Secondary Buyouts: Operating Performance and Investment Determinants

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Abstract

Secondary buyouts represent now over 60% of the overall buyout activity. In this paper we investigate the possible determinants of such a spectacular growth. We show that first-round buyers generate a large and significant abnormal improvement in operating performance. In contrast, SBO operating growth is not different from that of the peer group. Returns to secondary PE investors are positive but significantly lower than those of first round buyers. We test several alternative drivers of SBOs and find that favorable credit market conditions and PE reputation drive secondary investment volume.

*"How well investors are being served by secondary buyouts is [un]clear [...] the risk of overpayment in a secondary buyout is great. Once a business has been spruced up by one owner, there should be less value to be created by the next"**

*"We have sold the company because we had extracted all the value a private equity investor could generate"***

*"Investors have grumbled about secondary buyouts [...] because the transaction costs in buying and selling companies made it expensive for investors in private equity funds [...] If secondary buyout companies turn out to be more vulnerable to bankruptcy filings than other types of deals, the groans will grow louder"****[1]*

Introduction

Following the substantial growth of the Private Equity (PE) industry in the 80s and 90s, several theoretical and empirical contributions have attempted to explain the economic sources of returns of buyout transactions and the impact of PE investors on acquired companies.[2] However, established theories have been challenged by the recent surge of a family of deals known as secondary buyouts (SBOs). Secondary buyouts are leveraged buyouts in which both the buyer and the seller are private equity firms. Second-round acquirers provide a new ownership structure including, typically, a new set of private equity financiers while the original financiers and possibly some of the management exit (Cumming et al. 2007). SBOs have historically been almost exclusively confined to distressed transactions, as successful deals would be exited through IPOs or trade sales. However, in the last 10 years PE investors increasingly sought exit by selling initial buyouts to other PE firms in secondary leveraged buyouts that increased from 3% of all exits to above 30%. Secondary deals briefly declined at the peak of the financial crisis but since 2009 they have steadily increased to over 60% of all buyouts in the last two years.

INSERT FIGURE 1 HERE

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[1]*"Circular Logic", The Economist, 2/27/2010; **Andrea Bonomi, Investindustrial Private Equity CEO, Ducati sale to Audi press release, 4/19/2012; ***"A Troubling Sign for Secondary Private-Equity Buyouts?", The Wall Street Journal 3/6/2009.

[2]See Wright et al. (2009) for a detailed review.

This evidence notwithstanding, the economic rationale of this spectacular growth and the effects of SBOs on the operating performance of target companies are unclear. In particular, the increasingly popular wisdom is that secondary buyouts have a limited association with operational improvements and are mainly motivated by investor-specific characteristics, temporary market conditions and collaborative dealing between funds. Surprisingly, empirical evidence on this issue is still scant. Most of the existing research on buyouts focuses on the US market, where data on private companies are not available, thus restricting research on this topic to public-to-private transactions, which account for less than 6% of all LBO transactions, as reported by Stromberg (2008). This data limitation substantially reduce the possibility of studying secondary buyouts that, by and large, are private to private transactions.

In this paper, we fill this gap adding to the literature in several ways. First, a secondary buyout is different from any other acquisition in that it involves the migration of the same target company from one PE owner to another. The crucial question is therefore whether the second round buyer can generate a change in performance comparable to that of the first acquirer. Isolating this differential change requires extreme care and the only approach that allows minimizing endogeneity concerns is a panel one where the same company is tracked throughout both rounds. To the best of our knowledge, this is the only study that directly adopts a panel data methodology measuring the operating performance of 163 companies[3], from one year before the first buyout to two years after the second buyout. A contemporaneous paper - Wang (2012) - partly analyzes operating performance changes in secondary deals comparing heterogeneous first round and second round transactions. However, such a research strategy allows only to infer differences and results are prone to significant estimation biases. Secondly, when dealing with the peer sample, we adopt a comprehensive industry-size-year matching and further control the robustness of our results by running tests on a pre-event performance matched sample as suggested by Barber and Lyons (1996) and done by several influential papers. Under both matching approaches we obtain consistent and aligned results for operating performance changes of the target companies measured by 11 financial ratios computed at the absolute and change level, both adjusting

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[3]This is equivalent to 326 stand-alone deals because each company must be target to two consecutive buyouts to be included in the sample.

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and not adjusting for the within-industry volatility of each ratio to allow accurate comparability across deals. These granular tests robustly show that secondary deals do not exhibit incremental operating performance if compared with the peer sample and substantially underperform first round deals that, differently create significant efficiency gains. These results are in sharp contrast with Wang's evidence that doesn't isolate a clear pattern across rounds and versus the peers. Thirdly, as argued by Axelson, Stromberg and Weisbach (2009), SBO can be sought as an exit strategy because of fund life constraints by first round buyers. In fact, when the end of the investment period approaches, investors may be forced to expedite the disposal of the company to return the capital to the limited partners. In such a case SBOs might be a quicker way out than a trade sale or an IPO that can be either too lengthy, face unfavorable market conditions or both. Similarly, second round buyers may have an incentive in quickly drawing down capital to provide limited partners with a positive signal on the quality of the investment pipeline, thus building reputation, in a fashion similar to Gompers (1996) grandstanding hypothesis. In this paper we reject both hypotheses presenting first-time evidence of the differential performance of targets conditional on the buyer's and seller's characteristics. Fourthly, despite the absence of incremental operating performance, SBO deals may still provide remarkable returns to PE investors. We test this hypothesis by estimating deal value changes for the same target company conditional on the investment round. Our results robustly show that returns to PE investors are positive and large for both rounds but significantly lower for secondary buyers. These results suggest that PE investors may view SBOs as a "shortcut" to generate positive returns and maximize their follow-up fundraising. Because SBO target companies have proven to be solid cash flow generators able to cope with the stringent requirements of PE owners, investing in such companies, despite the limited room for incremental growth, can be a rational portfolio diversification strategy, where more risky first-round investments are balanced by a significant fraction of less risky deals. This result complements well with the evidence in Degeorge et al. (2013) who look at returns to LPs from a number of portfolio investments (first and second round BO). Looking at a large sample of investments by PE funds which several large US insititutional investors have invested in, they show that the net-of-costs returns from secondary deals are lower than those from primary deals.

Taken together, the two set of results outline a comprehensive and much needed picture of the other "dark side" of SBO, i.e. returns to investors. Finally, we complete our paper by investigating a number of possible alternative determinants that can explain the steady and spectacular surge in SBO activity. In a set of probit regressions, we show that deal value and investment duration positively affect the likelihood of observing an SBO. More interestingly, the increase in the market debt multiple and the decrease in the cost of leveraged finance strongly increase the probability of exiting a primary deal through a secondary sale. The reputation of the secondary syndicate is a crucial factor in SBOs, confirming the results of Demiroglu and James (2010) This suggests that the market believes that the higher risk of SBOs given by limited expected value creation is partially offset by the superior screening and monitoring skills of highly reputable PE investors. A final set of tests on the selling patterns of portfolio companies across rounds doesn't provide a clear support to the conjecture that SBO activity is facilitated by some form of "reciprocity"

1 Buyouts and secondary buyout theoretical motivations

Several studies had early detected the stark increase in SBO volume (Cumming et al. 2007; Wright et al. 2009; Levis,2008; Stromberg, 2007). However, as pointed out by Wright et al. (2009) and Cumming et al. (2007), our understanding of secondary buyouts presents several unresolved issues. In particular, there is still no robust empirical evidence on the effects of such transactions on target companies and their economic rationale is still puzzling. In fact, SBOs have been so far explained by borrowing from broader existing theories on LBOs but it is doubtful that these theories can satisfactorily explain SBO activity.

1.1 Value creation and Secondary buyouts

It is doubtful whether value creation theories explain the recent surge in secondary buyout activity. Under the null hypothesis that the first private equity investor has been effective in mitigating agency problems by implementing enhanced governance practices, engaging in active management monitoring and reducing free cash flows, it is unclear how a second, back-to-back financial sponsor can continue to create value

by exploiting these same mechanisms. As argued in Wright et al. (2009), resolution of agency problems is likely to generate a steep one-off change in performance. As a consequence, secondary buyouts can be expected to generate little, if any, incremental improvements in operating performance. In such cases, real operating growth can only be achieved through the implementation of new investments and strategies, as conjectured by Jensen (1993). This opportunity can take various forms, such as international expansion, industry consolidation, changes in strategy or the introduction of a new management team to engineer operational growth. Anecdotal evidence of secondary buyouts in which a private equity investor buys a company to lead expansion supports this argument.

Absent a radical project, as pointed out by Jenkinson and Sousa (2011b), there should be no or very limited motivation for a financial investor to step in as a secondary buyer, as the residual growth should be priced into the transaction, heavily reducing the secondary buyer's profitability.[4] In this paper, we test these conjectures providing previously unavailable cross-sectional evidence on value creation in SBOs.

1.2   Market segmentation and Secondary buyouts

Secondary buyouts may reasonably be determined by segmentation in the market for acquisition finance. Theoretically, the SBO acquirer should be unlikely to buy the target company at a significant discount to fair value, as the first-round PE investor rationally strives to sell the target as close to market value as possible. This result has been supported by Wang (2012), who shows that the seller's likelihood of achieving the target objective is positively correlated with the PE's sophistication, the absence of information asymmetry between managers and shareholders once the first buyout has taken place and the increased level of competitiveness in the PE industry. Additionally, the first PE investor will pursue optimal timing in exits by off-loading its portfolio when industry multiples are close to the expected peak levels. However, the timing of exits by PE investors is arguably also influenced by the need to pay out limited partners when funds are close to the end of their life. This leaves an opportunity for secondary buyout investors to exploit market-timing opportunities. As we have argued, such a route to returns

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[4]This can be the case of "forced exits " due to fund constraints such as the end of the life of the fund. We address this issue in section 3.3.

can be particularly viable in a growing market and an environment of low debt costs, which enable the exploitation of the relative mispricing of debt and equity.

The attractiveness of this strategy is enhanced by the positive track record of potential targets that have already been proven able to cope with high levels of leverage. Additionally, managers have already gained significant expertise in dealing with private equity investors, and enhanced governance and monitoring systems are already in place. Secondary buyouts thus present follow-up PE buyers with a less risky and more predictable alternative to first-round acquisitions. This argument is consistent with the evidence that the volume of secondary buyouts calculated as a percentage of total value transacted in buyouts has reached its peak at 26% in 2006-07, in correspondence with the recent credit boom. With respect to the risk profile of SBOs, Stromberg (2007) provides evidence that secondary buyouts are significantly more likely to lead to successful exits than public-to-private and private-to-private deals. Following these arguments, in this paper we investigate the relationship between deal multiples, the cost of debt and SBO volume.

1.3   Reciprocity and collusion

Private equity funds are generally set-up as closed-end structures with a finite investment and, more importantly, divestment horizon.[5] Additionally, they are repeated players in the market that base their chances of raising new funds on past performance records. On the one hand, adverse market conditions may affect the likelihood of exiting portfolio investments and generate the need for forced exits. This may have a perverse effect on realized returns and jeopardize current or future fundraising. On the other hand, failing to invest committed capital reduces returns and sends negative signals to limited partners that decrease the likelihood of further fundraising. These factors may generate an incentive to engage in a cooperative behavior with other market players in a quid pro quo logic, where one fund agrees to buy a company from another fund to facilitate exit and/or boost returns. The selling fund will then be expected to support the buying fund in the future in a reciprocal fashion. Such a practice should be easier to detect in SBO deals because if it actually exists, we should observe funds with higher reputation and a multi-fund

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[5]See: Bonini (2012)

history to swap companies between each other more frequently than younger and less reputable funds. Additionally, transaction values should be higher and more expensive. Several studies have addressed this behavior suggesting that reciprocity may take the form of altogether collusive practices. Officer et al. (2010) and Boone and Mulherin (2011) focus on consortium bidding in LBOs where PE funds team up in deals (especially larger ones) to, allegedly, reduce competitive auctioning that would push the price up. Results are not unequivocal because if Officer et al. (2010) find support for the collusion hypothesis, Boone and Mulherin (2011) find none. The latter results appear to be aligned with preliminary rulings by judges (e.g., UDC Massachusetts, 2011) that have investigated club deals following a formal investigation by the Department of Justice. The type of reciprocity and, possibly, collusive practice that we conjecture in our paper, however, has proven even harder to isolate. The only two papers attempting some investigation on this possible motivation are Jenkinson and Sousa (2011a) and Wang (2012). Both authors do not find conclusive evidence both in actual data and simulated data.

1.4 Value Transfers

Finally, a stream of research has focused on value transfers to PE investors from other players involved in the buyout to private equity investors. In particular, the extant literature has focused on transfers from employees of target companies, governments and taxpayers. On the one hand, the hypothesis of value transfer from employees has found very weak supporting evidence, as shown by Kaplan and Stromberg (2009). On the other hand, LBOs usually generate significant tax shields due to increased leverage and higher tax-deductible interest payments, which may intuitively motivate repeated buyouts. However, as shown in Kaplan (1989b) and Renneboog et al. (2007), expected tax savings are highly correlated with premiums paid to shareholders at the moment of the buyout. This evidence suggests that the tax benefits of increased debt are largely embedded in the price paid to existing equity holders, thus leaving very limited room for tax-driven returns to second-round PE investors. In the light of these contributions and consistent with Degeorge et al. (2012), Jenkinson and Sousa (2011b), and Jenkinson and Stucke (2011), we reject the hypothesis that tax savings are a significant differential factor in explaining the impressive

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growth in SBO activity.

2   Data and Methodology

2.1   Sample Selection and Description

Most SBO activity targets private-to-private transactions, thus preventing a focus on the US market, as US private companies are not required to disclose financial information. Unlike in the US, European companies have relatively stringent disclosure requirements. Accordingly, we collect information from the Mergermarket database on LBOs in the European market from 1998 to 2008 that disclose information regarding at least one of the following items: revenue, EBIT, or EBITDA transaction multiple; total absolute deal consideration; total debt funding; months held in the portfolio of the initial PE buyer; and exit type. This search strategy returns 2,911 transactions, of which 1,107 have been exited through an SBO and 1,804 have been exited through a trade sale. In the following, we will refer to this sample as to the Global SBO sample, which we will use for exit determinants and robustness tests. We complement these data with information on the industry-wide SBO volume, loan spreads, industry multiples, and debt and equity volumes from Standard and Poor's Leverage Commentary Data (S&P LCD). On the subsample of 1,107 deals exited through an SBO, we apply a second filter, keeping only deals where we have information guaranteeing the identity of the second-round buyer as a PE investor. This selection process reduces the sample to 723 companies and 1,513 first- and second-round deals. The number of deals is larger than twice the number of companies, as we record in this sample a few tertiary deals, i.e., third-round buyouts. We denote the first buyout as LBO1 and the secondary buyout as LBO2. To perform a robust analysis of the SBOs' operating performance, we exclude from this sample observations where:

- the full set of financial statements from the Bureau VanDijck-Amadeus database was not continuously available from one year before the first LBO to two years after the second LBO;

- the company was incorporated in countries other than Western Europe (the UK, Ireland, Den-

mark, Norway, Sweden, Finland, Germany, Belgium, Luxembourg, the Netherlands, France, Spain, Portugal, Italy, and Greece);

- the company was operating in the financial sector.

These criteria were introduced to focus on companies active in relatively comparable economic and accounting environments. A crucial methodological issue is the selection of the performance window. Ideally, we should try and collect data on as many fiscal years as possible following both buyouts. Because we select only consecutive deals, we know by construction the duration of the first-round investment, whose financial data we can track over the entire holding period, conditional on data availability. In contrast, for second-round investments, we face severe constraints because of the unavoidable delays in the data providers' collection process. In fact, financial statements for any given year are filed with local authorities the next fiscal year. At the end of the filing year, data providers collect and process information that becomes available to database users one year later. As a consequence, financial information is available at an approximately two-year delay. For example, 2005 financial statements are filed in 2006 and made available in 2007. This severely reduces the number of observations for which we have data more than two years away from the SBO. Although this limits inferences on long-term performance, it does enable the comparison of the differential effects of first-round versus second-round investors. Furthermore, the extant literature on LBO performance (see Kaplan, 1989a; Kaplan and Stromberg, 2009; Guo et al., 2011; Boucly et al. 2011) provides strong evidence that most of the performance change is achieved during the first 2 years, including the acquisition year, which allows confidence in the economic significance of the results.

The final sample is given by 326 deals on 163 European companies in 11 countries[6] that have been acquired by a PE investor in an initial buyout and exited through an immediately adjacent SBO transaction over the period 1999 to 2007. A more detailed description of the data collection process and additional documentation is reported in the Internet Appendix. We will refer to this sub sample as the restricted

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[6] The countries included in the final sample are: Belgium (6), Denmark (1), Finland (3), France (37), Germany (6), Netherlands (6), Norway (3), Spain (3), Sweden (9), Switzerland (1), United Kingdom (88). See Figure A2 in the Appendix.

SBO sample. As reported in the following methodology section, our operating performance metrics are computed as abnormal performance measures by adjusting target company yearly data for mean and median figures of a sample of peers selected one year before the first buyout from publicly traded firms in the same industry and year. We perform industry matching by selecting firms with a size measured by sales between +/- 50% of that of the target company in the same 4-digit SIC code, which is taken from the Compustat Global Dataset. If the extraction returns fewer than 10 firms, we step down to 3-digit or 2-digit matching. Because comparable figures are affected by extreme observations, following Barber and Lyon (1996), we winsorize data at the 1st and 99th percentiles of the observations for every accounting ratio for each year.

Since Barber and Lyons (1996), a number of papers on LBO have adopted a pre-event performance matching approach (see among others: Guo et al. 2011; Boucly et al., 2011; Cohn et al., 2013). All of these contributions share the common feature of looking at the performance of companies following a single-round buyout. In our approach we compare performance across two-consecutive rounds, therefore pre-event performance matching could be done only by selecting peers based on the performance of companies before the first-round deal. In such a case the comparable sample for the second round deal could be significantly distant from the SBO targets due to first-round idyosincratic factors. We believe that a industry, size, year matching approach is an adequate matching strategy because of three factors directly highlighted by Barber and Lyons (1996): a) target companies can be classified as small for which tests are comparably powerful under both matching approach; b) significance is controlled through the recommended non-parametric tests that provide well specified estimates; c) most of the relevant measures are computed as change measures which significantly reduces the estimation bias and the gap in significance. However, in order to ensure that our results are independent from the matching strategy we have built a control peer sample by selecting firms in the same 2 digits SIC code and keeping companies that one year before the buyout year had a performance measured by ROA between +/-50% that of the target company. This approach yields results that are almost perfectly aligned with those obtained through our main matching strategy as we discuss in the results section.

2.2 Summary Statistics

2.2.1 Deals statistics

Table 1 reports summary statistics for the full sample of 2,911 deals. The EBITDA multiple for the whole sample is a staggering 43.48, but its median is 10.42, which indicates the existence of misreported figures, extreme observations or both. The average deal value is 277 mil/USD, and the total debt funding is 387 mil/USD. The latter figure appears to be at odds with a lower average deal value but is driven essentially by a much lower number of deals disclosing information on debt contribution: although we have deal-value data for 1,998 deals, we only have information on debt funding for 173 deals. Finally, the holding period for portfolio companies is slightly less than 3.5 years on average and has a median of approximately 3 years, which is consistent with empirical and anecdotal evidence on PE investors seeking the quick turnover of their investment portfolio.

INSERT TABLE 1 AND 2 HERE

Breaking down the sample by exit type provides some additional intuitions. First, we notice that SBO deals show significantly lower median EBITDA multiples and revenue multiples: EBIT multiples are fractionally higher in terms of medians, but the difference is not significant. Interestingly, deal value is significantly higher in terms of both means and median figures, and SBOs appear to be almost twice as large as all other exit routes. Almost all disclosed information on debt funding comes from SBO deals and shows no significant difference between the two sub-samples. With regard to the investment-holding period, SBO deals appear to be held slightly longer than deals divested through a trade sale. The interpretation of these results is not straightforward. On the one hand, it appears that first-round PE buyers are better off selecting a traditional trade sale in terms of both proceeds and portfolio turnaround velocity; on the other hand, the higher deal size and the extreme (and significant) EBITDA multiple values indicate that SBOs may strategically be used by PE funds and debt providers to manage their investment portfolios.

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Table 2 restricts the analysis to the 163 companies for which we have detailed financial and accounting data. Panel A reports deal-level figures for both rounds. Median values for first round multiples and debt funding figures are slightly below those recorded in the global sample. Differently, the second round buyout of the same companies by a PE investors is completed at significantly higher multiples and deal values. Holding period for secondary deals for which we have an exit, seem to be slightly longer in medians but this result suffer from a reduced sample size. Panel B reports summary statistics for 8 firm-level financial items computed one before each round. The figures suggest that first round investors target relatively small companies (although the sample shows a non-negligible skewness toward larger deals) with average sales of 189 mil/USD (median of 46.2). Companies show average and median EBITDA/Sales ratios well above 10% and a relatively low level of debt. Interestingly, target companies exhibit a significant, strong positive change in raw performance under the first PE ownership In particular median sales increase by about 50%, EBIT and EBITDA increase twofold, and cash flows increase by three times, this time with significance both in means and medians..These results are strongly supportive of the arguments in Acharya et al. (2013), Boucly et al. (2011) and Kaplan and Stromberg (2008) that PE investors stimulate growth in target companies through superior managerial skills.

2.3 Sample validation

Boucly et al. (2011) provide novel evidence of the performance of buyout companies in France, controlling extensively their sample against European and global buyouts. In order to validate our sample, we run a preliminary set of regressions on a few performance indicators and compare them with evidence in Boucly et al. (2011). Our regressions take the following functional form:

$$Y_{jt} = \alpha_j + \delta_t + \gamma_j + POST1_{jt} + POST1_{jt}xSBO_j + \varepsilon_{jt} \tag{1}$$

where Y is the variable of interest[7] (Sales, EBITDA and ROA, alternatively), j and t are respectively

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[7] We use raw sales and compute ROA for comparison purposes. For detailed performance analyses we will adopt different

the target firm and time index, POST1 is a dummy taking the value of 1 after the first round buyout and zero before, SBO is a dummy variable taking the value of 1 after the second buyout and zero before. Finally we include a full set of year and country fixed effects. Results reported in table 3, are strongly aligned with those in Boucly et al. (2011).

<div align="center">INSERT TABLE 3 HERE</div>

Our regression R^2s are 87, 83 and 48 percent against 92, 87 and 53 for Sales, EBITDA and ROA respectively. Performance increases significantly following a first round buyout with sales increasing by approximately 18%, an estimate almost identical to that in Boucly et al. (2011) for private-to-private deals (their baseline case). We also obtain a very similar EBITDA growth estimate (24.5% vs. 21%) and a same sign but higher estimate for ROA (18% vs. 5.5%). Estimates for second round changes in our sample are insignificant suggesting that the SBO investor follows the growth trajectory of the first round investor but adding limited additional growth. This result is partially aligned with that in Boucly et al. (2011) who find that SBOs in their sample underperform first round deals but still generate a small incremental growth. The alignment of our sample with existing evidence allow to mitigate the risk that our results might be sample-specific.

3   The operating performance of target companies

3.1   Methodology

We now turn to finely assessing the operating performance of the target companies over the investment period, according to a set of different measures reported in Table 4.

<div align="center">INSERT TABLE 4 HERE</div>

These indicators return a comprehensive view of the effects of buyouts on several areas of the targets' operating performance. We opt for scaling sales by assets thus computing a turnover measure rather than

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measures as explained in the methodology paragraph.

looking at raw sales because, as documented by Fairfield and Yohn (2001), the turnover measure provides more accurate information on current and future performance in particular when measuring changes in performance. We prefer ROI over ROA because ROA is measured as Net Income over Total Assets and Net Income is excessively affected by differences across countries and over time in accounting standards and by discretionary accounting policies. Similarly to sales, we choose to scale debt by assets as an alternative specification to debt scaled by EBITDA. We reckon that results four the four measures scaled by assets may be affected by discretionary accounting practices at the time of the buyout. The literature (Kaplan, 1984; Guo et al. 2011) deals with this problem by recomputing the actual value of assets adding back pre-buyout write-ups gathered from 10-K statements or equivalent documents in non-US countries. Unfortunately this approach is not available for unlisted companies because they are not required to file footnotes alongside official financial statements. We acknowledge this possible problem in our results. However, we believe that the extent of the bias in our analyses is less pronounced because we compare the performance of first round vs. second round deals rather than the performance of buyout deals vis-a-vis non buyout companies. While in the latter case the accounting bias directly distorts results, in the former the problem is alleviated because both investors are likely to adopt similar accounting practices. This may lead more to an overestimation of both rounds market-adjusted performance rather than an across-rounds bias. Nonetheless, Mao and Renneboog (2013) highlight a specific case where managerial manipulation can lead to overestimated results.[8] We further discuss this problem in the robustness section.

For each of the above specified measures, we develop two alternative specifications to ensure the robustness of results. In the first specification, we follow Barber and Lyon's (1996) approach and compute a set of abnormal performance indicators to detect the level of abnormal operating performance of sample firms compared to their industry peers. Formally, we estimate the following:

Absolute abnormal performance indicator

$$Y_{i,s} = (x_i - m_s) \tag{2}$$

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[8]We thank an anonymous referee for this comment.

where x_i is the ratio x for firm i, operating in sector s, and m_s is the ratio x median for industry s. This indicator is calculated for the following points in time: one year before the first buyout (LBO1-1), one year after the first buyout (LBO1+1), one year before the second buyout (LBO2-1) and one and two years after the second buyout (LBO2+1; LBO2+2)

Abnormal performance percentage change indicator

Similarly to the abnormal performance absolute change, we construct a measure using percentage changes instead of absolute changes:

$$\Delta\%Y_{is} = (\Delta\%x_i - \Delta\%m_s) \tag{3}$$

This indicator is computed over three periods: from LBO1-1 to LBO1+1, from LBO2-1 to LBO2+1.and from LBO2-1 to LBO2+2.

The choice of these variables follows Barber and Lyon's (1996) recommendations for calculating abnormal operating performance and is consistent with the methodology used in other studies on value creation in LBOs (see Kaplan (1989a) and Guo et al. (2011)).

The statistical significance of the abnormal performance indicators is tested against the null hypothesis of no superior performance of the target companies as opposed to the sample peers.

In the second specification, we control for within-industry variations, as suggested by Desbrieres and Schatt (2002). However, given the negative skewness of the distribution of performance for the sample of comparable firms, we calculate the median industry performance instead of the average, as suggested by Barber and Lyon (1996). Desbrieres and Schatt's (2002) methodology differs from that used by earlier studies, as it takes into account within-industry variations of performance ratios, weighting deviations of performance from the sector mean (median) conditional on the volatility of the measure for the whole industry. As a consequence, abnormal performance in a highly volatile industry is weighted less than abnormal performance in a low-volatility industry. Formally, we calculate the following measures:

Industry volatility-adjusted absolute abnormal ratio

$$W_{is} = \frac{(x_i - m_s)}{\sigma_s} \tag{4}$$

where x_i is the ratio x for firm i, operating in sector s, and m_s and σ_s are the median and standard deviation of ratio x for industry s. This indicator is calculated for the following points in time: one year before the first buyout (LBO1-1), one year after the first buyout (LBO1+1), one year before the second buyout (LBO2-1) and one and two years after the second buyout (LBO2+1; LBO2+2).

Industry volatility-adjusted abnormal percentage change ratio

We evaluate the change in operating performance of targets of secondary buyouts compared to companies operating in the same industry, correcting for intra-sector variations by estimating the following:

$$\Delta\%W_{is} = \frac{(\Delta\%x_i - \Delta\%m_s)}{\sigma_{\Delta\%s}} \tag{5}$$

where $\Delta\%x$ is the percentage change in ratio x for firm i operating in industry s and $\Delta\%m_s$ and $\sigma_{\Delta\%s}$ are the median and standard deviation of indicator x for industry s, respectively. Similar to the absolute abnormal performance change indicator, this metric is computed over three periods: from LBO1-1 to LBO1+1, from LBO2-1 to LBO2+1.and from LBO2-1 to LBO2+2.

The statistical significance of industry volatility-adjusted measures is tested by a parametric t-test based on normalized and centered values. To control for extreme observations in our sample, we also perform a non-parametric Wilcoxon signed-rank test on the median performance estimates against the null hypothesis of no change.

3.2   Results

Figure 2 reports a graphical summary of the results that captures a striking superior performance of first round deals under all performance metrics.

INSERT FIGURE 2 HERE

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In the following paragraphs we analyze each of these metrics individually. Figures for all metrics are reported in Tables 5 and 6.

<center>INSERT TABLES 5 AND 6 HERE</center>

3.2.1   Operating Margins Ratios

The absolute performance of both EBIT/S and EBITDA/S indicates that the operating margins of target firms are higher than those of public comparable companies for the entire period of analysis. After the first buyout, the abnormal operating margin for PE-backed companies increases from 2.63% to 4.89% for EBIT/S and from 3.01% to 4.55% for EBITDA/S and remains stable up to the sale of the company. However, in the second round, investor margins decrease and ultimately revert to the industry average, as shown by the insignificance of the results for the second year after the second buyout. Examining industry volatility-adjusted measures, we notice a similar pattern, although incremental margins are larger for both buyout rounds, and the reversal is less dramatic. These results suggest that target companies were already outperforming industry peers and that PE backing strengthens this characteristic. However, under the first buyer, the EBIT/S measure more than doubles, and the EBITDA/S measure increases by 50%, whereas the contribution of secondary buyers is positive only immediately after the purchase and then becomes negative.

The negligible differential effect of SBO investors on target companies is very well captured by the change measure. Both ratios show a large and substantially significant change in performance under the first-round buyer and a much smaller or even negative change under second-round buyers. In particular, the EBIT/S measure (both in percentage- and industry volatility-adjusted terms) presents a small and insignificant change in means. The changes are significant in terms of median values but are obviously well below the first-round figure. This result is mirrored by the EBITDA/S measure, which captures very well how the extra performance of target firms, which is large and strongly significant for first-round buyers, diminishes quickly under the secondary investor.

These results have an important implication that SBO investors select well-performing companies but

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cannot provide any incremental growth, as almost all the latent value has already been extracted by the first investor.

3.2.2 Turnover Ratio

The turnover analysis provides interesting insights into the effects of PE activity. First-round investors target companies that are largely effective in exploiting their asset base, as measured by the large and statistically significant average and median differences with the industry peer sample. Adjusting for industry volatility, as is commonly recommended to account for systematic industry characteristics, confirms the target companies' superior use of their assets. This evidence is also consistent among second-round acquisitions. However, we can observe a significantly decreasing trend in this ratio. Target companies are certainly market leaders and have an inherent capacity of exceeding the performance of their peers, but the contribution of the new ownership to this superiority reduces over time.

Changes in ratios provide extra support for this view, showing that the raw percentage change is positive and significant for the first buyout and positive but considerably smaller and limitedly significant for the second buyout. Industry volatility-adjusted figures show that the limited significance for second-round deals disappears and that the sales performance of SBO target companies is not distinguishable from that of their peers.

This aggregate picture suggests that secondary deals experience growth but that most of the abnormal incremental growth is spurred by the first-round buyer.

3.2.3 Return on Investment Ratios

Target companies experience positive abnormal returns in all periods from one year before the first buyout to two years after the second buyout. Superior returns on operating activities compared with industry peers are statistically significant for both EBITDA/EA and EBIT/EA. All of the measures exhibit a pattern similar to that of the operating performance measures: the average abnormal return on investment jumps significantly following the first LBO. In particular, the average abnormal return on operating assets

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increases from 21.46% to 43.63% after the first year and 45.27% at the end of the holding period when EBITDA/EA is considered. However, despite being above the industry average, the yearly figures drop sharply after the second buyout. The same pattern can be observed for the EBIT/EA figures, which jump from 20.16% to 41.31% and remain at a remarkably similar value of 41.95% immediately before the sale of the portfolio company. Adjusting for industry volatility does not affect the interpretation: target companies were already highly profitable, confirming PE investors' superior skill at selecting target companies. However, return on investment measures strongly decrease for the second-round buyout. These results, paired with those on operating performance, indicate clearly that the return to investment is closely correlated with the possibility of improving the operating efficiency of the company.

The analysis of change in performance ratios only show significant outperformance in returns on economic assets for the first-round LBOs. This result is consistent with theoretical arguments and empirical evidence presented in Kaplan (1989a), Bull (1989) and Guo et al. (2011). Target companies experience statistically significant abnormal increases in performance of 95.90% and 116.73% as measured by EBITDA/EA and EBIT/EA, respectively. Industry volatility-adjusted figures are similarly robust and large (57.78% and 108.63%). In contrast, and consistent with our conjectures, secondary buyouts show small and erratically significant changes. For the raw EBITDA/EA change measure, we have essentially no significant results for up to 2 years after the second buyout. However, it appears that there is some long-term positive effect when adjusting for industry volatility. This result is not supported by the figures for the EBIT/EA measure, which show limited significance soon after the purchase and then become insignificant in means and marginally significant in medians. These results require careful interpretation: on the one hand, there is strong support for the view that second-round investors' contribution is small or even null. On the other hand, the weak recovery in performance metrics over longer time horizons may indicate that secondary buyers do not have room for large improvements, as most of the value has been already extracted, but do engage in a weakly successful exercise of carefully tuning the company to exploit the smallest sources of returns.

3.2.4　Return on Equity Ratios

Superior profitability compared to industry peers, measured as NI/E, is statistically significant at the 1% level in both raw and industry-adjusted tests, with significant increases found under both PE owners. The indicator CF/E yields similarly significant results after the first-round deal, but figures become less homogeneous under the second-round investor. This evidence is consistent with improved returns on equity due to the effect of increased leverage. This result is not necessarily related with an improvement in operating performance, as shown by Penman (2007),[9] although previous analysis on operating performance and return on investment suggests so.

The change in ratios shows a large abnormal increase in profitability for LBO1. Return on equity under the first-round investor increases by 140.78% for NI/E and 170.04% for CF/E; adjusting for sector-volatility, we obtain abnormal changes of 31.15% and 139.95%, respectively. The SBO figures are smaller, less significant or both, with the exception of the unadjusted CF/E indicator when measured in the shorter time frame. However, extending this window and adjusting for industry volatility yields a drop in size and significance, that suggests once again that second-round buyers have significant constraints against generating value in terms of both operating performance and shareholder value. However, equity returns may be generated through a number of possible channels. We will formally address this issue in section 4.

3.2.5　Liquidity Ratios

Buyout targets have liquidity levels aligned with those of their peers before the first deal, as measured by both the current ratio (CA/CL) and the acid ratio (Cash/CL). Whereas the first ratio decreases after the buyout, the second ratio increases, suggesting that professional investors intervene in the working capital structure of the target company by tailoring the structure of accounts payable and receivable and optimizing inventories, thus generating growth in cash over CL, which is captured by the second measure.

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[9]Consider the relation ROE=RNOA+(FD/EA)*(ROA-NBC), where ROE=NI/E as defined in section 3.1;. RNOA=EBIT/EA as defined in section 3.1 and NBC is Net Borrowing Costs. A positive increase in ROE can be driven, ceteris paribus, by an increase of RNOA or an increase in FD/EA, provided that RNOA>NBC.

This change is more pronounced following the first buyout than following the second one. However, yearly data are marginally significant over time and do not provide unequivocal interpretations. Changes in ratios are more homogeneous and provide some hint that second-round buyers tend to squeeze out liquidity from target companies, most likely to support a heavier financial structure and increase returns.

Changes in the current ratio are above the industry average in absolute and industry volatility-adjusted terms for both rounds, however the acid tests show that the first-round buyer generates a significant amount of extra cash, whereas the second-round buyer does so to a much lesser extent. Because the measures are computed for the same company but under different owners, this appears to suggest a change in the cash management policy of the new owner rather than a structural break in the cash generation potential of the target company.

3.2.6   Capital Structure Ratio

The previous tests show that the performance of target companies does not improve significantly following an SBO. Absent any noticeable value creation, the surge in SBOs may be interpreted as the rational response to the increased availability of leverage financing at constant or reduced prices. We should be able to detect this effect in two ways: first, at the firm level, we should observe a significant shift in the capital structure of target companies. Second, at the market level, we should observe an increase in the number of SBOs controlling for more favorable buyout and credit market conditions. We test the first expected effect by adopting the same approach using accounting ratios that we developed for the operating performance tests. In section 5, we will examine the second effect through a market-wide regression approach.

IThe yearly figures are rather mixed. SBO target companies show a level of leverage that is not significantly different from that of their industry peers at LBO1-1 for both ratios, confirming the anecdotal evidence that buyout targets have unexploited leverage slack. The average abnormal leverage increases weakly following the first buyout but more significantly following the second buyout. For both rounds, we notice a jump in leverage as measured by the debt multiple over EBITDA in the year following the

buyout, which may be due to the typical approach of BO firms of collapsing the investment vehicle into the target company after the closing of the transaction. When adjusting for industry volatility, the results are very mildly significant. In particular, for the FD/EA ratio, there is almost no evidence of above-average leverage for first-round deals and a very weakly higher mean leverage for second-round deals. With regard to the debt multiple ratio, there is no evidence of above-average leverage for second-round deals and some evidence for first-round deals. Overall, the yearly figures are confusing and do not allow any meaningful inferences to be drawn. Turning to changes in ratios reported in panel B, we have more consistent results. Whereas first-time buyouts show higher but not significant leverage ratios, second-round deals are significantly more leveraged both in means and medians, and for the debt multiple ratios, the results also hold when adjusting for industry volatility. Because we have previously shown that EBITDA growth is limited, this evidence suggests that SBOs stretch the target company's capital structure with increasing levels of debt. This result is aligned with evidence in Jenkinson and Sousa (2011a) who show that leverage ratios are significantly higher for secondary deals. However is partially different from that in Boucly et al. (2012) who didn't find significant increases in post-SBO leverage ratios when compared to first round deals although leverage ratios in the latter deals increase sharply. We believe that these differences in results may be driven by heterogenous buyout practices across regions and, more importantly across investors who have a high degree of discretion in the selection of the vehicle where to allocate the acquisition debt.

3.2.7 Pre-event performance matching

As discussed in the sample selection section, in order to address the possible concern that results might be affected by the peer-sample matching strategy we have re-computed all the above measures adopting a pre-event performance matched sample approach. Figure A3 in the Appendix, graphically reports average yearly levels for the three most important ratios: turnover, profitability and leverage. Consistent with our previous evidence, the operating performance of the target increases significantly after the primary buyout but remains constant or flattens at the industry level under the secondary investor. Differently,

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leverage doesn't increase significantly in first round deals but grows sizeably under secondary ownership.

Table A1 in the Appendix reports tests on change measures. Results for all ratios are almost identical to those previously obtained through the main matching strategy, with even stronger indication that secondary deals, differently from first round transactions, do not generate gains in performance above those observed for the peer sample. Looking in more detail at leverage, results are largely insignificant for the first metric with the exception of the short window around the second deal that shows weak evidence of some increase in leverage. On the contrary, the debt multiple ratio returns more powerful results, in particular for mean values that are close in levels to our previous results. Adjusting for industry volatility weakens the statistical significance but doesn't change the qualitative interpretation. The strong similarity of results supports the reliability of the main matching procedure that offers the advantage of larger sample size. Therefore. in.the following we will present results obtained on the industry,size,year matched sample.

3.3 Robustness analysis

3.3.1 Regression analysis

The strength of previous results raises some concerns. Firstly, as data plotted in figure 1 and figure A1 show, the SBO boom is a relatively recent phenomenon that peaked before the crisis and, consequently, our deals have an inevitable and possibly strong time-effect. In fact, first-round deals largely took place before the crisis and a significant fraction of secondary deals was completed immediately before the crisis. Accordingly, the negligible growth under the secondary investor could be driven by bad timing of second round deals. Secondly, our sample spans over 11 countries and we know that the crisis has had significantly different impact across European regions. In order to control for this possibly confounding effects we perform the following battery of regression tests:

$$Y_j = \alpha_j + \delta_j + \gamma_j + SBO_j + \varepsilon_{jt} \tag{6}$$

where Y is the change variable of interest, j is the target firm index, SBO is a dummy variable taking

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the value of 1 after the second buyout and zero before, δ and γ are vectors of country and buyout-year fixed effects. We then run a robustness analysis on the subsample of deals where the second round buyout has been completed before 2006. We choose 2006 as the cutoff year to ensure that the post-SBO performance metrics are not affected by the crisis.

<div align="center">INSERT TABLE 7 HERE</div>

Results presented in Table 7, Panels A and B, confirm the previous findings.[10] Even after controlling for year and countries effects, second round deals performance is significantly inferior to that of first round deals in most of the performance metrics. Significance is absent for ROE measures and limitedly observed for liquidity measures which is not surprising given that previous analyses showed that liquidity was abnormally and significantly large for both rounds. Capital structure metrics are generally insignificant with the exception of the FD/EA metric that is unexpectedly negative. However significance is at the threshold of the 10% level. More interestingly, the robustness test on the subsample of deals for which the second round has been completed before 2006, is strongly aligned with full sample results. Additionally, the FD/EBITDA ratio is largely positive and strongly significant for the industry adjusted absolute percentage change metric. Significance is slightly below the 10% level after adjusting for industry volatility but the parameter estimate is still large and positive.

Finally[11], following Guo and Hotckiss (2011) we have controlled for pre-buyout firm leverage. We have recoded our dataset and extracted the leverage level measured as both FD/EBITDA and FD/EA one year before the buyouts. We have then run a set of robustness regressions (Table A3, Panel B in the Appendix) that, however, didn't return significant results and left our main story unchanged. We have also repeated the exercise using the leverage variables computed 2 years before the SBO but results are similarly not significant.

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[10] We present results only for the LBO2+2 window in the interest of space. Results for the shorter LBO2+1 window are aligned with those of the longer one.

[11] We thank an anonymous referee for this insightful suggestion.

3.3.2 Fund characteristics

Our results show that first round buyers determine a significant change in performance that is not observed under the second round ownership. A potential concern may be that changes in the structure and characteristics of investors across rounds affect the observed performance differences..

Fund stage focus

If first-round buyers are VC investors and second-round buyers more strictly private-equity funds, then a diminishing operating performance would not be surprising. On one hand, our data collection process should exclude this possible source of bias because in the original extraction from Mergermarket we restricted the search to PE-backed deals only, excluding VC-backed deals. However it is entirely possible that Mergermarket classification is inaccurate. We control for this possible data-issue by collecting fund characteristics of our 326 deals (where available) and classifying fund stage focuses according to: a) the original Mergermarket classification; b) a cross-check with Thomson One Banker classification. In case of conflict we override Mergermarket and replace it with Thomson data; c) an analysis of each General Partner (GP) website; d) public information in the financial press obtained gathered from Factiva. Information is not available for all deals because the classification of data vendor is not always accompanied by an exact identification of the identity of the investor or because it is difficult or impossible to link the name of a Fund to that of the GP, that would be the one of interest. The results of this exercise are reported in Table 8.

INSERT TABLE 8 HERE

Information across rounds is unequally distributed. In Panel A we present figures for the absolute distribution of funds by fund focus for all deals for which we found data on the fund-management company. The Unpaired panel reports all data whereas the Paired panel restricts the analysis only to deals for which we had data on both the first and the second round. The reported figures suggest that most of the deals involve *stricto sensu* private equity investor that do not exhibit substantial differences in stage focus. Funds classified as VC are very limited in number but more surprisingly they are recorded both in first

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and second round. The transition matrix reported in Panel B suggests that there may still be some classification issues for VC investors because the frequency of transitions from VC to PE (10) is almost identical to the opposite (9) and there is only one VC to VC deal. However, as expected the vast majority of deals flow from one later-stage investor to another. Although standard classification rules may not fully capture the extent of fund focus diversification we believe that this evidence indicates that the risk of our results being driven by fund focus characteristics is modest.[12]

Fund and firm characteristics.

Fund age can affect the choices of the controlling shareholder in several ways. Most notably, two issues may affect performance: first, on one hand if a fund is approaching the end of the investment period it may be forced to sell. However, this should leave the secondary investor more upside rather than less. On the other hand, the follow up sponsor may be a young management company trying establish a reputation by quickly investing the committed capital thus entering too early in the deal. In any of these cases we should observe significant differences in the fund/management company characteristics. Secondly, the performance of the target companies is certainly associated with some superior skills by the private-equity sponsor as shown in Acharya et al. (2013), Boucly et al. (2011) and Kaplan and Stromberg (2008). Skills are most likely to build up over time, hence funds with longer track records should outperform new entrants. Finally size may matter. Bigger funds should provide target companies with a richer set of financing and growth opportunity, thus generating superior performance. We address these concerns by extending the fund characteristics data collection exercise outlined in the previous paragraph. Results are reported in Table 9.

<center>INSERT TABLE 9 HERE</center>

Fund age at entry and exit (computed when possible for SBOs) is measured in years from the fund first closing to the buyout announcement date and is almost identical across rounds. Although fund durations are densely clustered around 10 years[13] there may be differences that would make the absolute

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[12]We have run a set of tests excluding deals involving a VC investor without obtaining significantly different results.

[13]This information is obtained from EVCA, the European association of venture capital and private equity funds.

measure inadequate to control for the forced exits concern. Adjusting for the specific fund life doesn't yield significant differences. These results do not provide support to the hypothesis that exits or entries are driven by fund-structure motives. The GP age is slightly lower in secondary deals but the difference is not statistically significant. Differently, second round investors are weakly more experienced with an average of approximately 5 previous BO funds raised as opposed to 4 for first round GPs, although the difference is not significant in medians. More importantly size increases significantly almost doubling in mean and by over 50% in medians. This result, is not surprising because we have shown that companies grow significantly under the first round buyout, hence the entry value for second round investors is arguably larger. However, is at odds with the conjecture that bigger funds have a richer arsenal of levers to induce growth.

Finally, another possible source of differential performance could be given by a different regional characteristics between first round and second round buyers: funds skills, access to markets and cultural characteristics may not be homogeneously distributed across countries, thus generating different incremental growth on the target companies. We investigate this issue by controlling for the nationality of the GP[14] in the different rounds. Results reported in the Appendix, Table A2 show that the majority of deals are originated by domestic sponsors. There is a mild migration from domestic to foreign sponsor in second round deals but the difference is not statistically significant.

3.3.3 Pre-buyout manipulation

As previously discussed, Mao and Renneboog (2013) suggest that some buyouts may be affected by pre-buyout performance measures manipulation. When a buyout is a MBO, managers may have an incentive to depress performance measures to minimize the acquisition price and increase the potential returns at exit. This possible bias though, depends heavily on the joint distribution of the type of buyout in both rounds. Buyouts can be of several types but can be broadly grouped into two categories: MBOs, where the management initiate the acquisition, stays and has an incentive to manipulate, or non-MBOs a genuine

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[14]Funds are generally incorporated in tax-favorable countries as opposed to GP that are generally incorporated in the country which most of their activity is directed to.

third party acquisition with a substantial replacement of the existing management and a limited or absent incentive to manipulate. The incentive to manipulate is therefore a function of the type of buyouts in both rounds. If the first buyout is a MBO a downward manipulation is possible. If the same management initiates the second round acquisition they can choose to manipulate, trading off lower returns for the first round with higher ones for the second round, or present "true" figures reducing prospective second round returns but boosting first round profits. However, if the second round buyout is not a MBO, it is likely that the new buyer and management team rationally anticipate that manipulation occurred before the first round and discount that in the second round acquisition price. An opposite argument though applies to non-MBOs followed by MBOs. The manipulation hypothesis would predict higher second round returns due to manipulation. This would bias our results upwards for second-round deals as opposed to first round-deals.

The previous arguments suggest that manipulation may not have a univocal effect on performance and requires an appropriate control. We performed our robustness exercise by collecting data from Zephyr on the type of buyout for both rounds and running a set of regressions controlling for the type of first and second round buyout. We report summary figures and results in table A3 in the Appendix. The main results of our analysis are unchanged both in magnitude and significance. We have also tried a clustered analysis estimating the performance for each individual subgroup without finding any significant difference.

We further supported this result by explicitly quantifying accounting earnings management through a standard Jones (1991) model. Results are reported in Table A4 in the Appendix and do not show evidence of abnormal discretionary accruals before a buyout conditional and unconditional on the buyout type.

4 Enterprise value changes

In the previous section, we showed that secondary deals hardly generate any improvement in operating performance. This lack of operational performance growth may have opposite effects on deals values. On the one hand, investors' returns may be smaller or negative, as the return would be largely driven by

exploiting the cash generation capacity of the target company, the stability or growth of exit multiples and the relatively short holding period. On the other hand, because investors are likely aware of the limited room for improvement, they are more likely to select companies that are inherently robust cash generators, with a solid market position and a proven capacity to sustain high debt burdens and meet financial investors' requirements. This selectivity may ultimately result in smaller but more predictable positive returns and low default rates. In this section, we test this conjecture by comparing the evolution of entry and exit enterprise values for first- and second-round deals and by investigating default rates. Despite our best efforts, we fully acknowledge that results may differ from true deal values because we don't have direct access to the Funds track record and therefore we need to backward engineer returns which may lead to inaccurate computed figures.[15]

We compute enterprise value changes between entry and exit following Phalippou (2008) and McKinsey (2004) as follows[16]:

$$EV\ MIRR = \sqrt[n]{\frac{Exit\_value}{Outlay}} - 1 \tag{7}$$

where:

$n=$ holding period expressed in number of years from the investment announcement date to the exit announcement date

$Outlay=$ All equity investments[17] by the fund (initial investment plus any additional equity contribution)

$CashFlows=$ The sum of all cash flows to investors during the holding period given by:

In our exercise, we face additional complexity due to the difference in exits between first- and second-round investments. In fact, we have by construction actual exit values (when available) for first-round deals, whereas for second-round deals, we may fail to have realized exits. This requires the estimation of

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[15]In previous versions we computed also equity values factoring in interim cash flows. A referee noted that our results called for a specific, more detailed analysis that would be out of the scope of this work. We have therefore opted or excluding those results in the published version and release them in a separate paper.

[16]We report in the Internet Appendix a sample of the estimation.

[17]All equity figures are adjusted by outstanding shareholder loans (if any) and obtained from Mergermarket.

exit values and, accordingly, the computation of estimated MIRR for unrealized investments. We estimate MIRR for unrealized investments by calculating an exit value, given by the last available EBITDA, multiplied by the same-year EBITDA multiple, obtained from Damodaran's website and Bloomberg. In order to estimate write-offs for unrealized deals, we subtract from estimated EVs,the most recent net financial position figure prior to the estimated exit date. If the value of the NFP exceeds the EV, thus yielding a zero or negative equity value, we set the exit value at zero, assuming a complete write-off by the financial investor.

All measures are adjusted for shareholder loan extension and repayments if possible. The tests are run on pairs of first- and second-round buyouts on the same company.

Table 10 reports the results of a set of difference tests.

<div style="text-align:center">INSERT TABLE 10 HERE</div>

Computed changes in target company values are aligned with figures in Cao and Lerner (2009) and Degeorge et al (2013). Looking at second round deals, the limited growth in operating performance has a significant effect on value changes. In particular, first-round EV MIRRs are 2.5 times greater on average and twice as large in terms of medians when realized exits are considered.[18] The difference becomes significantly more pronounced when unrealized exits are included, which, at the time of the analysis, showed negative returns. The differences are significant for means and medians well above the 1% level for all measures

These results may suggest an increased likelihood of default for portfolio companies. Although it is inappropriate to compare first-round and second-round buyouts' default rates, as first-round buyouts by construction cannot include defaults, we can compare the default rates of SBO deals with the figures for the global sample. In the realized exits subsample, we document four cases of complete write-offs. This figure increases to ten cases, or 11.49%, when including unrealized exits. However, this default rate is not

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[18]It is worth noting that for the actual exits subsample, 35 out of 47 exits took place before the end of 2008. Hence, the lower return of SBOs has been recorded when transaction values and multiples were still high, thus landing further support to our result.

significantly different from the 12.97% rate observed in the global sample of 2,911 buyout deals for which we could locate updated information on the current status of the target companies.

5 Alternative Motivations of Secondary buyouts

In the previous section, we showed that the operating performance of SBO target companies only improves marginally under second-round PE ownership. Additionally, enterprise value changes are significantly lower in secondary transaction, with potentially higher default rates. These results cast doubt on the economic rationale underlying a secondary acquisition. In this section, we attempt to assess the alternative motivations of SBO outlined in section 1.1.

5.1 Market segmentation

SBO transactions may be a rational response to relative mispricing in debt and equity markets that allow achieving superior portfolio returns. Signals of mispricing can be an increasing debt supply, a decreasing cost of financing or an increase in deal values. In such a case, PE investors may find it optimal to invest in companies with limited or no growth but significant cash flow generation, as borrowing at abnormally low risk-adjusted rates in sectors experiencing temporary overheating allow for a relatively low-risk capital allocation. In this environment, investors will increasingly steer away from first-round LBOs, as "flipping" companies through SBOs provides a more predictable and profitable short-term source of returns. This behavior should be more common among higher-quality PE investors because, as shown by Demiroglu and James (2010), PE reputation acts as a substitute for bank monitoring and control, which facilitates access to debt financing for high-reputation investors. We address this hypothesis by running a battery of probit regressions on the global LBO sample of 2,911 transactions divested through an SBO or a trade sale (TS). The dependent variable takes the value of 1 if the deal has been exited through an SBO and 0 otherwise. The independent variables are as follows: revenue multiple, the total absolute deal consideration, the number of months held in the portfolio of the initial PE buyer, the LBO market leverage, measured as the average Debt over EBITDA multiple and the debt spread recorded in the LBO market by the S&P LCD

service. For months held and debt spread, we also introduce a squared term because the duration and especially the financing costs are likely to have non-linear effects on the propensity of exiting. Finally, we model PE reputation as follows: first, because most deals are syndicated, we identify all individual investors involved in the purchase and sale syndicates, and we rank each investor according to Private Equity International's PEI 300 ranking. In particular, we assign a value of 1 to investors ranked among the top 50 investors worldwide or among the top 25 European investors to account for different geographical relevance, and zero otherwise. Second, we calculate a cumulative ranking score for the syndicate as the sum of the rankings of the syndicate members. Third, we define a syndicate (buying or selling) to be a top syndicate if the majority of its members are top ranked.

INSERT TABLE 11 HERE

The results reported in Table 14 support our previous findings and provide interesting additional evidence. Univariate regressions show a negative parameter for the revenue multiple, which appears to indicate that very overpriced deals are less likely to find an exit through an SBO. Deal value is positively related with the likelihood of exiting through an SBO, providing additional support for a strategic interpretation of SBOs. First, when deals are large, finding an appropriate exit can be a more lengthy process that may affect returns. Sponsor-to-Sponsor transactions can alleviate the problem by facilitating exits from large deals; duration, as shown in Jenkinson and Sousa (2011a), is positively related with the likelihood of exit through an SBO, suggesting that because duration negatively affects returns, when a company has been in the PE portfolio for too long, flipping it to a friendly investor can be a rational risk-reduction choice. In addition, consistent with the view that the availability of cheap financing provides a powerful incentive to engage in secondary deals, as it can drive up equity returns, we find a small but significantly negative sign for the LBO spread parameter. The leverage in the LBO market is surprisingly negative and significant, apparently suggesting that the increase in debt multiples reduces the likelihood of secondary deals. Finally, consistent with evidence presented in Demiroglu and James (2010), the reputation of the PE buyer has a strong positive effect on the likelihood of observing an SBO rather than a trade sale. The seller's reputation parameter is also positive, but the estimate is approximately

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one tenth that of the buyer, and the significance of this relationship is lower. In column 7, we turn to a comprehensive multivariate model that introduces quadratic terms. The results are extremely significant and aligned with our hypotheses. Revenue multiple, deal value and duration estimates are aligned in sign and size, but the revenue multiple is no longer significant. Separately, debt spread and LBO leverage are highly significant and with the correct sign, suggesting that the availability of low-cost debt increases the attractiveness of SBOs for PE investors at a slightly increasing rate as indicated by the positive parameter of the quadratic spread term. In particular, a one-basis-point decrease in the spread increases the likelihood of an SBO by approximately 3 percentage points, whereas a one-unit increase in the Debt to EBITDA multiple increases the likelihood of SBO by approximately 8%. Finally, the reputation of the secondary buyer is a key determinant of the exit choice, the likelihood of SBO increasing by 40% for a reputation value 1 standard deviation above the mean value.

These results suggest that highly reputable PE investors are reacting to favorable market conditions by targeting cash-generating companies that, despite having limited growth potential, can afford sustained levels of relatively cheap debt and allow a more predictable route to achieve (and largely beat) the investors' return targets, thus allowing them increased chances for incremental fundraising.

5.2   Reciprocity

A complete and conclusive test of this hypothesis is extremely hard to devise given the patchy availability of transaction data and the existence of potentially unobservable factors. However, given that reciprocal dealing practices or even collusion can in principle be powerful drivers of secondary buyouts, we try to provide some evidence on this possible motive for the surge in secondary deals. The null hypothesis of no cooperative cross-selling requires that the transaction frequencies of target companies from one fund to another should be aligned with the unconditional probability $1/N$. In fact, there no clear value or benefit-driven motivation that could justify repeated secondary deals between the same funds. Differently, a cooperative cross-selling behavior with other market players would predict higher transaction frequencies between single funds or between funds in the same quality cluster. Rejecting the null hypothesis therefore

implies finding patterns in the deal-making records across funds. We test this conjecture by examining buyer-seller frequencies at the individual fund-level and by aggregating funds in High vs. Low reputation according to the classification introduced in section 5.1. We perform these tests on both the extended sample of 1,513 deals and the restricted sample of 326 deals adopted for the operating performance tests. For the two samples, we focus only on the secondary rounds, that is, on 723 and 163 deals.

At the single fund level[19] similarly to Wang (2012) we don't find any significant pattern: there are signs that some funds transact more with some specific counterparties but frequencies are very low and insignificant. In Table 12 we report the frequency of transactions where the seller is a company ranked as a top syndicate and the buyer is either a Top or non-Top syndicate.

<div align="center">INSERT TABLE 12 HERE</div>

In Panel A, we note that the best funds sell more often to junior funds than to their peers, whereas less reputable funds show a higher propensity to transact between themselves. This pattern is partly confirmed also in the subset of deals included in our operating performance analysis, which, however, is affected by a reduced sample size. On the one hand, the larger fraction of deals sold to junior funds is reasonable, given the much larger number of funds and the correlated assets under management. However, it is interesting to notice that top funds buy much more from each other than they do from junior funds, with the fraction being well above 40% both in the global sample and the restricted sample. This evidence can be a signal of reciprocal dealing, as top funds are more likely to have a close and established relationship that can allow for some deal-fixing. In such a case, deal characteristics should exhibit higher deal multiples and deal values, as suggested by the previous regression analysis. We test this conjecture by examining differential deal-level characteristics in top vs. non-top seller deals. The results reported in Table 13 are fairly similar for both samples but provide limited support to our conjecture.

<div align="center">INSERT TABLE 13 HERE</div>

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[19]In the global sample we have 100+ funds. This results in a 100x100 matrix of cross-sales that, given the inconclusiveness of results we choose not to report.

We notice that deals where both the buyer and the seller are top-ranked funds tend to be traded at substantially higher multiples, are larger and involve higher debt levels. However, the validity of these results is ambiguous, since means and medians significance for the global sample is weak (with the exception of deal size and debt levels) whereas mean significance for the restricted sample is stronger in means but absent in medians. These results are not sufficient a proof of the existence of reciprocal cross-selling in the private equity industry motivated by quasi-collusive behaviors. In fact an alternative explanation could simply be that high-reputation funds are generally larger in size than junior ones and tend to target bigger firms which eventually are more likely to be sold to large and, similarly to first round, more reputable funds. This seem to be confirmed by our data. Analogously, the higher multiples recorded could be simply related with skills: highly reputable funds are better managers and create more value than lower quality funds, hence they can extract higher price premia. However, in unreported analyses, we don't find any statistical difference in the performance of first round deals conditional on the fund reputation. Finally, high quality funds may have more bargaining power when dealing with junior investors and this would allow for more value extraction through lower acquisition prices.

Our results therefore, fail to provide convincing evidence of reciprocal selling although they unveil some unexpected phenomena that are certainly worth further investigation.

6   Conclusions

The recent spectacular growth in secondary buyout transactions has attracted attention from both academics and practitioners because of the limited understanding of the economic determinants of these deals. Existing theories on leverage buyouts identify four main factors that motivate the acquisition of a company by a PE investor: i) increasing the operating performance through agency cost reduction and operational engineering; ii) mispricing in the debt and equity markets ; iii) value transfers from employees and the government; and iv) reciprocity. However, it is unclear which of these theories can explain secondary transactions. In this paper, we address this question, shedding light on the effects on operating performance by SBO investors and on the determinants of SBO activity.

We collect a sample of 326 transactions for which we have full financial and accounting data from one year before the first buyout to two years after the second buyout. Our results show that companies targeted by multiple buyouts experience abnormal improvements in their operating performance as a result of the first acquisition but do not exhibit signs of incremental changes in performance during the secondary transaction. In particular, for all measures of operating performance, first-round acquisitions result in a steep, one-off increase that is smaller or absent for secondary transactions. SBO transactions exhibit evidence of liquidity squeeze-out and higher leverage than first-round deals. These limited contributions to the target company growth translate into significantly lower, although still positive, returns to PE investors. These results allow the rejection of the hypothesis that operating value creation can be the main driver of an SBO. Looking at a global SBO sample of 2,911 transactions, we investigate whether mispricing in the debt and equity markets can explain growth in this class of deals. Our results show that the likelihood of exiting transactions through SBO increases quickly in response to upward movements in LBO market leverage and downward movements in the cost of acquisition finance. Additionally, the first-round deal's duration, the deal size and the buyer's reputation are positive determinants of secondary transactions. These results hint at the possible existence of a particular form of reciprocal or quasi-collusive practice in the PE market: PE management companies are repeated players in the market that base their chances of raising new funds on past performance track records. Market conditions can negatively affect portfolio company exits and/or prevent the investment of committed capital. Both phenomena reduce returns and send negative signals to investors, who may not provide further capital in follow-on fundraising. Reciprocity whereby PE funds agree to buy from each other to reduce or solve exit or investment difficulties may thus be a rational behavior by fund managers that comes at the cost of reduced returns to investors and a violation of the risk-return profile of this class of investments. Our results, show that highly ranked funds significantly transact more between themselves at higher multiples and higher deal values but do not provide sufficient support to a collusion hypothesis.

Our evidence imply a puzzle: because transactions completed at higher multiples, increased levels of debt and lower spreads are clearly more risky, as shown by increased levels of defaults of companies and

CLOs, it is unclear what motivates debt providers in entering and fuelling this family of deals. We intend to answer this question in future research.

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Figure 1

SBO Market Data

This figure summarizes Secondary Buy-Out data from 1998 to end of 2012 provided by S&P LCD (Leverage Commentary Data). The left axis reports figures for Total SBO activity by volume in bn/USD, the right axis reports the fraction of SBO over total LBO activity in percentage terms.
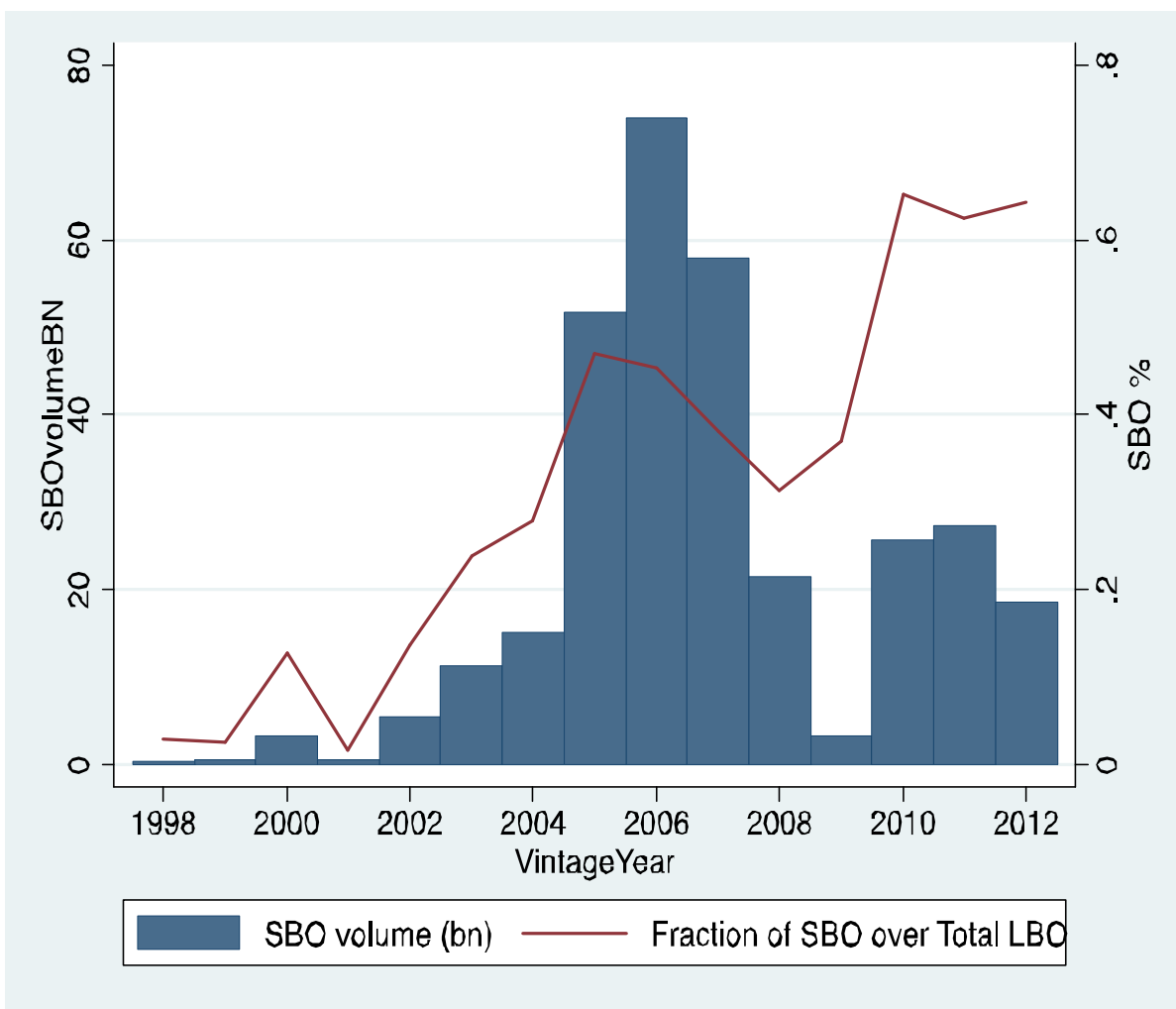
Figure 2

Abnormal Change in Performance

This figure summarizes the abnormal percentage change figures in 11 performance ratios computed on a sample of 163 companies target to two consecutive buyouts. For each ratio, the first column reports the abnormal percentage change in that ratio under the first round buyer while the second and third column report the change under the secondary buyer between one year before the second buyout and one and two years after the second buyout. The ratios are defined as follows: Operating Margin ratios (EBIT/S and EBITDA/S); Turnover ratio (S/EA); return on investment Ratios (EBIT/EA and EBITDA/EA); Return on Equity Ratios (NI/E and CF/E); Liquidity Ratios (CA/CL and Cash/CL); Capital Structure Ratios (FD/EA and EF/EBITDA)
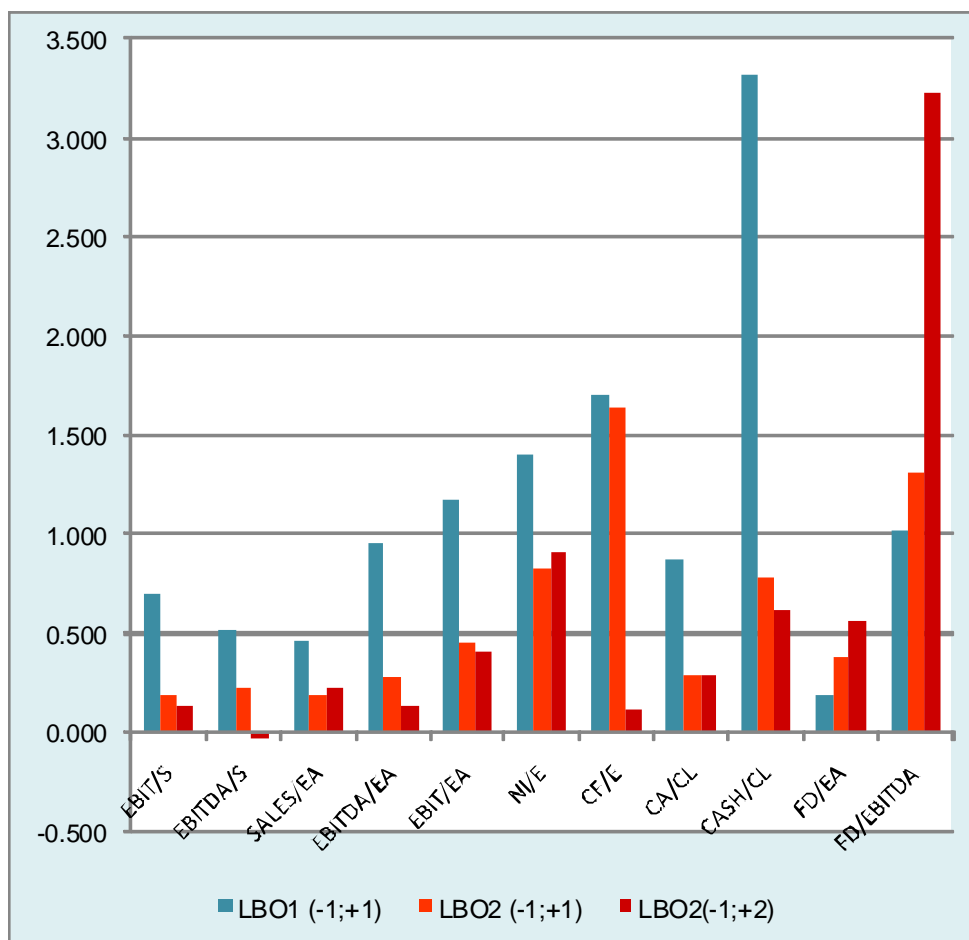
Table 1

Full sample summary statistics

This table provides summary statistics for the full sample of 2,911 LBO from 1998 to 2008 tracked by Mergermarket. Revenue, EBIT, and EBITDA multiples report the transaction value as a multiple of the last available figure for sales, EBIT and EBITDA, respectively; Deal value is the disclosed value of the transaction in million of dollars; Total debt funding is the disclosed value of the transaction in million of dollars; Months held is the calculated holding period from initial purchase to divestment. Significance of differences in means and medians between the "SBO" and "Other exits" groups is estimated by a standard t-test for equality of means and a non parametric K-sample test for equality of medians. Significance at the 1%, 5% and 10% level is denoted by ***,** and * respectively.

	Other exits				SBO				Total			
	Mean	St. Dev	Median	Obs.	Mean	St. Dev	Median	Obs.	Mean	St. Dev	Median	Obs.
Number of deals				1,804				1,107				2,911
Revenue Multiple	26.85	(534.80)	1.33	820	3.99	(21.46)	1.13*	545	17.72	(414.78)	1.26	1365
EBIT Multiple	138.49	(1,411.31)	14.34	427	240.43	(2,990.74)	14.54	297	180.39	(2,200.85)	14.34	725
EBITDA Multiple	23.47	(68.18)	10.73	459	72.27**	(586.63)	10.00**	319	43.48	(379.68)	10.42	778
Deal Value	227.38	(472.28)	76.00	1257	360.65***	(596.42)	53.00**	741	276.80	(525.84)	95.50	1998
Total Debt Funding	384.71	(474.31)	202.08	8	386.97	(571.03)	226.67	165	386.87	(565.74)	222.16	173
Months Held	38.56	(21.85)	35.00	617	43.30***	(21.17)	39.00***	505	40.65	(21.65)	37.00	1122

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Table 2

SBO sample summary statistics

This table provides summary statistics for the sub-sample of 163 companies incorporated in Western Europe, target to a first and a second, back-to-back buy-out, for which we could collect a full set of financial statements from one year before the first LBO to one year after the second LBO. Panel A reports Revenue, EBIT, and EBITDA multiples report the transaction value as a multiple of the last available figure for sales, EBIT and EBITDA, respectively; Deal value is the disclosed value of the transaction in million of dollars; Total debt funding is the disclosed value of the transaction in million of dollars; Months held is the holding period computed from initial purchase to divestment. Panel B reports financial information in the year before each buyout round.Significance in difference in means and medians is estimated by a standard t-test for equality of means and a non parametric K-sample test for equality of medians. Significance at the 1%, 5% and 10% level is denoted by ***,** and * respectively.

PANEL A Deal-level statistics

	LBO 1				LBO 2			
	Mean	Sta. Dev	Median	Obs	Mean	Sta. Dev	Median	Obs.
Revenue Multiple	1.5	(1.13)	1.1	88	2.2***	(1.50)	1.8***	91
EBIT Multiple	18.8	(18.61)	11.8	58	23.4	(21.73)	15.8**	66
EBITDA Multiple	12.9	(10.75)	9.0	54	14.6	(9.83)	11.9***	71
Deal Value	274.2	(341.97)	109.0	110	463.4***	(463.94)	210.0*	107
Total Debt Funding	238.9	(291.25)	126.3	28	429.4**	(366.42)	300.0**	33
Months Held	38.4	(18.80)	36.0	163	44.9	(18.20)	44.3**	47

PANEL B Firm-level statistics

	LBO 1-1				LBO 2-1			
	Mean	Sta. Dev	Median	Obs.	Mean	Sta. Dev	Median	Obs.
Total assets	184.3	396.46	33.7	161	187.2	(334.03)	57.9***	161
Sales	188.7	(386.01)	46.2	162	170.1	(267.32)	68.7***	162
P/L after tax	9.3	(22.62)	2.6	163	10.1	(13.24)	6.2***	163
Cash flow	6.9	(24.30)	1.9	158	17.2***	(28.41)	6.3***	159
EBIT	14.0	(27.99)	4.4	161	16.9	(23.78)	8.3***	161
EBITDA	18.8	(33.45)	5.9	162	21.4	(28.72)	10.9***	162
Loans	20.4	(49.27)	1.6	159	13.4*	(29.40)	1.5*	160
Financial Debt	51.3	(107.19)	5.4	160	50.7	(97.03)	6.6	161

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Table 3

Performance by buyout round

This table reports results of OLS estimates of changes in yearly Sales, EBITDA and ROA of companies target to two consecutive buyouts, conditional on the ownership status. POST1 is a dummy variable taking the value of 0 before the first buyout and 1 elsewhere. SBO is a dummy variable taking a value of 0 if the company is under the control of the first round buyer and 1 if the company is under the control of the secondary buyer. All regressions include firm, year and country fixed effects. Robust standard error are clustered at the dealroundXyear level. Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

	Ln(Sales)	Ln(EBITDA)	Ln(ROA)
POST1	0.184	0.245	0.182
	4.43***	3.68***	2.92**
POST1xSBO	0.047	-0.083	-0.152
	1.59	1.17	1.6
Country, Firm, Year F.E.	YES	YES	YES
R^2	0.87	0.83	0.48
N	1,440	1,336	1,244

45

Table 4
Variables

This table reports the variables used to measure the performance of first and second round buyouts. All variables are computed yearly and as change measures over different windows.

Ratio	Variables
Operating Margin Ratios	
	EBIT / S = Earnings before Interest and Taxes / Sales
	EBITDA / S = Earnings before Interest, Taxes, Depreciation, and Amortization / Sales
Turnover Ratios	
	S/EA = Sales / Economic Assets
Return on Investment Ratios	
	EBIT / EA = Earnings before Interest and Taxes / Economic Assets
	EBITDA / EA = Earnings before Interest, Taxes, Depreciation, and Amortization / Economic Assets[1]
Return on Equity Ratios	
	NI / E = Income before Extraordinary Items / Total Shareholders' Funds
	CFO / E = Cash Flows from Operations[2] / Total Shareholders' Funds
Liquidity Ratios	
	CA / CL = Current Assets / Current Liabilities
	CASH / CL = Cash and Cash Equivalents / Current Liabilities
Capital Structure Ratio	
	FD / EA = Financial Debt / Economic Assets
	FD / EBITDA = Financial Debt / Earnings Before Interest, Taxes, Depreciation, and Amortization

[1] Following the approach of Penman (2007), Economic Assets (EA) is defined as: Total Assets - Cash and Equivalents -- Trade and other Operating Creditors = Total Shareholders Funds + Long Term Liabilities + Total Debt included in Current Liabilities

[2] Measured by: Net Income + Extraordinary Items + Depreciation and Amortisation -- Change in Working Capital

Table 5

Yearly abnormal operating performance

This table reports the yearly levels of the ratios of abnormal operating performance outlined in paragraph 3.1. Each ratio is computed in five different points in time during the two buy-outs: LBO1-1 indicates one year before the first buyout; LBO1+1 indicates one year after the first buyout; LBO2-1 indicates one year before the second buyout; LBO2+1 indicates one year after the second buy out; LBO2+2 indicates two years after the second buy out. Panel A reports the Abnormal Performance measured as the difference between the performance indicator of each company minus the industry median, as in Barber and Lyon (1996). Panel B reports the Sector Volatility Adjusted performance measured as the difference between the performance indicator of each company minus the industry median, divided by the industry median standard deviation, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Statistical significance is calculated through a standard t-test (t) for means and a non-parametric Wilcoxon signed-rank test (Z) for unreported medians. Significance at the 1%, 5%, and 10% level is denoted by t1, t5 and t10 respectively for t-tests, and z1, z5 and z10 respectively for Wilcoxon tests.

	PANEL A: Abnormal Performance (mean Y)					PANEL B: Sector-volatility adjusted performance (mean W)				
	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
EBIT/S	$2.63\%^{t1,z1}$ (163)	$4.89\%^{t1,z1}$ (163)	$4.48\%^{t1,z1}$ (163)	$4.11\%^{t1,z1}$ (163)	$2.24\%^{z1}$ (152)	$19.68\%^{t5,z1}$ (163)	$42.97\%^{t1,z1}$ (163)	$37.96\%^{t1,z1}$ (163)	$46.27\%^{t1,z1}$ (163)	$39.56\%^{t10,z1}$ (152)
EBITDA/S	$3.01\%^{t1,z1}$ (159)	$4.55\%^{t1,z1}$ (159)	$3.66\%^{t1,z1}$ (159)	$4.37\%^{t1,z1}$ (158)	$1.33\%^{z1}$ (146)	$26.6\%^{t5,z1}$ (159)	$45.58\%^{t1,z1}$ (159)	$35.81\%^{t1,z1}$ (159)	$47.26\%^{t1,z1}$ (158)	$25.67\%^{t10,z1}$ (146)
SALES/EA	$164.78\%^{t1,z1}$ (152)	$184.71\%^{t1,z1}$ (162)	$142.77\%^{t1,z1}$ (156)	$143.31\%^{t1,z1}$ (156)	$159.06\%^{t5,z1}$ (138)	$84.2\%^{t1,z5}$ (152)	$78.76\%^{t1,z1}$ (156)	$58.14\%^{t1,z5}$ (155)	$57.53\%^{t1,z1}$ (155)	$63.44\%^{t1,z5}$ (134)
EBITDA/EA	$21.46\%^{t1,z1}$ (149)	$43.63\%^{t5,z1}$ (153)	$45.27\%^{t5,z1}$ (152)	$18.52\%^{t1,z1}$ (152)	$9.91\%^{t1,z1}$ (142)	$62.57\%^{t1,z1}$ (147)	$72.22\%^{t1,z1}$ (151)	$63.87\%^{t1,z1}$ (150)	$66.01\%^{t1,z1}$ (150)	$57.06\%^{t1,z1}$ (138)
EBIT/EA	$20.16\%^{t1,z1}$ (154)	$41.31\%^{t5,z1}$ (157)	$41.95\%^{t5,z1}$ (156)	$19.98\%^{t1,z1}$ (157)	$11.97\%^{t1,z1}$ (146)	$127.81\%^{t1,z1}$ (152)	$186.97\%^{t1,z1}$ (155)	$180.3\%^{t1,z1}$ (154)	$173.3\%^{t1,z1}$ (155)	$78.02\%^{t1,z1}$ (142)
NI/E	$21.50\%^{t1,z1}$ (157)	$28.37\%^{t1,z1}$ (158)	$28.34\%^{t1,z1}$ (158)	$36.94\%^{t1,z1}$ (161)	$26.35\%^{t1,z1}$ (156)	$75.98\%^{t1,z1}$ (155)	$73.92\%^{t1,z1}$ (156)	$109.71\%^{t1,z1}$ (156)	$165.99\%^{t1,z1}$ (159)	$105.58\%^{t1,z1}$ (143)
CF/E	$36.66\%^{t10,z10}$ (140)	$34.00\%^{t1,z1}$ (155)	$171.82\%^{t10,z1}$ (156)	$49.73\%^{t5,z1}$ (154)	$44.82\%^{t5,z5}$ (142)	-24.81% (135)	146.85% (147)	$101.97\%^{t1,z5}$ (147)	$163.58\%^{t1,z1}$ (149)	$-120.07\%^{z5}$ (137)
CA/CL	5.38% (158)	$1.85\%^{t5}$ (154)	$-1.21\%^{z5}$ (157)	$-2.98\%^{z1}$ (160)	$-6.48\%^{t5,z1}$ (141)	$-6.28\%^{z1}$ (159)	14.21% (157)	7.36% (157)	-0.02% (159)	$32.01\%^{t1,z10}$ (137)
CASH/CL	$-0.77\%^{z5}$ (161)	$26.99\%^{t5}$ (159)	$24.71\%^{t5}$ (160)	13.04% (161)	$41.99\%^{t1,z1}$ (141)	$22.43\%^{z10,\$}$ (166)	$11.78\%^{t10,\$}$ (156)	$6.09\%^{z10,\$}$ (160)	$3.27\%^{z1,\$}$ (165)	$-9.56\%^{t5,z1,\$}$ (142)
FD/EA	4.05% (138)	$10.72\%^{t5}$ (141)	$6.46\%^{t10}$ (142)	$6.98\%^{t5,z5}$ (143)	3.90% (134)	6.56% (136)	$25.62\%^{t10}$ (136)	10.36% (138)	$17.64\%^{t10}$ (139)	$15.56\%^{t10}$ (125)
FD/EBITDA	40.14% (145)	$197.99\%^{t5}$ (148)	20.89% (149)	$195.7\%^{t5}$ (149)	41.40% (119)	$51.51\%^{t5}$ (143)	14.66% (147)	$26.73\%^{t5}$ (150)	-18.69% (150)	19.16% (123)

$=unreported medians have negative sign

47

Table 6
Abnormal operating performance change measures

This table reports the changes in the measures of abnormal operating performance outlined in paragraph 3.1. Change measures are computed over three windows: LBO1(-1;+1) indicates changes from one year before the first buy out to one year after the first buy out; LBO2(-1;+1) indicates changes from one year before the second buy out to one year after the second; LBO2(-1;+2) indicates changes from one year before the second buy out to two years after the second buy out. Panel A reports the Abnormal Performance percentage change computed as the difference between the percentage change in absolute Abnormal Performance minus the percentage change in the industry median. Panel B reports the Sector-volatility adjusted percentage change calculated as the difference between the performance indicator percentage change minus the industry median performance indicator percentage change, divided by the industry performance indicator's standard deviation, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Statistical significance is calculated through a standard t-test (t) for means and a non-parametric Wilcoxon signed-rank test (Z) for unreported medians. Significance at the 1%, 5%, and 10% level is denoted by t1, t5 and t10 respectively for t-tests, and z1, z5 and z10 respectively for Wilcoxon tests.

	PANEL A			PANEL B		
	Abnormal % Change (mean D%Y)			Sector-volatility adjusted % Change (mean		
	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
EBIT/S	$69.69\%t^{1,z1}$	$18.19\%^{z5}$	$13.6\%^{z1}$	$48.37\%^{t1,z1}$	$5.29\%^{z1}$	$38.15\%^{t10,z1}$
	(163)	(163)	(152)	(163)	(163)	(152)
EBITDA/S	$50.96\%^{t1,z1}$	$22.73\%^{t5,z1}$	$-3.03\%^{z1}$	$51.27\%^{t1,z1}$	$35.6\%^{t5,z1}$	$29.48\%^{z1}$
	(159)	(159)	(146)	(159)	(159)	(146)
SALES/EA	$46.04\%^{t5}$	$18.68\%^{t5}$	$22.13\%^{t10}$	$99.78\%^{t5}$	-2.88%	58.83%
	(152)	(156)	(138)	(152)	(155)	(134)
EBITDA/EA	$95.9\%^{t1,z1}$	$28.43\%^{t10}$	$13.41\%^{t10}$	$57.78\%^{t5,z1}$	22.94%	$36.33\%^{t10,z5}$
	(149)	(153)	(152)	(147)	(150)	(138)
EBIT/EA	$116.73\%^{t1,z1}$	$45.72\%^{t10}$	$40.87\%^{z5}$	$108.63\%^{t1,z1}$	$72.12\%^{t1,z10}$	$96.41\%^{z5}$
	(154)	(153)	(146)	(152)	(154)	(142)
NI/E	$140.78\%^{t5,z10}$	$82.76\%^{t1,z1}$	$91.41\%^{t10,z1}$	$31.15\%^{t5,z1}$	$22.76\%^{t10,z1}$	$32.99\%^{t10,z1}$
	(157)	(158)	(156)	(155)	(156)	(143)
CF/E	$170.48\%^{t1,z1}$	$163.26\%^{t1,z1}$	$11.47\%^{t10,z5}$	$139.95\%^{t1,z1}$	$46.69\%^{z5}$	$46.95\%^{z5}$
	(140)	(156)	(142)	(135)	(147)	(137)
CA/CL	$87.12\%^{t5,z1}$	$28.93\%^{t1}$	$29.46\%^{t1,z5}$	$51.89\%^{t1,z5}$	$49.68\%^{t10}$	$70.59\%^{t1,z5}$
	(158)	(157)	(141)	(159)	(157)	(137)
CASH/CL	$331.81\%^{t5,z5}$	$78.12\%^{t1}$	$62.46\%^{t1}$	$66.69\%^{t5}$	$47.2\%^{t10}$	22.15%
	(161)	(160)	(141)	(163)	(163)	(140)
FD/EA	18.45%	$37.82\%^{t5}$	$55.82\%^{t1,z5}$	-27.94%	20.79%	$61.67\%^{z10}$
	(138)	(142)	(134)	(136)	(138)	(125)
FD/EBITDA	$101.55\%^{t5}$	$130.34\%^{t1,z1}$	$322.34\%^{t10,z5}$	87.55%	$275.99\%^{t5,z1}$	$168.21\%^{t10}$
	(145)	(149)	(119)	(143)	(150)	(123)

Table 7

Operating performance: Fixed effects and <2006 robustness regressions.

This table reports results of OLS estimates of the changes in operating performance conditional on the investment round for primary and secondary deals executed before 2006. We present results only for the LBO1(-1;+1) and LBO2(-1;+2) window i.e. changes from one year before the first buyout to one year after the first buyout and one year before the second buyout to two years after the second buy out. The independent variable SBO is a dummy controlling for the Buyout round. All regressions include year and country fixed effects. Panel A reports regression results for absolute percentage change computed as the difference between the percentage change in absolute Abnormal Performance calculated as in Barber and Lyon (1996) minus the percentage change in the industry median. Panel B reports regression results for sector volatility adjusted percentage change computed as the difference between the performance indicator percentage change minus the industry median performance indicator percentage change, divided by the industry performance indicator's standard deviation, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Panel C and D report results for the same metrics computed on a subsample of deals where the second round buyout has been completed before2006. Robust standard error are clustered at the 'year x Round' level Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

PANEL A -Absolute % Change: LBO1 (-1;+1), LBO2 (-1;+2)

	Operating Margin		Turnover	ROI		ROE		Liquidity		Capital Structure	
	EBIT/S	EBITDA/S	SALES/EA	EBITDA/EA	EBIT/EA	NI/E	CF/E	CA/CL	CASH/CL	FD/EA	FD/EBITDA
SBO	-0.863	-1.081	-0.44	-1.401	-1.132	-0.2	-1.598	-0.044	-4.624	-0.455	-0.547
	(2.63)**	(3.38)**	(3.04)**	(11.06)***	(3.35)**	(0.27)	(1.42)	(0.41)	(2.64)**	(1.62)	(0.71)
Country, year F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.04	0.04	0.08	0.06	0.1	0.13	0.03	0.05	0.06	0.13	0.06
N	309	300	292	294	302	292	261	301	273	208	200

PANEL B - Sector Volatility Adjusted % Change: LBO1 (-1;+1), LBO2 (-1;+2)

	Operating Margin		Turnover	ROI		ROE		Liquidity		Capital Structure	
	EBIT/S	EBITDA/S	SALES/EA	EBITDA/EA	EBIT/EA	NI/E	CF/E	CA/CL	CASH/CL	FD/EA	FD/EBITDA
SBO	-0.459	-0.8	-0.666	-0.326	0.685	0.013	-0.46	0.106	-0.123	-1.374	0.772
	(2.49)**	(3.57)***	-1.73	(3.10)**	(1.64)	(0.11)	(1.27)	(0.43)	(0.35)	(2.23)*	(0.65)
Country, year F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.13	0.05	0.12	0.05	0.11	0.03	0.04	0.06	0.07	0.09	0.19
N	301	288	264	258	269	260	251	281	245	185	180

ROBUSTNESS TESTS: SBO DEAL DATE<2006

PANEL C -Absolute % Change: LBO1 (-1;+1), LBO2 (-1;+2)

	Operating Margin		Turnover	ROI		ROE		Liquidity		Capital Structure	
	EBIT/S	EBITDA/S	SALES/EA	EBITDA/EA	EBIT/EA	NI/E	CF/E	CA/CL	CASH/CL	FD/EA	FD/EBITDA
SBO	-1.405	-0.897	-0.714	-1.639	-1.054	-1.449	-1.513	-1.159	-0.76	0.302	1.033
	-1.91	(2.14)*	(10.01)***	(5.22)***	(4.54)***	-1.09	-1.75	(4.70)***	-1.73	-1.93	(5.76)***
Country, year F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.04	0.04	0.05	0.06	0.17	0.30	0.04	0.02	0.07	0.10	0.12
N	124	122	121	122	124	116	103	125	116	87	87

PANEL D - Sector Volatility Adjusted % Change: LBO1 (-1;+1), LBO2 (-1;+2)

	Operating Margin		Turnover	ROI		ROE		Liquidity		Capital Structure	
	EBIT/S	EBITDA/S	SALES/EA	EBITDA/EA	EBIT/EA	NI/E	CF/E	CA/CL	CASH/CL	FD/EA	FD/EBITDA
SBO	-1.132	-0.47	-1.831	-0.393	-0.239	-0.108	-0.401	0.487	-0.769	-0.199	2.334
	(8.17)***	(6.99)***	(3.59)**	(3.02)**	-0.25	-0.33	-0.84	-1.75	(2.09)*	(3.18)**	-1.58
Country, year F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.10	0.07	0.12	0.06	0.20	0.02	0.08	0.04	0.06	0.10	0.07
N	122	117	106	105	106	106	99	117	107	75	78

Table 8
Fund stage focus

This table presents summary statistics on the stage focus of the PE Bidder. Stage focus is defined as Venture Capital or Buyout following the initial classification in Mergermarket, checking with Thomson One Banker classification and cross-checking with fund institutional website. Panel A reports the fund focus for all deals for which we had reliable information on at least one of the two rounds (unpaired) and for all deals for which we had reliable information on both rounds (paired data). Panel B reports the transition matrix in fund focus from the first to the second round only for deals for which we had fund focus information on both rounds.

PANEL A - Stage focus distribution

Unpaired

Type	First Round	Second Round
Buyout	130	111
VC	17	12
Total	147	123

Paired

Type	First Round	Second Round
Buyout	98	101
VC	12	9
Total	110	110

PANEL B - Paired Transition Matrix

Type	LBO 2 Buyout	LBO 2 VC
LBO 1 Buyout	90	9
LBO 1 VC	10	1
Total	100	10

Table 9

Fund characteristics

This table reports summary statistics of the main characteristics of the acquiring PE fund in the first and second round buyout. Information onf Fund characteristics is obtained from Thomson OneBanker, Dealscan, Mergermarket and management companies websites. Variables are defined as follows: Fund Ageing at BO is the age of the fund in years from first closing to the BO announcement date; Fund ageing at exit is the age of the fund in years from first closing to the exit announcement date; Fund Age at Entry and Exit in % is the ratio of the fund age at entry and exit over the fund life in percentage terms; PE firm age is the age of the management company from the first fund closing date to the BO date; BO specialization is the number of funds raised at the BO date; Fund size is the total amount of committed capital of the fund executing the BO. Difference in means and medians significance between the firs round (LBO1) and second round (LBO2) is estimated by a standard unpaired t-test for equality of means and a non parametric K-sample test for equality of medians. Significance at the 1%, 5% and 10% level is denoted by ***, ** and * respectively.

	LBO1				LBO2			
	Mean	St. Dev	Median	Obs.	Mean	St. Dev	Median	Obs.
Fund Ageing at BO	2.63	(2.30)	2.17	147	2.45	(2.20)	1.88	128
Fund Ageing at Exit	6.23	(2.87)	5.67	147	6.35	(3.09)	6.08	79
Fund Age at Entry (% over fund life)	0.29	(0.24)	0.26	147	0.22	(0.20)	0.18	79
Fund Age at Exit (% over fund life)	0.62	(0.30)	0.57	147	0.60	(0.27)	0.61	79
PE Firm age	18.98	(15.84)	17.00	147	16.57	(12.27)	16.00	128
BO specialization	3.85	(3.63)	3.50	144	4.98*	(5.56)	3.00	123
Fund Size	1007.04	(1445.65)	427.13	144	1977.59***	(3348.04)	737.72	121

Table 10

Enterprise value MIRR

This table provides summary statistics for the MIRR on companies target of two consecutive buy-out rounds. We report means and medians significance tests for the difference between first round and second round (A-B); the difference bewtween first round and second round buy-out returns including only true exits (A-C) and the difference bewtween first round and second round buy-out returns including only the estimated exits. Estimated exits are computed as the run-rate EBITDA multiplied by the prevailing market multiple. Panel A reports differences in Enterprise Value MIRR computed as in Phalippou (2008); Panel B reports the number of write-offs in the original global European sample of 2,911 buy-out deals. Standard deviation is reported in parentheses in panel A and B. Difference in means is estimated by a standard two-tailed t-test for equality of means. Difference in medians is estimated by a non parametric K-sample test for equality of medians. We report t-values for the difference in means tests and Chi-square values for the differences in medians tests. Significance at the 1%, 5% and 10% level is denoted by ***,** and * respectively.

	PANEL A - EVMIRR						
	LBO1	LBO 2 (Full sample)	LBO 2 (Actual exits)	LBO 2 (Est. Exits)	Difference tests		
	(A)	(B)	(C)	(D)	(A)-(B)	(A)-(C)	(A)-(D)
Mean	0.329	-0.054	0.127	-0.267	5.383***	2.371**	7.425***
	(0.457)	(0.488)	(0.483)	(0.405)			
Median	0.242	-0.027	0.148	-0.191	14.206***	3.934**	27.785***
Obs.	89	87	47	40			

	PANEL B - Write-offs		
	Global Dataset	Full sample (actual)	Full sample (actual+estimated)
Write-offs	115	4	10
	(12.97%)	(4.60%)	(11.49%)
Obs.	887	47	87

Table11

Probit Regressions

This table presents results for a set of logistic regressions capturing the propensity of a target company to be divested through a Secondary Buy-Out. Peers are identified by LBO target companies in the same 4-digit SIC code, not divested through a SBO or liquidation. In each model the dependent variable is 1 for sample firms, indicating exit through secondary buy-out and 0 for control transactions, indicating exit through other routes. Independent variables are defined as follows: Revenue Multiple is the reported deal value multiple of the last available year revenues; Ebit Multiple is the reported deal value multiple of the last available year EBIT; EBITDA Multiple is the reported deal value multiple of the last available year EBITDA; Deal Value is the absolute disclosed dollar value of the deal expressed in million of dollars; Total debt funding is the reported total debt provided for the transaction; months held is the number of months the company has been held by the seller before a Trade Sale or a SBO; Ranking Seller and Ranking Buyer are measures of the cumulative ranking of PE investors in the selling or buying syndicate. It is computed by assigning a value of 1 to each investors ranked in the PEI 300 Worldwide Top50 funds or European Top 25. If the majority of syndicate members are ranked as Top investors then the syndicate is given a dummy value of 1 and 0 otherwise. Joint Ranking is a dummy variable that takes a value of 1 if both the buysing and selling syndicate are classified as Top ranked by the two individual rankings. Robust standard errors clustered at the year level are reported in parentheses. Significance at the 1%, 5% and 10% level is denoted by ***,** and * respectively.

	Probability of exit through a SBO						
	1	2	3	4	5	6	7
Intercept	-0.391***	-0.363***	-0.386***	-1.908***	3.297**	-0.622***	-0.805***
	(0.056)	(0.076)	(0.074)	(0.173)	(1.395)	(0.129)	(0.076)
Revenue Multiple	-0.002***						-0.003
	(0.000)						(0.002)
Deal Value		0.186***					0.108*
		(0.033)					(0.057)
Months Held			0.005***				0.014**
			(0.002)				(0.007)
Months held^2							0.000
							(0.000)
Debt Spread					-0.001***		-0.288***
					0.000		(0.027)
Debt Spread^2							0.001***
							(0.000)
LBO market Leverage						-0.027***	0.224***
						(0.000)	(0.020)
Seller Ranking				0.121**			0.089
				(0.055)			(0.095)
Buyer Ranking				1.966***			2.483***
				(0.251)			(0.386)
Joint Buyer, Seller Ranking				0.316			-0.230
				(0.306)			(0.503)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES
N	1,355	1,992	1,117	2,903	2,541	2,834	569
Pseudo R2	0.020	0.040	0.020	0.130	0.000	0.010	0.220

Table 12

Reciprocity - Deal Frequencies

This table reports the frequency matrix of SBO transactions between Top funds and non top funds, where a Top fund is identified as a fund ranked in the top 50 investors worldwide or in the top 25 European investors according to the Private Equity International PEI 300 survey. Panel A reports absolute and relative values observed in the global sample of 1,513 buy-out deals focusing only on the 723 second rounds. Panel B reports absolute and relative values observed in the restricted sample of 326 buy out deals adopted for the operating performance tests and focusing only on the 163 secondary rounds. Frequencies add up by column or row respectively. In the last column we report a Pearson's chi-squared test for the hypothesis that rows and columns are independent.

PANEL A - GLOBAL SBO SAMPLE

	Non-Top Seller		Top Seller		TOTAL	Pearson's Chi-2
Non-Top Buyer	365	73%	133	27%	498	
	78%		65%			
						14.48***
Top Buyer	100	58%	73	42%	173	
	22%		35%			
TOTAL	465		206		671	

PANEL B - RESTRICTED SBO SAMPLE

	Non-Top Seller		Top Seller		TOTAL	Pearson's Chi-2
Non-Top Buyer	65	72%	25	28%	90	
	68%		51%			
						4.18**
Top Buyer	30	56%	24	44%	54	
	32%		49%			
TOTAL	95		49		144	

Table 13

Reciprocity-Deal Characteristics

This table reports mean and medians of a set of deal characteristics between Top funds and non top funds, where a Top fund is identified as a fund ranked in the top 50 investors worldwide or in the top 25 European investors according to the Private Equity International PEI 300 survey. Statistics are computed for the global sample of 1,513 buy-out deals focusing only on the 723 second rounds and for the restricted sample of 326 buy out deals adopted for the operating performance tests and focusing only on the 163 secondary rounds. Difference in means is estimated by a standard two-tailed t-test for equality of means. Difference in medians is estimated by a non parametric K-sample test for equality of medians. We report t-values for the difference in means tests and Chi-square values for the differences in medians tests. Significance at the 1%, 5% and 10% level is denoted by ***, ** and * respectively.

	Global SBO sample (Top buyer)				Restricted SBO Sample (Top Buyer)			
	Non-Top Seller		Top Seller		Non-Top Seller		Top Seller	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Revenue Multiple	2.112	1.781	2.446*	1.894	1.966	1.751	2.848**	2.265
	60		55		23		20	
EBIT Multiple	20.811	14.118	27.635*	18.207**	13.646	13.634	25.637**	16.602
	33		32		16		15	
EBITDA Multiple	13.824	11.2	14.129	11.9048	11.882	11.710	17.630**	13.530
	37		35		16		15	
P/E multiple	44.093	23.535	62.821*	48.307	31.703	20.842	36.350	21.628
	29		25		15		10	
Deal Value	399.597	309.000	934.942***	1029.000***	360.000	204.000	923.750***	1004.500***
	77		69		25		24	
Total Debt Funding	346.419	248.872	669.181***	544.17***	378.969	246.736	613.047*	535.862**
	16		27		6		12	

Appendix

Figure A1

Sample year distribution

This figure summarizes the deal distribution of first and second round buyouts on our sample of 163 deals for which we could collect fincial data on the target company from one year before the first round buyout to two years after the second round buyout.

Figure A2

Deals country distribution

This figure summarizes the country distribution of our sample of 163 companies target to a first and second round buyouts for which we could collect fincial data on the target company from one year before the first round buyout to two years after the second round buyout.
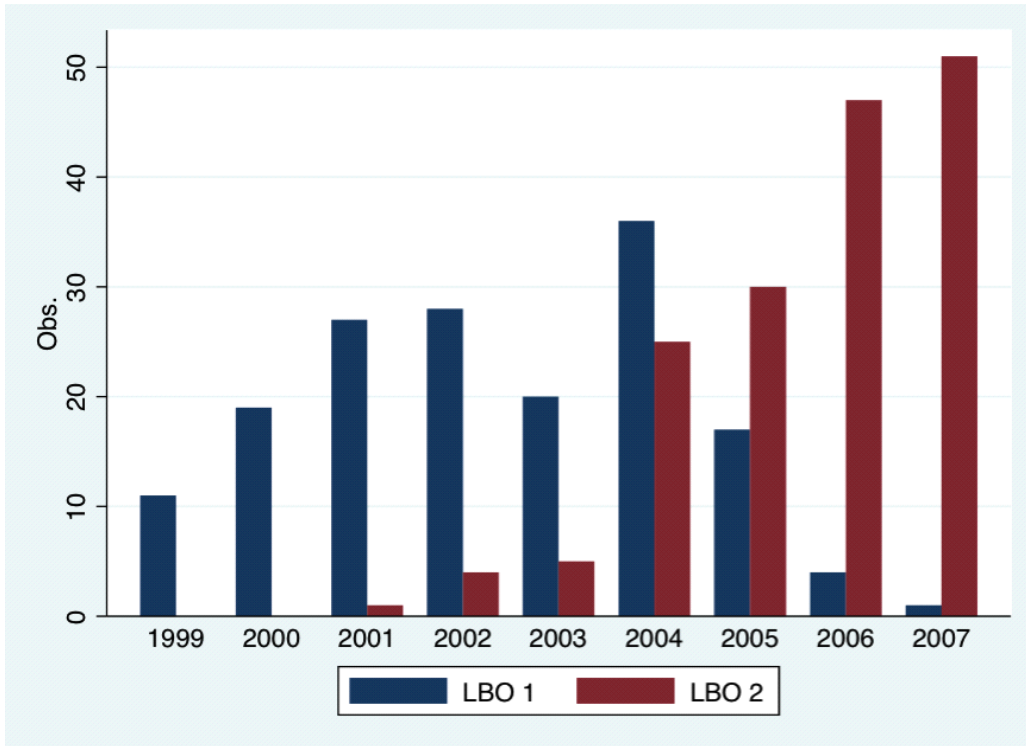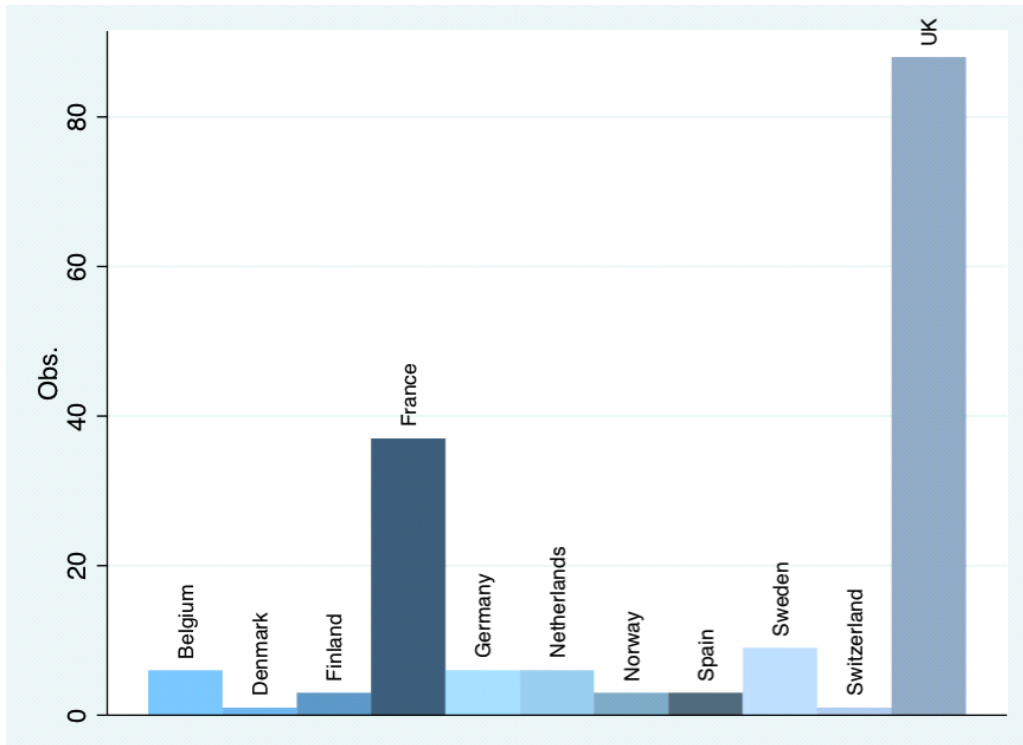
Figure A3

Pre-event performance matching yearly ratios

These figures report yearly levels of industry adjusted ratios for turnover measured as S/EA; operating margin measured as EBIT/S, and leverage measured as FD/EA for first round and second round buyouts on the same company. Ratios are computed adjusting the target level by the peer sample median level where the peer sample is built by selecting companies in the same 2-digit SIC code with pre-first round buyout ROA between +/- 50% of that of the target company.

Table A1

Pre-event matching sample robustness test

This table reports abnormal performance change and industry volatility adjusted abnormal performance change measures of the target companies matched with a sample of peer companies based on 2 digit SIC code industry and comparable performance before the first buyout. We build the peer group an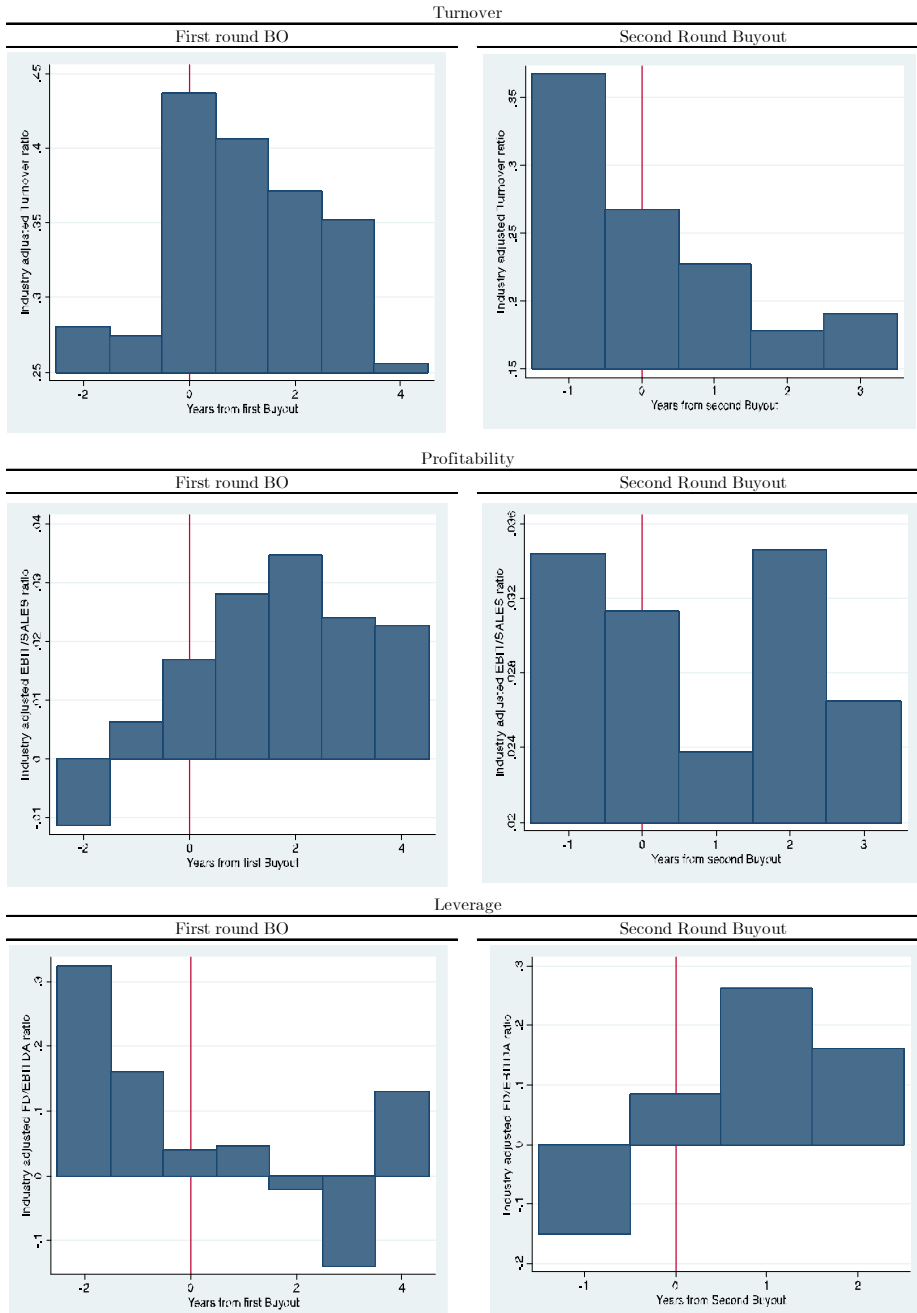d test the results following Barber and Lyons (1996) in the following way: Each company is matched with the full 2 digits SIC code universe of comparable companies one year before the buyout. Comparables are included in the peer group if ROAi=target ROA+/-50%. Reported figures are median change measures for the two buyout rounds where the second buyout change is measured over both a long (-1;+2) and short (-1;+1) window. For leverage only we report also mean values in parentheses. Significance is measured thorugh a non-paramateric Wilcoxon rank test. For mean leverage values significance is tested through a standard t-test. Significance at the 1%, 5%, and 10% level is denoted by ***, **, and * respectively.

PANEL A - INDUSTRY ADJUSTED ABNORMAL PERFORMANCE

	EBIT S	EBITDA S	S EA	EBIT EA	EBITDA EA	NI E	CFO E	CA CL	CASH CL	FD EA	FD EBITDA
LBO 1 (-1;+1)	0.23 ***	0.16 ***	0.02 *	0.31 ***	0.17 ***	0.30 ***	-0.40	0.09 ***	0.18 ***	-0.22 (-0.24)	-0.22 (-0.03)
	(116)	(114)	(116)	(117)	(114)	(115)	(100)	(116)	(86)	(78)	(76)
LBO 2 (-1;+1)	-0.05	0.02	-0.04	-0.07	-0.06	0.03	-0.11	0.05	0.13	-0.11 (0.19*)	0.05* (1.38***)
	(115)	(111)	(115)	(115)	(111)	(114)	(109)	(114)	(97)	(72)	(71)
LBO 2 (-1;+2)	-0.06	0.03	-0.07	-0.05	0.00	0.17 *	-0.52	0.04 *	-0.08	-0.05 (-0.14)	-0.23 (3.39*)
	(106)	(103)	(106)	(106)	(103)	(103)	(103)	(105)	(90)	(63)	(60)

PANEL B- INDUSTRY VOLATILITY ADJUSTED ABNORMAL PERFORMANCE

	EBIT S	EBITDA S	S EA	EBIT EA	EBITDA EA	NI E	CFO E	CA CL	CASH CL	FD EA	FD EBITDA
LBO 1 (-1;+1)	2.47 ***	1.54 ***	0.05 *	3.60 ***	2.69 ***	0.90 ***	-0.95	0.10 ***	0.31	-1.50 (-1.34)	-0.08 (-0.14)
	(101)	(100)	(101)	(102)	(100)	(100)	(87)	(101)	(68)	(72)	(70)
LBO 2 (-1;+1)	-0.33	0.27	-0.04	-0.97	-0.54	0.04	0.01	0.02	0.15	-0.82 (-1.27)	0.02 (0.81*)
	(99)	(96)	(99)	(99)	(96)	(98)	(94)	(98)	(85)	(61)	(61)
LBO 2 (-1;+2)	-0.27	0.87	-0.16	-0.39	0.19	0.75	-0.52	0.02 *	-0.12	-0.33 (-0.51)	-0.04 (0.16)
	(90)	(88)	(90)	(90)	(88)	(88)	(88)	(89)	(80)	(54)	(52)

Table A2

Fund location

This table presents summary statistics on the location of the PE Bidder measured as the country of incorporation of the Management Company as reported by Thomson One Banker and cross-checking with fund institutional website. Panel A reports the fund location for all deals. Panel B reports the transition matrix in the location of the acquiring investor from the first to the second round.

PANEL A - Fund location frequency	First Round	Second Round
Domestic	120	102
Foreign	43	61
Total	163	163

PANEL B - Transition Matrix		
Type	LBO 2 Domestic	LBO 2 Foreign
LBO 1 Domestic	81	21
LBO 1 Foreign	39	22
Total	120	43

Pearson's Chi-2	5.353***

Operating performance

Robustness test: Pre-buyout leverage and type of buyout

PANEL A - Type of buyout

	Operating Margin		Turnover	ROI		ROE		Liquidity		Capital Structure	
	EBIT/S	EBITDA/S	SALES/EA	EBITDA/EA	EBIT/EA	NI/E	CF/E	CA/CL	CASH/CL	FD/EA	FD/EBITDA
SBO	-0.751	-1.08	-0.413	-1.38	-1.04	0.04	-1.472	-0.05	-5.252	-0.415	-0.118
	(2.04)*	(3.21)**	(2.95)**	(11.28)***	(2.67)**	-0.05	-1.14	-0.33	(2.54)**	-1.3	-0.18
Type of buyout	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.06	0.04	0.09	0.06	0.11	0.14	0.04	0.07	0.09	0.13	0.07
N	299	290	284	285	292	282	252	291	263	203	195

PANEL B - Pre-buyout Leverage

	Operating Margin		Turnover	ROI		ROE		Liquidity		Capital Structure	
	EBIT/S	EBITDA/S	SALES/EA	EBITDA/EA	EBIT/EA	NI/E	CF/E	CA/CL	CASH/CL	FD/EA	FD/EBITDA
SBO	-0.944	-1.184	-0.567	-1.548	-1.216	-0.434	-1.89	-0.087	-4.639	-0.61	-0.429
	(2.62)**	(3.25)**	(3.70)***	(12.17)***	(4.48)***	-0.64	-1.62	-0.7	(2.54)**	(1.98)*	-0.69
Pre-buyout leverage (FD/EA)	0.482	-0.233	-0.022	-0.085	0.126	0.641	-0.594	1.681	-1.476	0.117	1.389
	-0.46	-0.37	-0.23	-0.14	-0.15	-0.38	-0.23	-1.81	(2.09)*	-0.11	-0.3
Pre-buyout leverage (FD/EBITDA)	0.034	0.014	-0.001	0.021	0.077	0.02	0.064	0.011	-0.031	-0.007	-0.046
	-1.58	(1.93)*	-0.12	(2.87)**	-1.34	-1.26	-1.28	-0.98	-1.44	-0.47	-0.76
Country F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.05	0.04	0.05	0.06	0.11	0.13	0.03	0.07	0.06	0.12	0.06
N	285	284	274	279	283	268	247	278	256	200	198

PANEL C - Type of buyout and leverage

	Operating Margin		Turnover	ROI		ROE		Liquidity		Capital Structure	
	EBIT/S	EBITDA/S	SALES/EA	EBITDA/EA	EBIT/EA	NI/E	CF/E	CA/CL	CASH/CL	FD/EA	FD/EBITDA
SBO	-0.821	-1.182	-0.53	-1.53	-1.093	-0.154	-1.751	-0.137	-5.353	-0.574	0.029
	(2.05)*	(3.01)**	(3.22)**	(11.71)***	(3.80)***	-0.2	-1.28	-0.8	(2.35)*	-1.63	-0.05
Pre-buyout leverage (FD/EA)	-0.093	-0.35	-0.149	-0.298	-0.382	-0.281	-2.229	1.527	-1.773	0.012	0.446
	-0.22	-1.4	-0.99	-0.69	-1.34	-0.19	-0.88	-1.56	(1.90)*	-0.01	-0.08
Pre-buyout leverage (FD/EBITDA)	0.037	0.015	0	0.022	0.08	0.02	0.069	0.007	0.005	-0.007	-0.047
	-1.54	(1.95)*	-0.01	(2.89)**	-1.34	-1.21	-1.39	-0.53	-0.15	-0.45	-0.82
Type of buyout	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.06	0.04	0.09	0.06	0.11	0.14	0.04	0.07	0.09	0.13	0.07
N	299	290	284	285	292	282	252	291	263	203	195

Table A4
Accruals Earnings Management (AEM)

This table report the results of univariate tests on the level of actual and abnormal discretionary accruals in firms target to a first-round MBO and industry peers. The industry peers sample is given by 718,004 firm-year observations of large and medium sized private companies, located in the 11 European countries of incorporation of the 163 firms in the LBO/SBO main sample and belonging to the same 39 2-digit SIC codes. Panel A shows the actual average of accruals for companies in the same SIC code of the LBO company measured one year before the LBO date, scaled by assets at time LBO-2 ; Panel B shows the average of abnormal discretionary accruals for the full LBO/SBO sample computed as the difference between total accruals and fitted normal accruals with parameters estimated through a standard Jones (1991) model on the sample of peers; Panel C, presents separate values of abnormal discretionary accruals for the MBO and non-MBO subsample. Significance is measured through a standard t-test . Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

	PANEL A - Peers sample	PANEL B - LBO/SBO sample	PANEL C - LBO/SBO sample		
			MBO	non-MBO	Difference (MBO-nonMBO)
Total Accruals(t)/Total assets(t-1)	-0.009***				
(Standard Error)	0.001				
Abnormal discretionary accruals		0.009	0.004	0.010	0.006
(Standard Error)		0.058	(0.253)	(0.058)	(0.254)

Internet Appendix

Data collection process and documentation

For the purpose of our research we had to start from a very large number of transactions, extracted from Mergermarket (MM), the leading data provider for the PE industry. The data collection process has been as follows. First, we queried MM for all European deals completed between 1998 and 2008 that had information on at least one deal-level item (revenue, EBIT, or EBITDA transaction multiple; total absolute deal consideration; total debt funding; months held in the portfolio of the initial PE buyer).

We obtained 2,911 first round transactions. After further cleaning we turned to finding accounting data on Bureau van Djik web-based platform. We proceeded as follows:

1)   start from the company name and search for it in BvD. This search was done at the single company level by typing the name of the company and running the query. This had to be repeated for all 2,911 companies plus the cross-checks explained below;

2)   check that there was a likely match between the company reported in MM and that in BvD;

3)   check that statements were available for the required period (from LBO1-1 to LBO2+2);

4)   check that the data referred to the consolidated entity where needed;

5)   check that the data were not referring to a shell company;

6)   download the data in excel format;

7)   extract the relevant information and feed a working dataset.

When we couldn't find a match we actually checked over the Internet and other sources if the company had changed the legal entity name or had a different legal entity name than the commercial name (for instance: Gaucho Grill is the commercial name of GIOMA ltd).

Out of 2,911 deals we are left with just 163 companies, or just above 5%.

The following document reports a sample financial statements file from BvD (web-based version):

LA SENI

BvD ID number	FR32876106900033	**Location**	PARIS (FR)
Official number	328761069-00033	**Date of incorporation**	01/1984
Publicly quoted	No	**Ultimate owner**	This company is a Single location

Contact details

Address	172 RUE SAINT MAUR
	75011 PARIS
	FRANCE
Phone	+33 1 43574963
Fax	+33 1 43574058

Status & account information

Legal form	SARL	**Consolidation code**	U1
Legal status	Active	**Account date**	31/12/2009
Source	Coface Services	**Number of years**	10
BvD indep. indicator	U	**Account currency**	EUR

Size & main activity/industry

Op. revenue (Turnover)	2 mil EUR	**No of employees**	39
P/L for period (Net Income)	0 mil EUR	**No of rec. shareholders**	0
		No of rec. subsidiaries	0
Company category	Medium sized		
Main activity	General cleaning of buildings		

Industry / Activities

Trade description (original language)
Activités de nettoyage.

NAF Rev. 2 code(s)
Primary code :
8121Z - General cleaning of buildings

NACE Rev.2 code(s)
Primary code :
8121   - General cleaning of buildings

NAICS 2007 code(s) {derived from NACE Rev.2 codes}
Core code :
5617   - Services to Buildings and Dwellings
Primary code :
561720 - Janitorial Services
561790 - Other Services to Buildings and Dwellings

US SIC code(s) {derived from NACE Rev.2 codes}
Core code :
734   - Services to dwellings and other buildings
Primary code :
7349   - Building cleaning and maintenance services, not elsewhere classified

Balance sheet

	31/12/2009 th EUR 12 months Local GAAP	31/12/2008 th EUR 12 months Local GAAP	31/12/2007 th EUR 12 months Local GAAP	31/12/2006 th EUR 12 months Local GAAP	31/12/2005 th EUR 12 months Local GAAP	31/12/2004 th EUR 12 months Local GAAP	31/12/2003 th EUR 12 months Local GAAP	31/12/2002 th EUR 12 months Local GAAP	31/12/2001 th EUR 12 months Local GAAP
Assets									
Fixed assets	20	23	18	19	23	28	27	31	29
- Intangible fixed assets	8	10	6	6	6	6	6	6	7
- Tangible fixed assets	1	1	0	2	4	8	8	11	9
- Other fixed assets	11	12	12	11	13	14	13	14	13
Current assets	1,582	1,449	1,277	1,151	1,040	911	858	806	754
- Stock	11	15	10	11	13	13	11	12	10
- Debtors	334	324	290	275	259	234	204	204	211
- Other current assets	1,237	1,110	977	865	768	664	643	590	533
* Cash & cash equivalent	1,217	1,090	964	849	753	640	613	562	520
TOTAL ASSETS	1,602	1,472	1,295	1,170	1,063	939	885	837	783
Liabilities & Equity									
Shareholders funds	1,175	1,016	872	762	667	620	588	552	489
- Capital	20	20	20	20	20	20	20	20	20
- Other shareholders funds	1,155	996	852	742	647	600	568	532	469
Non-current liabilities	54	59	55	54	53	33	26	32	29
- Long term debt	0	0	0	0	0	0	0	0	0
- Other non-current liabilities	54	59	55	54	53	33	26	32	29
* Provisions	45	46	55	53	52	32	26	30	28
Current liabilities	373	396	368	354	343	286	272	252	265
- Loans	0	0	0	0	0	0	0	0	0
- Creditors	46	53	45	37	41	23	31	25	23
- Other current liabilities	327	343	323	317	302	263	241	227	242
TOTAL SHAREH. FUNDS & LIAB.	1,602	1,472	1,295	1,170	1,063	939	885	837	783
Memo lines									
Working capital	299	286	255	249	231	224	184	191	198
Net current assets	1,209	1,053	909	797	697	625	586	554	489
Enterprise value	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Number of employees	39	39	38	37	36	37	35	41	42

Profit & loss account

Unconsolidated	31/12/2009 th EUR 12 months Local GAAP	31/12/2008 th EUR 12 months Local GAAP	31/12/2007 th EUR 12 months Local GAAP	31/12/2006 th EUR 12 months Local GAAP	31/12/2005 th EUR 12 months Local GAAP	31/12/2004 th EUR 12 months Local GAAP	31/12/2003 th EUR 12 months Local GAAP	31/12/2002 th EUR 12 months Local GAAP	31/12/2001 th EUR 12 months Local GAAP
Operating revenue (Turnover)	1,724	1,696	1,604	1,515	1,433	1,329	1,191	1,147	1,100
Sales	1,668	1,636	1,562	1,472	1,394	1,296	1,151	1,114	1,054
Costs of goods sold	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Gross profit	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other operating expenses	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Operating P/L [=EBIT]	238	219	167	131	76	62	70	103	143
Financial revenue	0	0	0	0	0	0	0	0	0
Financial expenses	1	1	1	0	1	1	1	1	0
Financial P/L	-1	-1	-1	0	-1	-1	-1	-1	0
P/L before tax	237	218	166	131	75	61	69	102	143
Taxation	73	68	50	42	23	16	19	32	47
P/L after tax	164	150	116	89	52	45	50	70	96
Extr. and other revenue	6	0	1	18	11	5	3	5	7
Extr. and other expenses	11	6	8	12	7	10	10	4	16
Extr. and other P/L	-5	-6	-7	6	4	-5	-7	1	-9
P/L for period [=Net income]	159	144	109	95	56	40	43	71	87
Memo lines									
Export turnover	0	0	0	0	0	0	0	0	0
Material costs	43	39	44	41	41	42	39	34	42

The following is the list of companies in the dataset.

Target

#	Name	#	Name	#	Name	#	Name	#	Name
1	Aac Centso BV	36	Compagnie Des Salins Du Modi Et Du Salines De L'est	71	Gredus Limited	106	Northworld Limited	141	Ster Century (Uk) Limited
2	Aclm Limited	37	Compagnie Immobilier Services Group (Cis)	72	Groupe Moniteur	107	Ny Aeropace Limited	142	Stokemani
3	Aerud	38	Control Meters Regulation	73	Hertiag-Bank Utrecht Bv	108	No-Aire Limited	143	Svp
4	Aibel As	39	Coor Service Management Ab	74	Heipiong Behrer B.V.	109	Nvi Installation Ab	144	Teaching Personnel Limited
5	Akan Affelou Franchiseur	40	Cosy Environmental Ltd.	75	Hilkays Blinds Limited	110	Ogf	145	The Copyright Promotions Licensing Group
6	Aiplast	41	Delta Fluid Products Limited	76	Henaire D'or Sa	111	Osor	146	The Mill (Facility) Limited
7	All Cramp Nv	42	Denby Usa Limited	77	Hobbs Limited	112	Ovoid Limited	147	Tekhnein Services France
8	Alliance Medical Limited	43	Durranto Limited	78	Hss Hire Service Group Limited	113	Paltervary (Uk) Limited	148	Tradus Plc
9	Alms Consulting Group	44	Early Learning Centre Limited	79	Hydraum Limited	114	Park Resorts Limited	149	Tragus Holdings Limited
10	Anricmex Ab	45	Edinburgh Woolen Mill Limited	80	Iris Software Limited	115	Prm Pharmaceutical Services Limited	150	Transuren System Gmbh
11	Antler Limited	46	Elematic Oy Ab	81	Itho BV	116	Permobil Ab	151	Travelodge Hotels Limited
12	Apen Sa	47	Elokm	82	Jane Norman Limited	117	Peter Black Footwear & Accessories Limited	152	Tri Education Limited
13	Apollo Property Services Group Limited	48	Ekel Networks Corporation	83	Kru Management Systems Limited	118	Phadia Ab (Formerly Pharmacia Diagnostics Ab)	153	Tunstall Group Limited
14	Aviagen Limited	49	Empire Services Plc	84	Konrad Hornschuch Aktiengesellschaft	119	Phase Eight (Fashion & Designs) Limited	154	U-Pol Limited
15	Beck & Pollitzer Engineering Limited	50	Environmental Resources Management Limited	85	Kg1 (Bdi)	120	Pierre Foods Inc	155	United Biscuits (Uk) Limited
16	Bel'm Production	51	Eu Vetoca Sa	86	Kwik-Fit (Gb) Limited	121	Planmojen Norge As	156	Veason Oy
17	Berry Plastics Holding Corp	52	Euroflorist Sverige Ab	87	La Croissanterie (Sa)	122	Polypipe Limited	157	Vent Industrial Products Nv
18	Bmc Neos Limited	53	European Homes France	88	La Seni	123	Powakaddy International Limited	158	Walker Leisure (Uk) Limited
19	Boat International Media Limited	54	Eurotel Limited	89	Laboratoires Sebia	124	Precioo Technichor	159	Warner Howard Limited
20	Bonna Sabla	55	Everiopean	90	Legal Marketing Services Limited	125	Prime Life Limited	160	Wavin B.V.
21	Brunet	56	Fat Face Limited	91	M-Lolyoke Health Care Ab	126	Provimi	161	Wba Plc
22	Buffet Crampon	57	Fardua Sverige Ab	92	Maplin Electronics Ltd	127	Qm Group Limited	162	Westminster Health Care Limited
23	Bureau Van Dijk Electronic Publishing	58	Firth Rixson Limited	93	Marc Orran	128	Rmn Europe Limited (Formerly Rmn Goole Limited)	163	Whitworths Holdings Limited
24	Bushboard Washroom Systems Limited	59	Fishers Services Limited	94	Marken Limited	129	Robert Prettie & Co Limited		
25	Cabot Financial (Europe) Limited	60	Fitness First Clubs Limited	95	Mayfair Bingo Limited	130	Sam -		
26	Campden Publishing Limited	61	Fives Sa	96	Medica France	131	Seneco Sa		
27	Canary Wharf Group Plc	62	Fraikin Locamion	97	Mersine Hotels Group Limited	132	Securistyle Limited		
28	Care Principles Limited	63	Frank Thomas Limited	98	Mill House Inns (Trading) Limited	133	Sirona Dental Systems Gmbh		
29	Carrieres Du Hainaut	64	Gambro Ab	99	Movisa Envases Sa	134	South Staffordshire Water Plc		
30	Cavo Sante Animale	65	Gee	100	Moeller Gmbh	135	Southampton [...] Steam Packet Company		
31	Challenger International (33.06% Stake)	66	Generale De Protection Sas	101	Mono Consultants	136	Southern Cross/Lsc Limited		
32	Champeau	67	Get As (Formerly Upc Norge As)	102	Moody International Ltd	137	Sperling Index Limited		
33	Cinq A Sec France	68	Gloma (Uk) Limited	103	National Car Parks Limited	138	Stahlwerke Bochum Gmbh		
34	Clifford Thames Group Limited	69	Globalcollect	104	Neville Johnson Limited	139	Ste Picard Surplus		
35	Com Hem Ab	70	Goodfellow Cambridge Limited	105	Nightfreight (Gb) Limited	140	Steelite International Plc		

The following is the list of Private Equity firms and the funds sponsoring the 326 deals.

LBO1: PRIVATE EQUITY FIRM/FUND(S) (1/3)	
PRIVATE EQUITY HOUSE	**FUND(S)**
❖ 21 Centrale Partners SA	• 21 Developpement II
❖ 3i Group Plc	• 3i UK MBO Fund I
	• 3i UK MBO Fund II
	• UKIP I
	• 3i Eurofund II
	• 3i Eurofund III
❖ Aberdeen Asset Managers	• Murray Johnstone Private Acquisitions Partnership III, L.P.
❖ Accent Equity Partners AB	• Nordico Equity
❖ Activa Capital (n/a, 100.0%)	• Activa Capital Fund I
❖ Acuity Capital LLP	• Electra Club Co-Investment, Ltd.
❖ Advantage Capital	• Advantage Capital Partners 1
❖ Advent International Corporation	• Global Private Equity IV, L.P.
❖ Alliance Entreprendre SAS	• Capital Regions
❖ Alpha Group	• Alpha Private Equity Fund 2
	• Alpha Private Equity Fund 3
	• Alpha Private Equity Fund 4
❖ AlpInvest Partners N.V.	• Alpinvest
❖ Apax Partners LLP	• Apax ventures IV
	• APAX Europe V
❖ Astorg Partners SAS	• Astorg II FCPR
❖ AtriA Capital Partenaires	• AtriA Private Equity Fund FCPR
❖ August Equity LLP	• August Equity Partners, L.P.
❖ AXA Private Equity SA	• AXA Venture Fund IV
	• Axa Private Equity Fund II
❖ BancBoston Capital/BancBoston Ventures	• BancBoston Ventures
❖ BC Partners, Ltd.	• BC European Capital VI
❖ Bencis Capital Partners	• NeSBIC Buy-out Fund
❖ Beringea LLC	• Global Rights Fund II
❖ Bridgepoint Capital	• Bridgepoint Europe I (FKA: European Private Equity Fund I)
	• Bridgepoint Europe II (FKA: European Private Equity Fund II)
❖ Candover Investments PLC	• Candover 1997Fund
	• Candover 2001 Fund
	• Candover 2005 Fund
❖ CapMan Plc	• Finnventure Fund V
❖ Carlyle Group LLC, The	• Carlyle Europe Partners, L.P.
	• Carlyle Partners III, L.P.
	• Carlyle Europe Technology Partners
❖ Castle Harlan Inc	• Castle Harlan Partners IV
❖ CBPE Capital LLP	• Close Brothers Private Equity Fund VI
❖ Chequers Capital Partners SA	• Chequers Capital
❖ Cinven, Ltd.	• Cinven Fund, The
	• Second Cinven Fund, The
	• Third Cinven Fund, The

LBO1: PRIVATE EQUITY FIRM/FUND(S) (2/3)	
PRIVATE EQUITY HOUSE	**FUND(S)**
❖ CVC Capital Partners, Ltd.	• CVC European Equity Partners
	• CVC European Equity Partners II LP
	• CVC European Equity Partners III LP
❖ ECI Partners LLP	• ECI 7
❖ EPF Partners SA	• European Pre-Flotation Fund I (AKA : EPF I)
❖ EQT Fund management Limited	• EQT II
	• EQT III
	• EQT IV
❖ Equistone Partners Europe, Ltd.	• Barclays Private Equity France
	• Barclays Private Equity PVLP, L.P.
	• Barclays Private Equity European Fund
❖ EURAZEO SA	• Gazeo Ventures
❖ Exponent Private Equity LLP	• Exponent Private Equity Partners
❖ Fox Paine & Company LLC	• Fox Paine Capital Fund II, L.P.
❖ GCP Member Ltd	• Close Brothers Growth Capital Fund
❖ GIMV NV	• Halder Investments III, BV
	• Halder Investments IV-A
❖ Goldman, Sachs & Company	• Goldman Sachs Capital Partners 2000 (Fund IV)
	• GS Capital Partners V, L.P.
❖ Graphite Capital Management LLP	• F&C Buy Out Trust
	• Graphite Capital Partners V
❖ Great Hill Partners LLC	• Great Hill Equity Partners II, L.P.
❖ Gresham Private Equity	• Gresham Trust
	• Gresham III, L.P.
❖ Groupe Siparex SAS	• Siparex Nord I
❖ Henderson Global Investors, Ltd.	• Henderson European Partners I LP
❖ HgCapital	• MUST 3
❖ IK Investment Partners Limited	• Industry Kapital 2000 Fund
❖ Inflexion PLC	• Inflexion Private Equity Fund 2
❖ ISIS Equity Partners plc	• Friends Ivory & Sime 1998 LP
❖ Littlejohn & Company LLC	• Littlejohn & Co.
❖ Lyceum Capital Partners LLP	• West Private Equity Fund 2000
❖ Prime Technology Ventures	• Prime Technology Ventures II
❖ MBO Partenaires SAS	• MBO Capital Fund
❖ Milestone Capital Partners Limited	• European Acquisition Capital, L.P. II
❖ Montagu Private Equity LLP	• Montagu II
❖ Norddeutsche Private Equity GmbH	• Crescat Equity 1
❖ Nordic Capital	• Nordic Capital IV, L.P.
	• Nordic Capital II
❖ Northern Venture Managrs, Ltd.	• Northern 3 VCT
❖ Omnes Capital SA	• Credit Lyonnais LBO 1
❖ PAI Partners SAS	• PAI LBO Fund
	• PAI Europe III
❖ Panorama Capital	• J.P. Morgan Partners Global Investors Fund, L.P.
❖ Pechel Industries Partenaires	• Pechel Industries SCR

LBO1: PRIVATE EQUITY FIRM/FUND(S) (3/3)	
PRIVATE EQUITY HOUSE	**FUND(S)**
❖ Perfectis Private Equity SA	• Perfectis I FCPR
❖ Permira Advisers LLP	• Permira Europe III
❖ Phildrew Ventures_UBS Capital Partners	• Phildrew Ventures Fifth Fund
❖ Phoenix Equity Partners, Ltd.	• Phoenix Equity Partners III
❖ Quartus Gestion SAS	• Quartus Capital Partners I FCPR
❖ Rollins Specialty Group, Inc.	• Risk Capital Partners
❖ Royal Bank Equity Partners, Ltd. (RBPE, Ltd.)	• Royal Bank Equity Partners Limited
❖ Rutland Partners LLP	• Rutland Fund
❖ Sagard SAS	• Sagard I FCRP
❖ Segulah Advisor AB	• Segulah II
❖ Sentica Partners Oy	• Sentica Kasvurahasto II Ky
❖ Vestar Capital Partners Inc	• Vestar Capital Partners IV, L.P.
❖ Waterland Private Equity Investments BV (n/a, 100.0%)	• Waterland Private Equity Fund II BV
❖ Welsh, Carson, Anderson & Stowe	• Welsh, Carson, Anderson and Stowe VIII, L.P.

LBO2: PRIVATE EQUITY FIRM/FUND(S) (1/4)	
PRIVATE EQUITY HOUSE	**FUND(S)**
❖ 3i Group Plc	• 3i UK MBO Fund II
	• 3i Eurofund IV
	• 3i Eurofund III
	• 3i Eurofund V
❖ ABN AMRO Global Infrastructure Fund	• ABN AMRO Global Infrastructure Fund
❖ ABN AMRO Private Equity	• ABN AMRO Private Equity II, L.P.
❖ Acuity Capital LLP	• Acuity VCT 2 (FKA: Electra Kingsway VCT 2)
❖ Advent International Corporation	• Global Private Equity IV, L.P.
	• Advent International GPE V, LP
❖ Alinda Capital Partners LLC	• Alinda Infrastructure Fund I, L.P.
❖ Alpha Group	• Alpha Private Equity Fund 4
❖ AlpInvest Partners N.V.	• NIB Capital Private Equity N.V.
❖ Altor Equity Partners AB	• Altor Fund II
❖ Apax Partners LLP	• APAX France IV
	• APAX France V
	• APAX Europe VI
	• APAX Europe V
	• APAX Europe VII, L.P.
❖ Apollo Management LP	• Apollo Investment Fund V, L.P.
❖ Argos Soditic SA	• Euroknights IV
❖ Astorg Partners SAS	• Astorg III FCPR
	• Astorg IV FCPR

LBO2: PRIVATE EQUITY FIRM/FUND(S) (2/4)

PRIVATE EQUITY HOUSE	FUND(S)
❖ AtriA Capital Partenaires	• AtriA Private Equity Fund II FCPR • AtriA Private Equity Fund FCPR
❖ August Equity LLP	• August Equity Partners, L.P.
❖ AXA Private Equity SA	• AXA Expansion I • LBO funds • AXA LBO Fund III
❖ Azulis Capital	• Middle Market Fund III FCPR
❖ Bank of Scotland Corporate	• Uberior Equity, Ltd.
❖ BC Partners, Ltd.	• BC European Capital Partners V • BC European Capital VII • BC European Capital VIII
❖ Blackstone Group, L.P., The	• Blackstone Communications Partners I, L.P. • Blackstone Capital Partners IV, L.P. • Blackstone Capital Partners V, L.P.
❖ Bridgepoint Capital	• Bridgepoint Europe I • Bridgepoint Europe III • Bridgepoint Europe IV
❖ Bridgepoint Development Capital	• Hermes Private Equity Partners II • Hermes Private Equity Partners III
❖ Candover Investments PLC	• Candover 2005 Fund
❖ CapVest Ltd	• CapVest Equity Partners L.P.
❖ Carlyle Group LLC, The	• Carlyle Europe Technology Partners, L.P. • Carlyle Europe Partners, L.P. • Carlyle Europe Partners II, L.P.
❖ Change Capital Partners LLP	• Change Capital Partners Fund
❖ Charterhouse Capital Partners LLP	• Charterhouse Capital Partners VIII
❖ Cinven, Ltd.	• Fourth Cinven Fund, The
❖ CM CIC LBO Partners SAS	• FCPR CIC LBO Fund
❖ CVC Capital Partners, Ltd.	• CVC European Equity Partners III LP • CVC European Equity Partners IV LP
❖ Doughty Hanson & Co	• Doughty Hanson & Co. IV. L.P. • Doughty Hanson & Co. V. L.P.
❖ Duke Street LLP	• Duke Street Capital V
❖ ECM Equity Capital Management GmbH	• German Equity Partners III
❖ Endless LLP	• Endless Fund I
❖ Equistone Partners Europe, Ltd.	• Barclays Private Equity PVLP, L.P. • Barclays Private Equity European Fund • Equistone Partners Europe Fund II • Equistone Partners Europe Fund III
❖ Equita Management GmbH	• EQUITA GmbH & Co. Fonds 3 KGaA
❖ European Capital	• European Capital S.A. SICAR
❖ Exponent Private Equity LLP	• Exponent Private Equity Partners
❖ Fonds Partenaires Gestion; La Financiere Patrimoniale d Investissement (LFPI)	• Groupe LFPI
❖ GCP Member Ltd	• Close Brothers Growth Capital Fund
❖ GI Partners	• GI Partners Fund II
❖ Gilde Buy Out Partners BV	• Gilde Buyout Fund III

LBO2: PRIVATE EQUITY FIRM/FUND(S) (3/4)

PRIVATE EQUITY HOUSE	FUND(S)
❖ Gilde Investment management BV	• Gilde Participaties BV
❖ Goldman, Sachs & Company	• GS Capital Partners VI, L.P.
❖ Graphite Capital Management LLP	• Graphite Capital Partners VI
❖ Groupe Bruxelles Lambert SA	• Ergon Capital Partners
❖ Groupe Siparex SAS	• Siparex Midcap I FCPR
❖ Hellman & Friedman LLC	• Hellman & Friedman Capital Partners VI, L.P.
❖ Herkules Capital AS	• Herkules II
❖ HgCapital	• MUST 4
❖ Hutton Collins Partners LLP	• Hutton Collins Mezzanine Partners, L.P.
❖ IFE Mezzanine SARL	• IFE Fund II
❖ IK Investment Partners Limited	• Industri Kapital 2004 Fund
	• Industry Kapital 2000 Fund
❖ Inflexion PLC	• Inflexion 2006 Buyout Fund
❖ Infracapital Partners LP	• N/A
❖ ING Parcom Private Equity SAS	• FCPR ING Parcom Private Equity III
❖ Intermediate Capital Group PLC	• ICG Mezzanine Fund 2003
	• ICG European Fund 2006
❖ Kaupthing Bank hf.	• Alpha I Venture Capital Fund
❖ Key Capital Partners	• Key Capital Partners
❖ LGV Capital Ltd	• LGV 4 Private Equity Fund
❖ Lion Capital LLP	• Lion Capital Fund I, L.P.
❖ Litorina Capital Advisors AB	• Litorina Kapital III
❖ Macquarie Infrastructure and real Assets (Europe) Ltd	• Macquarie European Infrastructure Fund II
❖ Madison Dearborn Partners LLC	• Madison Dearborn Capital Partners IV, L.P.
❖ Mobeus Equity Partners LLP	• Matrix Enterprise Fund II (MEF II)
	• Matrix Income & Growth 4 VCT
❖ Montagu Private Equity LLP	• Montagu II
	• Montagu III
❖ Motion Equity Partners LLP	• Cognetas Fund
	• Cognetas Fund II
❖ Nexicap Partners SA	• Banque Populaire Proximite Sud Est 2004
❖ Nordic Capital	• Nordic Capital V
❖ Oak Hill Capital Management	• Oak Hill Capital Partners II, L.P.
❖ PAI Partners SAS	• PAI Europe IV
❖ Pamplona Capital Management LLP	• Pamplona Capital Partners I, L.P.
❖ Pechel Industries Partenaires SAS	• Pechel Industries II FCPR
❖ Perfectis Private Equity SA	• Perfectis II FCPR
❖ Permira Advisers LLP	• Permira Europe III
	• Permira UK Venture IV
❖ Phoenix Equity Partners, Ltd.	• Phoenix Equity Partners IV
	• Phoenix Equity Partners 2006 Fund
❖ Pragma Capital SA	• Pragma
❖ Qualium Investissement SAS	• CDC Capital III FCPR
❖ Rhone Capital LLC	• Rhone Partners II L.P.

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LBO2: PRIVATE EQUITY FIRM/FUND(S) (4/4)

PRIVATE EQUITY HOUSE	FUND(S)
❖ RJD Partners Ltd	• Royal London Private Equity (RLPE) • RJD Private Equity Fund II
❖ Royal Bank Equity Partners, Ltd. (RBPE, Ltd.)	• Royal Bank Equity Partners Limited
❖ Triton Partners	• Triton Fund II L.P.
❖ YFM Equity Partners, Ltd.	• Chandos Fund

Pre-buyout manipulation

The following matrix provides a simplified description of the possible cases for manipulation and implications in terms of effects on returns, differentiating the analysis for MBO and non-MBO deals.

		SBO (LBO 2)	
		MBO	Non-MBO
	MBO	Case highlighted by referee. Manipulation possible. The original Management team stays and accepts lower returns from the second deal. However second round PE discounts that in acquisition prices.	First round manipulation possible. Second round management team and PE sponsors anticipate and discount that. The discount in such a case Is likely to be higher than in the MBO/MBO case because the new management has incentives to minimize the acquisition price.
LBO 1	Non-MBO	The management appointed by the first round PE stays in the second round. This provides incentive to manipulate yielding however to potentially higher returns for the second round BO vs the first round BO.	Limited incentive to manipulation.

We collected data on the buyout type for both rounds from Zephyr, following the above reported classification strategy. Our sample distributes as follows:

		SBO (LBO 2)	
		MBO	Non-MBO
LBO 1	MBO	19	19
	Non-MBO	26	95

The total number of reported transactions is 159 because we have equivocal information on the buyout type for either the first or the second round deal for 4 companies.

At a first glance the fraction of cases that might be subject to bias due to pre-LBO manipulation is rather limited (19 MBO/MBO. Interestingly there are 26 cases of institutional buyouts followed by an MBO. In such a case the downward manipulation hypothesis would predict higher returns for the second buyout. This would produce an effect on comparative first and second round returns (low first round returns, high second round returns).

Building on these data we have run a set of regressions controlling for the type of first and second round buyout. As reported in table A3, results are unchanged both in magnitude and significance. We have also tried a clustered analysis estimating the performance for each individual subgroup without finding any significant difference.