or multiple arbitrage when modelling the returns of a platform company deal?

	N	Mean	S.D.	Q1	Median	Q3
Add-on modelling	32	78%	42%	100%	100%	100%
Add-on incl. synergy modelling	32	69%	47%	0%	100%	100%
Add-on incl. synergy & mult. arbitrage modelling	32	66%	48%	0%	100%	100%

Panel D: Add-on pricing (qualitative assessment)

Question: Please comment on whether one pays a discount or premium in the acquisition of an add-on company vs. in the acquisition of a platform. There are five answer categories ranging from a lot less to a lot more.

	Answer distribution (%)					Statistics		
	-2 A lot less	-1 Less	0 Similar	1 More	2 A lot more	N	Mean	S.D
Add-on vs. platform (qualitative)	21.9	71.9	6.3	0.0	0.0	32	-1.2	0.5

Panel E: Add-on pricing (quantitative assessment)

Follow-up question: How much more or less in (% delta in valuation multiple) would one pay for the acquisition of an add-on company vs. in the acquisition of a platform?

	N	Mean	S.D.	Q1	Median	Q3
Add-on vs. platform (quantitative)	32	-28%	13%	-38%	-30%	-20%

Table 12

Survey results on B&B valuation, pricing and value creation—*continued*

Panel F: Exit pricing (qualitative assessment)

Question: Please comment on whether one commands a discount or premium during the exit of a B&B strategy (platform incl. add-ons) vs. in the acquisition of a platform. There are five answers from a lot less to a lot more.

	Answer distribution (%)					Statistics		
	-2 A lot less	-1 Less	0 Similar	1 More	2 A lot more	N	Mean	S.D
Exit vs. entry of platform (qualitative)	0.0	0.0	16.1	67.7	16.1	31	1.0	0.6

Panel G: Exit pricing (quantitative assessment)

Follow-up question: How much more or less in (% delta in valuation multiple) would one command for an exit of a B&B strategy (platform incl. add-ons) vs. in the acquisition of a platform?

	N	Mean	S.D.	Q1	Median	Q3
Exit vs. entry of platform (quantitative)	31	26%	26%	9%	20%	30%

Panel H: Management retention at entry for non-B&B deals

Question: Please state in what % of non-B&B deals from a typical PE one would keep the target management in place on day 1?

	N	Mean	S.D.	Q1	Median	Q3
Non B&B mgmt. retention percentage	32	75%	19%	65%	80%	90%

Panel I: Management retention at entry for B&B deals

Question: Please state in what % of B&B deals from a typical PE one would keep the target management in place on day 1?

	N	Mean	S.D.	Q1	Median	Q3
B&B mgmt. retention percentage	32	63%	24%	50%	70%	76%

Panel J: Pricing determinants (qualitative assessment)

Question: Please state whether it is worth paying a more or less for an experienced management team in a B&B deal. There are five answer categories ranging from a lot less to a lot more.

	Answer distribution (%)					Statistics		
	-2 A lot less	-1 Less	0 Similar	1 More	2 A lot more	N	Mean	S.D
Impact (qualitative) of an exp. management team	0.0	0.0	28.1	68.8	3.1	32	0.8	0.5

Panel K: Platform and add-on synergy realization

Question: How important is synergy realization in a B&B deal?

	Answer distribution (%)					Statistics		
	-2 Very unim-portant	-1 Unim-portant	0 Neither	1 Impor-tant	2 Very im-portant	N	Mean	S.D
Importance of synergy realization	0.0	0.0	12.5	56.3	31.3	32	1.2	0.6

Table 13

Survey results on B&B acquisition processes

This table presents the survey answers regarding the difficulty of finding a platform company and add-ons (Panel A), investment thesis sharing between acquirers, target management and vendors prior to deal closing (Panel B) and its impact on deal pricing (Panel C). In Panel B, the answer "yes" is scored as 100%, "no" as 0%.

Panel A: Existence of good platform and add-on targets

Question: Please state how difficult it is to find and execute a deal for a good platform and good add-on targets. There are five answer categories ranging from very easy to very hard.

	Answer distribution (%)					Statistics		
	-2	-1	0	1	2	N	Mean	S.D
	Very easy	Easy	Neither	Hard	Very hard			
Platform acquisition	0.0	3.1	3.1	81.3	12.5	32	1.0	0.5
Add-on acquisition	3.1	62.5	31.3	3.1	0.0	32	-0.7	0.6

Panel B: Information sharing

Question: When looking at a normal acquisition process, is the platform target management and the prior target owner informed of the new investment strategy (e.g., B&B strategy etc.) ex-ante of the acquisition?

	N	Mean	S.D.	Q1	Median	Q3
Investment strategy sharing	32	100%	0%	100%	100%	100%

Panel C: Information sharing pricing (qualitative assessment)

Question: Is it likely for the vendor of a platform company to command a premium for the asset due to knowledge of an upcoming B&B investment strategy ex-ante of the acquisition? There are five answers from very unlikely to very likely.

	Answer distribution (%)					Statistics		
	-2	-1	0	1	2	N	Mean	S.D
	A lot less	Less	Similar	More	A lot more			
Vendor commanding a B&B premium	0.0	6.7	46.7	40.0	6.7	30	0.5	0.7

Table 14

Survey results on B&B execution

This table presents the survey answers regarding whether add-ons are planned or generic (Panel A), when generic add-ons occur during the holding period (Panel B), whether add-ons are considered as transformative (EV larger than 50% of platform) or tuck-in (EV smaller than 50% of platform) (Panel C), who sources add-on deal flow (share of count analysis) (Panel D) and whether add-ons decision making lies with the platform management or with the acquiring PE firm (Panel E).

Panel A: Occurrence of planned vs. generic add-ons

Question: What share of add-ons is planned prior to the platform acquisition vs. generic? Please allocate 100 points as a share of count assessment.

	N	Mean	S.D.	Q1	Median	Q3
Planned	32	38%	23%	20%	30%	53%
Generic	32	62%	23%	48%	70%	80%
Total	32	100%				

Panel B: Timing of generic add-ons

Question: During what part of the holding period do generic add-ons occur?

	Answer distribution (%)			Statistics		
	1	2	3	N	Mean	S.D
	Beginning	End	No difference			
Timing of generic add-ons	9.4	28.1	62.5	32	2.5	0.7

Panel C: Occurrence of transformative vs. tuck-in add-ons

Question: What share of add-ons is considered transformative vs. tuck-in? Transformative add-ons have an EV larger than 50% of platform whilst tuck-ins have an EV smaller than 50% of platform. Please allocate 100 points as a share of count assessment.

	N	Mean	S.D.	Q1	Median	Q3
Transformative	31	25%	19%	10%	20%	25%
Tuck-in	31	75%	19%	75%	80%	90%
Total	31	100%				

Panel D: Add-on deal flow sourcing

Question: Who typically sources the deal flow for add-ons (a) the target, (b) the vendors or (c) managed by PE company themself? Please allocate 100 points.

	N	Mean	S.D.	Q1	Median	Q3
Platform	32	31%	14%	24%	30%	40%
Vendor of platform	32	5%	7%	0%	5%	10%
Managed by PE	32	63%	14%	50%	63%	71%
Total	32	100%				

Panel E: Add-on acquisition decision-making

Question: Who makes the ultimate decision whether to acquire an add-on (a) the target, (b) the acquiring PE company? Please allocate 100 points.

	N	Mean	S.D.	Q1	Median	Q3
Platform management	31	32%	21%	20%	30%	50%
Acquiring PE	31	68%	21%	50%	70%	80%
Total	31	100%				

Appendix

Appendix A1

Variable definitions

This table describes the construction and sources of the dependent and independent variables used in this paper.

Category	Variable	Description
Entry pricing	EV/Sales	Disclosed deal enterprise value divided by sales in the year of the buyout. Sources: BvD Zephyr; BvD Orbis
	EV/EBITDA	Disclosed deal enterprise value divided by EBITDA in the year of the buyout. Sources: BvD Zephyr; BvD Orbis
	LN (EV/EBITDA)	Natural logarithm of the disclosed deal enterprise value divided by EBITDA in the year of the buyout. Sources: BvD Zephyr; BvD Orbis
	B&B	Indicator variable that equals 1 if the portfolio firm conducts at least one add-on acquisition during the holding period, and 0 otherwise. Source: BvD Zephyr, LexisNexis, PE firm websites
Portfolio firm and buyout characteristics	LN (Prev. acq. exp.)	Natural logarithm of 1 plus the number of acquisitions made by the portfolio firm prior to the buyout. Source: BvD Zephyr
	Small-cap	Indicator variable that equals 1 if the disclosed deal enterprise value is less than 25 million USD, and 0 otherwise. Source: BvD Zephyr
	Mid-cap	Indicator variable that equals 1 if the disclosed deal enterprise value is equal to or larger than 25 million USD and less than 600 million USD, and 0 otherwise. Source: BvD Zephyr
	Large-cap	Indicator variable that equals 1 if the disclosed deal enterprise value is equal to or larger than 600 million USD, and 0 otherwise. Source: BvD Zephyr
	LN (Enterprise value)	Natural logarithm of the disclosed deal enterprise value of the buyout. Source: BvD Zephyr
	Management participation	Indicator variable that equals 1 if the buyout is labelled as "management buyout," "management buy-in," or "buy-in management buyout" in Zephyr. Deals with management participation are only included if a PE investor is involved, i.e., pure management buyouts without PE involvement are excluded. Source: BvD Zephyr
	Syndicate	Indicator variable that equals 1 if more than one PE sponsor backs the portfolio firm, and 0 otherwise. Source: BvD Zephyr
	Public-to-private	Indicator variable that equals 1 if the portfolio firm's vendor at entry is a publicly listed entity, and 0 otherwise. Source: BvD Zephyr
	Divisional	Indicator variable that equals 1 if the portfolio firm has been a corporate division or subsidiary before the buyout event, and 0 otherwise. Source: BvD Zephyr
	Receivership	Indicator variable that equals 1 if the portfolio firm acquisition is labeled as a receivership deal, and 0 otherwise. Source: BvD Zephyr
	Financial	Indicator variable that equals 1 if the portfolio firm's vendor at entry is another PE firm. Source: BvD Zephyr
	Privatization	Indicator variable that equals 1 if the portfolio firm acquisition is labeled as a privatization deal, and 0 otherwise. Source: BvD Zephyr
	Private-to-private	Indicator variable that equals 1 if the vendor of the portfolio firm is some other form of private entity (excluding the forms above), and 0 otherwise. Source: BvD Zephyr

Appendix A1

Variable definitions—*continued*

Category	Variable	Description
Investment conditions	Competitive pressure	Indicator variable that equals 1 if the number of PE transactions in the portfolio firm's industry in a respective country increased by more than 50% in the year before the buyout, and 0 otherwise. Basis for the calculations are all institutional buyouts between 1997 and 2020, where deal financing is labelled as "leveraged buyout" or "private equity" (37,580 global buyouts). Source: BvD Zephyr
	LN (high-yield spread)	Natural logarithm of the BofA Merrill Lynch option-adjusted high-yield spread at buyout entry measured on a monthly basis. Source: BofA Merrill Lynch Global Research
Performance diagnostics	Equity IRR	Continuous variable that takes on the value of the internal rate of return of the total equity investment of a buyout. Source: PE fund of funds
	Sales CAGR	Continuous variable that takes on the value of the compounded annual growth rate of sales between the entry and exit of a buyout. Source: PE fund of funds
	EBITDA margin CAGR	Continuous variable that takes on the value of the compounded annual growth rate of the EBITDA margin (% of sales) between the entry and exit of a buyout. Source: PE fund of funds
	EV/EBITDA multiple CAGR	Continuous variable that takes on the value of the compounded annual growth rate of the EV/EBITDA multiple at entry and exit of a buyout. Source: PE fund of funds
	Equity ratio CAGR	Continuous variable that takes on the value of the compounded annual growth rate of the equity ratio (equity as a % of the Enterprise Value) between the entry and exit of a buyout. Source: PE fund of funds

Appendix A2

Univariate assessment of PE buyout size and acquisition multiples

This table presents a univariate comparison of entry EV/Sales multiples (Panel A) and entry EV/EBIDTA multiples (Panel B) for different enterprise value size categories for the full sample of PE deals presented in Table 2. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

Panel A: EV/Sales

	(1) Small-cap (EV<25m)	(2) Mid-cap (25m< EV <600M)	(3) Large-cap (EV> 600m)	Diff (1) vs. (2)	Diff (1) vs. (3)	Diff (2) vs. (3)
EV/Sales	1.15	2.31	3.05	-1.16***	-1.90***	-0.74***
N	700	2,166	533	2,866	603	2,699

Panel B: EV/EBITDA

	(1) Small-cap (EV<25m)	(2) Mid-cap (25m< EV <600M)	(3) Large-cap (EV> 600m)	Diff (1) vs. (2)	Diff (1) vs. (3)	Diff (2) vs. (3)
EV/EBITDA	7.65	12.31	13.66	-4.66***	-6.01***	-1.35***
N	433	1,394	374	1,827	807	1,768

Online Appendix

Questionnaire on B&B rationale, valuation, pricing, value creation, acquisition processes and execution

This online appendix contains the survey questionnaire used in the 32 field interviews for "Pricing and Value Creation in Private Equity-backed Buy-and-Build Strategies" (Hammer, Marcotty-Dehm, Schweizer & Schwetzler, 2022). The results to this questionnaire are presented in Tables 10-14 of the manuscript.

Beginning of survey questionnaire

Many thanks for taking the time in participating in this 30-minute interview that contains 26 questions. The results provided during this interview will be fully sanitized and only presented in an aggregate form.

1 Please state your number of years of experience within the Private Equity field
[●]

2 Please state in which country your PE firm is headquartered in
[●]

3 Please state the average deal size (Enterprise Value in EUR) of the PE you work in
[●]

4 Please state whether your PE firm typically pursues Buy-and-Build strategies
[Yes/No]

5 In short, what are the main key success factors for a Buy-and-Build acquisition?
[●]

6. Please rate the importance of the 3 traditional PE value levers for B&B strategies specifically. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	1	2	3	4	5	6	7
Strategy & operative performance	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Multiple expansion	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Leverage	[●]	[●]	[●]	[●]	[●]	[●]	[●]

7. We will now list platform characteristics and ask you to rate the importance of these characteristics for a platform company from 1-7. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	1	2	3	4	5	6	7
Ideal platform characteristics							
High financial performance	[●]	[●]	[●]	[●]	[●]	[●]	[●]
High cash generation	[●]	[●]	[●]	[●]	[●]	[●]	[●]
High market share	[●]	[●]	[●]	[●]	[●]	[●]	[●]
High quality of management	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Strong corporate governance	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Previous B&B experience	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Previous PMI experience	[●]	[●]	[●]	[●]	[●]	[●]	[●]

8. We will now list add-on characteristics and ask you to rate the importance of these characteristics for an add-on company from 1-7. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	1	2	3	4	5	6	7
Ideal add-on characteristics							
High financial performance	[●]	[●]	[●]	[●]	[●]	[●]	[●]
High cash generation	[●]	[●]	[●]	[●]	[●]	[●]	[●]
High market share	[●]	[●]	[●]	[●]	[●]	[●]	[●]
High quality of management	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Strong corporate governance	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Same country as platform	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Same industry as platform	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Same place in industry value chain	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Willingness of getting acquired	[●]	[●]	[●]	[●]	[●]	[●]	[●]

9. We will now list B&B industry characteristics and ask you to rate the importance of these characteristics for a B&B investment from 1-7. A score of 1 means very unimportant, a score of 4 means neutral, a score of 7 means very important.

	1	2	3	4	5	6	7
Industry characteristics							
Strong growth prospects	[●]	[●]	[●]	[●]	[●]	[●]	[●]
High level of fragmentation	[●]	[●]	[●]	[●]	[●]	[●]	[●]
Mature (i.e., not nascent)	[●]	[●]	[●]	[●]	[●]	[●]	[●]

10. Please state in what % of non-B&B deals from a typical PE one would keep the target management in place on day 1?

[0-100%]

11. Please state in what % of B&B deals from a typical PE one would keep the target management in place on day 1?

[0-100%]

12. Please state whether it is worth paying more or less for an experienced management team in a B&B deal. There are five answer categories ranging from a lot less to a lot more.

A lot less	Less	Similar	More	A lot more
[●]	[●]	[●]	[●]	[●]

13a. Please comment whether it is necessary to pay a premium in the acquisition of a platform company vs. in the acquisition of a conventional buy-out. There are five answer categories ranging from a lot less to a lot more.

A lot less	Less	Similar	More	A lot more
[●]	[●]	[●]	[●]	[●]

13b. If the answer to question 13a was not similar – How much more or less in (% delta in valuation multiple) would one pay for the acquisition of a platform company vs. in the acquisition of a conventional buy-out?

[-100% - 100%]

14a. Please comment on whether one pays a discount or premium in the acquisition of an add-on company vs. in the acquisition of a platform. There are five answer categories ranging from a lot less to a lot more.

A lot less	Less	Similar	More	A lot more
[●]	[●]	[●]	[●]	[●]

14b. If the answer to question 14a was not similar – How much more or less in (% delta in valuation multiple) would one pay for the acquisition of an add-on company vs. in the acquisition of a platform?

[-100% - 100%]

15a. Please comment on whether one commands a discount or premium during the exit of a B&B strategy (platform incl. add-ons) vs. in the acquisition of a platform. There are five answers from a lot less to a lot more.

A lot less	Less	Similar	More	A lot more
[●]	[●]	[●]	[●]	[●]

15b. If the answer to question 15a was not similar – How much more or less in (% delta in valuation multiple) would one command for an exit of a B&B strategy (platform incl. add-ons) vs. in the acquisition of a platform?

[-100% - 100%]

16. Please state how difficult it is to find and execute a deal for a good platform and good add-on targets. There are five answer categories ranging from very easy to very hard.

	Very easy	Easy	Neither	Hard	Very hard
Platform	[●]	[●]	[●]	[●]	[●]
Add-on	[●]	[●]	[●]	[●]	[●]

17a. Does your company include potential add-ons when modelling the returns of a platform company deal?

[Yes/No]

17b. If the answer to question 17a was yes – Does your company include synergies when modelling for add-ons prior to closing the platform deal?

[Yes/No]

17c. If the answer to question 17a was yes – Does your company include synergies and multiple arbitrage when modelling for add-ons prior to closing the platform deal?

[Yes/No]

18. How important is synergy realization in a B&B deal?

V. unimportant	Unimportant	Neither	Important	V. important
[●]	[●]	[●]	[●]	[●]

19. How do PE-firms typically realize the synergies in a B&B deal in practice?

[●]

20. When looking at a normal acquisition process, is the platform target management and the prior target owner informed of the new investment strategy (e.g., B&B strategy etc.) ex-ante of the acquisition?

[Yes/No]

21. Is it likely for the vendor of a platform company to command a premium for the asset due to knowledge of an upcoming B&B investment strategy ex-ante of the acquisition? There are five answers from very unlikely to very likely.

Very unlikely	Unlikely	Neither	Likely	Very likely
[●]	[●]	[●]	[●]	[●]

22. What share of add-ons is planned prior to the platform acquisition vs. generic? Please allocate 100 points as a share of count assessment.

Planned	Generic
[0-100]	[0-100]

23. During what part of the holding period do generic add-ons occur?

Beginning	End	No difference
[●]	[●]	[●]

24. Who typically sources the deal flow for add-ons (a) the target, (b) the vendors or (c) managed by the PE company themselves (also including advisors of the PE)? Please allocate 100 points:

Platform	Vendor of platform	Managed by PE
[●]	[●]	[●]

25. Who makes the ultimate decision whether to acquire an add-on (a) the platform company or (b) the acquiring PE company? Please allocate 100 points:

Platform management	Acquiring PE
[0-100]	[0-100]

26. What share of add-ons is considered transformative vs. tuck-in? Transformative add-ons have an EV larger than 50% of platform whilst tuck-ins have an EV smaller than 50% of platform. Please allocate 100 points as a share of count assessment.

Transformative	Tuck-in
[0-100]	[0-100]

End of survey questionnaire