Institutional Members: CEPR, NBER and Università Bocconi

WORKING PAPER SERIES

Secondary Buyouts

Stefano Bonini

Working Paper n. 441

This Version: May, 2012

IGIER – Università Bocconi, Via Guglielmo Röntgen 1, 20136 Milano –Italy
http://www.igier.unibocconi.it

Secondary Buyouts

Stefano Bonini*
Bocconi University
Via Roentgen 1, 20136, Milan, Italy
stefano.bonini@unibocconi.it
+39025836.3612

This draft: May 2012

JEL Codes: G01, G24, G34

Keywords: Secondary buyout, Private Equity, Financial Crisis

* * I thank Viral Acharya, David Yermack, Samuel Lee, Cem Demiroglu, Maurizio Dallocchio, Ludovic Phalippou and seminar participants at the NYU Pollack Center for Law & Business, the 2010 EFM Symposium on Entrepreneurial Finance and Venture Capital, and the 2011 FMA Conference for helpful comments and suggestions. I am indebted to Elio Battaglia, Martina Domeniconi and Andrea Gagliardi for their excellent research assistance. I thank S&P LCD and Mergermarket for providing the data. This paper was conceived while the author was a Visiting Associate Professor at NYU Stern. The ideas expressed in this paper are those of the author and do not necessarily reflect the position of the author's institutions. Any errors that remain are my own.

Abstract

In this paper, we show that secondary buyouts (SBOs) do not generate a significant improvement in the operating performance of target companies. We collect deal-level information on 2,911 buyouts between 1998 and 2008 and gather detailed firm-level financial and accounting information on 163 companies targeted by two consecutive leveraged acquisitions in the period 1998-2008. We show that first-round buyers generate a large and significant abnormal improvement in operating performance and efficiency. In contrast, SBO investors do not show statistically significant evidence of incremental contribution to the performance of target companies whereas they increasing leverage and squeeze-out. Returns to PE investors are significantly lower in secondary transactions and are mostly determined by large dividend payments. Market-wide SBO activity is significantly determined by favorable debt market conditions and PE reputation. Additionally, large and high-value deals are more likely to be exited through an SBO. We test a possible collusive motive for this class of deals, finding some support for this conjecture.

*"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, but in the six years leading up to the collapse of the buyout market, 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%. However, 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 temporary market conditions, collusion and investor-specific characteristics. Surprisingly, empirical evidence on this issue is almost non-existent. Previous research focuses on the US market, where data on private companies are not

[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.

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).

In this paper, we contribute to the literature in several ways. First, we provide previously unavailable evidence on the differential changes in operating performance in companies targeted by two consecutive LBOs. Secondly, we obtain our results tracking the operating performance of 163 companies[3] targeted by two consecutive buyouts, from one year before the first buyout to two years after the second buyout. To the best of our knowledge, this is the only study that directly adopts a panel data approach, which allows the direct measurement of operating efficiency changes between buyout rounds for the same company. We believe that this approach outperforms a typical peer sample approach, as it enables the isolation of the true differential effect of first-round buyers from second-round investors, thus providing cleaner and less equivocal inferences than alternative methodologies such as industry/size matching or propensity score matching.[4] Finally, we investigate alternative motivation for SBO deals specifically addressing credit market conditions and collusion that seem to have significantly shifted the investment logic of PE firms.

Our findings show that follow-up deals create little, if any, differential value. In particular, we robustly show that most of the latent value is extracted by the first-round investor and that limited or no operating value is created by second-round investors. Returns to PE investors are accordingly much greater for primary buyers and are mainly driven by the growth in operating performance, which translates to higher exit values. In contrast, secondary deal returns rely heavily on dividend payout and appear to present higher default risk. These results suggest that PE investors increasingly viewed 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 diversification strategy can be substantially stimulated by favorable market conditions and could potentially translate into collusive practices. In a set of probit regressions, we show that deal value and investment

[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.

[4]Wang (2011) focuses on the same topic but employs propensity score matching. Although the exercise is technically sound, the results remain questionable, as they cannot rule out the possibility that first-round deals did not experience a second round transaction, which raises endogeneity concerns.

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 of the existence of collusion in the PE industry provide support for the conjecture that the role of SBOs in diversification is facilitated by some form of "reciprocity": PE managers buy from each other in secondary deals to maximize their invested capital and sustain returns, thus arguably increasing the likelihood of further future fundraising.

The paper is organized as follows. The first section reviews the literature contributions on leveraged buyouts and discusses the implications for SBOs. Section 2 presents the data Section 3 introduces the methodology and documents the operating performance of SBO companies. Section 4 examines the investor performance. Section 5 explores alternative determinants of the SBO activity, and Section 6 concludes.

1 Buyouts and secondary buyout theoretical motivations

Only a few studies have addressed the theoretical and empirical characteristics of SBOs. Cumming et al. (2007) and Wright et al. (2009), using data collected by the Center for Management Buyout Research at Nottingham University, believe that secondary buyouts have become an important driver of buyout activity in terms of both the number of deals and the transaction value. Levis (2008) using data from the British Venture Capital Association and Price Waterhouse Coopers, shows that between 1998 and 2006, secondary buyouts accounted for 4% of exits and 10.8% of the total value divested by the private equity industry in the UK. Using data from Capital IQ, Stromberg (2007) shows that secondary buyouts represented 20% of global leveraged buyout (LBO) activity in terms of enterprise value transacted between 1970-2007 and 24% of exits over the same period. A stream of research has examined secondary buyouts as an exit route. Nikoskelainen and Wright (2007) document that secondary buyout exits in the UK have a median index-adjusted IRR of 2.0%, which is significantly lower than that

of IPOs and trade sales exit routes.

Despite the increasing dissemination of such transactions, no studies have been conducted on the effect of secondary buyouts on the operating performance of target companies. Wright et al. (2009) and Cumming et al. (2007) identify secondary buyouts as a research area that presents several unresolved issues. Both contributions emphasize that no empirical evidence is available on the effects of such transactions on target companies and that the economic rationale of secondary buyout is puzzling. In fact, SBOs have been explained (with limitations) by borrowing from broader existing theories on LBOs. However, it is doubtful that these theories can satisfactorily explain SBO activity. Following Palepu (1990) and Kaplan and Stromberg (2009) we identify three main theories motivating leveraged acquisitions: value creation, mispricing exploitation and value transfers from other players.

1.1 Value Creation

There is a large stream of literature investigating the effect of private equity investors on the performance of target companies (Cumming et al. (2007) and Kaplan and Stromberg (2009) provide comprehensive surveys). Several theoretical and empirical contributions have explored how leveraged buyout investors increase the performance of portfolio companies. A commonly shared view is that a PE investor generates returns by one or more of the following strategies: improving incentive alignment between managers and shareholders; reducing agency costs due to increased leverage, as predicted by Jensen's (1986) Free Cash Flow (FCF) hypothesis; and active monitoring of operations by investors, lenders and board members. As suggested by Jensen (1989a) and Jensen (1993), these three factors interact to provide companies undergoing an LBO with strong tools to improve operating cash flows and investment returns. High financial leverage prevents managers from investing in unprofitable or wasteful projects or seeking private benefits, whereas management equity-based compensation makes it suboptimal for managers to seek short-term increases in cash flows to pay down debt at the expense of long-term value. Further, active ownership by investors guarantees the effective monitoring of management decisions and strategies.

Several studies have attempted to provide empirical evidence of value creation in LBOs. Kaplan's (1989a) seminal contribution shows that PE-backed companies outperform their industry peers by approximately 20% in terms of return on assets and return on sales in the three years after the buyout. Lehn and Poulsen (1989) provide

evidence to support the FCF hypothesis and show that the likelihood of a company's going private is inversely related to its growth in sales and directly related to the level of undistributed cash flows. Muscarella and Vetsuypens (1990) find that targets of reverse LBOs experience a significant increase in operating productivity and margins, resulting from restructuring activities. Their results are confirmed by Smith (1990), who shows that improvements are noteworthy because they are not generated through substantial employee layoffs or cuts in R&D, maintenance or advertising expenses. Similarly, Bull (1989) finds an increase of operating productivity and higher rates of new-product development for PE-backed companies. Lichtenberg and Siegel (1990) observe that plant productivity, measured as the total factor productivity of LBO targets, increases from 2.0% above the industry average in the pre-buyout period to 8.3% following the buyout. Similarly, Harris et al. (2005) compare the plant productivity of targets of UK MBOs with the productivity of comparable firms. PE-backed companies show a substantial increase in productivity after the buyout and significant outperformance relative to comparable firms. Several studies have focused on the most recent wave of buyout transactions. Desbieres and Schatt (2002), using a French sample of MBOs, observe a significant decrease in return on equity, return on investment and margin ratios in the years following the buyout. Acharya et al. (2012) provide evidence for UK transactions, showing a significant abnormal increase in EBITDA margins compared to industry peers as a result of active monitoring by buyout professionals and improved corporate governance. However, Guo et al. (2011), in a follow-up to Kaplan's (1989a) study, show that median operating performance by US PE-backed companies is not significantly different from the performance of benchmark firms matched on industry and pre-buyout characteristics.

1.1.1 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, 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.[5] In this paper, we test these conjectures providing previously unavailable cross-sectional evidence on value creation in SBOs.

1.2 Mispricing

Private equity investors are sophisticated agents that may be able to detect temporary market anomalies. In such a case, profitable investment opportunities may stem from buying targets low and selling them high, exploiting the expansion of sector valuation multiples accompanied with high leverage to multiply returns to equity after paying down debt commitments with cash flows generated by the target operations. Guo et al. (2011) show that industry- or market-related changes in multiples account on average for 12.0% of the returns on the capital invested in the buyout. Phalippou and Zollo (2005) show that private equity funds' performance covaries positively with market and business cycles, suggesting that a substantial share of returns is due to market conditions. Following an efficient markets argument, it is difficult to expect this strategy to be effective for second-round buyouts if they are not accompanied with some degree of operational improvement. However, as suggested in Kaplan and Stromberg (2009), private equity might benefit from market frictions that cause a segmentation of equity and debt markets, which leads to a mispricing of debt markets relative to equity markets. Enhanced access to cheap debt relative to costly equity allows PE investors to exploit arbitrage opportunities and generate abnormal returns by increasing leverage ratios.

Mispricing can also occur if PE investors can buy the target at a discount to fair value by exploiting information asymmetry between pre-buyout investors and managers

[5] This can be the case of "forced exits " due to fund constraints such as the end of the life of the fund.

involved in the buyout, in essence transferring some of this value from existing shareholders to acquirers. For example, Bargeron et al. (2007) find that, controlling for other factors, public target shareholders receive a 63% higher premium from public bidders compared to private equity acquirers. However, such evidence may also be explained by superior negotiating abilities by PE investors or market timing, as discussed by Kaplan and Stromberg (2009).

1.2.1 Mispricing 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 (2011), 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 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 Collusion

Private equity funds are generally set-up as closed-end structures with a finite investment and, more importantly, divestment horizon.[6] Additionally, they are repeated players in the market who 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 collude 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 similar fashion. SBOs are a natural testing ground because if a collusive practice exists, we should observe funds with higher reputation and a multi-fund history to swap companies between each other more frequently than younger and less reputable funds. Additionally, transaction values should be higher and more expensive. Research on collusive practices by PE funds has essentially focused on consortium bidding in LBOs, a different type of collusive practice where PE funds team up in deals (especially larger ones) to, allegedly, reduce competitive auctioning that would push the price up. Officer et al. (2010) find support for the collusion hypothesis, whereas Boone and Mulherin (2011) do not find conclusive evidence on the existence of a collusion-driven explanation for consortium formation. Their 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 collusion 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 Sousa (2011) and Wang (2011), whose results are unfortunately inconclusive.

[6] See: Bonini (2012)

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 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, we reject the hypothesis that tax savings are a significant differential factor in explaining the impressive 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, Denmark, 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) 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[7] 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. We will refer to this sub sample as the restricted 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 from publicly traded firms in the same country, industry and year. We perform industry matching by selecting comparable firms 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.

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

[7] The countries included in the final sample are: Belgium, Denmark, Finland, France, Germany, Sweden, Switzerland, Netherlands, Norway, Spain, United Kingdom.

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.

Table 2 restricts the analysis to the 163 companies for which we have detailed financial and accounting data. Panel A reports deal-level figures.

Multiples and debt funding figures are closely aligned with those in the global sample. Although deal values are approximately 18% larger both on average and in terms of median values, deal durations are approximately 6 months shorter on average. Panel B reports summary statistics for 8 firm-level financial items in the first LBO. Figures suggest that PEs target relatively small companies (although the sample shows a non-negligible skewness toward larger deals) with an average turnover of 189 mil/USD and a median of 46.2. Companies show average and median EBITDA/Sales ratios well above 10% and a relatively low level of debt, rendering them ideal targets for a PE investor.

3 The operating performance of target companies

3.1 Methodology

We assess the operating performance of the target companies over the investment period, according to a set of different measures:

1) Operating Margin Ratios

- EBIT / S = Earnings before Interest and Taxes / Sales

- EBITDA / S = Earnings before Interest, Taxes, Depreciation, and Amortization / Sales

2) Turnover Ratios

- S/EA = Sales / Economic Assets

3) Return on Investment Ratios

- EBIT / EA = Earnings before Interest and Taxes / Economic Assets
- EBITDA / EA = Earnings before Interest,Taxes, Depreciation, and Amortization / Economic Assets[8]

4) Return on Equity Ratios

- NI / E = Income before Extraordinary Items / Total Shareholders' Funds
- CFO / E = Cash Flows from Operations[9] / Total Shareholders' Funds

5) Liquidity Ratios

- CA / CL = Current Assets / Current Liabilities
- CASH / CL = Cash and Cash Equivalents / Current Liabilities

6) Capital Structure Ratio

- FD / EA = Financial Debt / Economic Assets
- FD / EBITDA = Financial Debt / Earnings Before Interest, Taxes, Depreciation, and Amortization

[8]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

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

These indicators return a comprehensive view of the effects of buyouts on several areas of the targets' operating performance. For each of these measures, we develop two alternative specifications to check 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

$$Y_{i,s} = (x_i - m_s) \tag{1}$$

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:

$$\Delta\%Y_{is} = (\Delta\%x_i - \Delta\%m_s) \tag{2}$$

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

$$W_{is} = \frac{(x_i - m_s)}{\sigma_s} \tag{3}$$

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:

$$\Delta\%W_{is} = \frac{(\Delta\%x_i - \Delta\%m_s)}{\sigma_{\Delta\%s}} \tag{4}$$

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

INSERT FIGURE 1 HERE

In the following paragraphs we analyze each of these metrics individually.

3.2.1 Operating Margins Ratios

Table 3 shows results for two alternative measures of operating margin performance. 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.

INSERT TABLE 3 HERE

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 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, reported in Table 4, 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.

INSERT TABLE 4 HERE

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 is consistent with the previous conclusion that most of the incremental growth is spurred by the first-round buyer.

3.2.3 Return on Investment Ratios

Table 5 shows that 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 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.

INSERT TABLE 5 HERE

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

Table 6 presents results for measures of equity performance. 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),[10] although previous analysis on operating performance and return on investment suggests so.

INSERT TABLE 6 HERE

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

Table 7 indicates that 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

[10] 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.

acid ratio (Cash/CL).

INSERT TABLE 7 HERE

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. 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 their target companies, most likely to support a heavier financial structure and increase returns.

Whereas the changes in the current ratio are above the industry average in both absolute and industry volatility-adjusted terms, the acid tests show that the first-round buyer generates a significant amount of extra cash, whereas the second-round buyer do 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.

In Table 8, we report results for the Capital Structure ratios defined in Section 3.1

INSERT TABLE 8 HERE

The 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.

4 Investor performance

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 investors' performance. 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 first- and second-round returns to private equity investors and by investigating default rates.

4.1 Returns

The most common approach to estimating returns to investors is computing the project's IRR. However, both academics (Phalippou, 2008) and practitioners (McKinsey, 2004) warned against the use of standard IRR, as its multiple drawbacks are likely to produce biased estimates of returns. In particular, two commonly accepted caveats concern the treatment of interim dividend reinvestment and the reliability of pooled data. Phalippou (2008) proposes the adoption of a modified IRR methodology that explicitly addresses these issues. Following his approach, we compute returns as follows:

$$MIRR = \sqrt[n]{\frac{Cash\_Flows}{Outlay}} - 1 \tag{5}$$

where:

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

$Outlay$= All equity investments[11] 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:

- dividends and distributed reserves capitalized at a reinvestment rate equal to a reasonable hurdle rate. Phalippou (2008) suggests 8% to be an acceptable median value for the market.
- Exit proceeds net of the Net Financial Position at the exit date

Since our measurement is subject to a subjective adjustment due to the hurdle rate choice and to potential missing data on additional disbursement to investors, we compute two separate MIRR measures:

- Equity MIRR that incorporates interim cash flows

[11] All equity figures are adjusted by outstanding shareholder loans (if any).

- Enterprise Value MIRR that doesn't incorporate interim cash flows and includes only entry and exit values without adjusting for the Net Financial position at entry and exit.

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 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 and Bloomberg, minus 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 and are pro-rated for the investor's equity stake. The tests are run on pairs of first- and second-round buyouts on the same company.

Table 9 reports the results of a set of difference tests.

INSERT TABLE 9 HERE

The limited growth in operating performance has a significant effect in returns to investors in terms of both Equity and EV MIRR. The differences are significant for means and medians well above the 1% level for all measures, with the exception of the difference in equity returns between the full set of first-round returns and the subset of actual exits. However, this lack of significance cannot be interpreted as a signal of homogeneity between the two rounds of investment, as the structure of returns differs substantially between the two deals. The bottom part of panel A shows that the contribution of interim cash flows to the overall equity return grows by almost 150% on the whole sample and by a staggering 400% when comparing first-round deals with actual exits. This evidence indicates that investors in SBO deals rely more heavily on cash disbursements to build their returns. Figures computed at the enterprise value level support this interpretation, showing that first-round returns are consistently and

significantly higher than those recorded in secondary transactions. In particular, first-round EVs are 2.5 times greater on average and twice as large in terms of medians when realized exits are considered. The difference becomes significantly more pronounced when unrealized exits are included, which, at the time of the analysis, showed negative returns. The negative sign of unrealized exits may appear at odds with the positive mean and median values of the Equity MIRR for the same subsample. However, the result is not surprising because the methodology of calculating the EV MIRR does not incorporate interim cash flows into the computation. This reinforces the view that returns for second-round deals are largely driven by interim payouts to investors, which do not generate an increase in enterprise value, rather than by operating performance improvement, which would translate in a measurable increase in EV. 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 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 improves marginally under second-round PE ownership. Accounting returns to investors are insignificantly different from those of the peer group. Equity returns from a PE investor's perspective are positive but significantly lower and, more importantly, largely driven by interim cash flows. Debt levels increase, and there is evidence of liquidity squeeze-out under a second-round PE owner. 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 Mispricing

SBO transactions may be a rational response to relative mispricing in debt and equity markets that allow outperforming 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 10 HERE

The results reported in Table 10 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 Sousa (2011), 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, appearing to suggest 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 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 of this 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. 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 Collusion

A complete and conclusive test of this hypothesis is extremely hard to devise given the patchy nature of transaction data availability and the existence of potentially unobservable factors. However, given that collusion can in principle be a powerful driver of buyout activity, we try to provide some evidence on both our 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.

Table 11 reports the frequency of transactions where the seller is a company ranked as a top syndicate, according to the classification developed in the previous paragraph, and the buyer is either a Top or non-Top syndicate.

INSERT TABLE 11 HERE

In Panel A, we note that the best funds sell more often to junior funds than to their peers, whereas the opposite is true for less reputable funds, which 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 around 50% both in the global sample and the restricted sample. This pattern can signal collusive behavior, as top funds are more likely to have a close and established relationship that can allow for some deal management. 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 12 are fairly aligned for both the global and the restricted sample and provide some support to our conjecture.

INSERT TABLE 12 HERE

We notice larger multiples and deal characteristics for potentially collusive deals, even though significance of the means is weak and the K-sample non-parametric median test is significant only for the EBIT multiple of the global sample. This analysis is certainly not sufficient to be considered proof of the existence of collusive cross-selling in the private equity industry, but it does provide an intriguing clue that would certainly be worth a more focused analysis.

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 (Jensen, 1986; Kaplan, 1989a; Kaplan and Stromberg, 2009); ii) mispricing in the debt and equity markets (Phalippou and Zollo, 2005; Kaplan and Stromberg, 2009, Guo et al., 2011); iii) value transfers from employees and the government (Kaplan, 1989b; Davis et al. 2008; Kaplan and Stromberg, 2009); and iv) collusion (Officer et al. 2010; Mulherin, 2011, Wang, 2011). 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 from Mergermarket and S&P LCD a sample of 2,911 European LBO transactions between 1998-2008 that have been divested either through an SBO or a trade sale and for which we have information on at least one of the following deal-level items: revenue, EBIT, the EBITDA transaction multiple, the total absolute deal consideration, the total debt funding, or months held in the portfolio of the initial PE buyer. From this initial sample, we extract 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. However, there is a structural change in the dynamic of returns to PE investors between the two rounds: whereas first-round returns are mainly generated by higher exit values, which are largely determined by an increase in operating performance, second-round deal returns rely heavily on interim cash flows. This suggests that these deals are more sensitive to deterioration in market conditions because if cash flows reduce and exit values drop, deals can generate negative enterprise values. This conjecture is supported by the figures of estimated returns on unrealized second-round deals that are significantly negative and exhibit a positive number of actual and expected defaults. These results allow the rejection of the hypothesis that operating value creation can be the main driver of an SBO. Looking at the 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 collusion 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. A collusive practice 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, albeit certainly not conclusive, support this view by showing that highly ranked funds significantly transact more between themselves at higher multiples and higher deal values.

Our results 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[12], it is unclear what motivates debt providers

[12] As measured by the current level of the S&P/LSTA Leveraged Loan Index and the number of projected corporate defaults in the next three years by S&P LCD.

in entering and fuelling this family of deals. We intend to answer this question in future research.

References

Acharya V., Hahn M. Kehoe C.(2012), "Corporate Governance and Value Creation: Evidence from Private Equity", The Review of Financial Studies, forthcoming

Barber B., Lyon J. (1996), "Detecting Abnormal Operating Performance: The Empirical Power and Specification of Test-Statistics", Journal of Financial Economics, 41:359-399

Bargeron L., Schlingemann F., Stulz R., Zutter C. (2008), "Why do private acquirers pay so little compared to public acquirers?", Journal of Financial Economics, 89(3):375-390

Bonini S. (2011), "The development of Venture Capital", in "Handbook of Venture Capital and Private Equity", D. Cumming ed., Oxford University Press

Boone, A., Mulherin, H., (2011). "Do private equity consortiums facilitate collusion in takeover bidding?" Journal of Corporate Finance, 17(5), 1475–1495

Bull I. (1989). "Financial Performance of Leveraged buyouts: an Empirical Analysis.", Journal of Business Venturing, 4(4): 263-279.

Cumming D., D. Siegel and M. Wright (2007), "Private Equity, Leveraged Buyouts and Governance", Journal of Corporate Finance, 13 (4): 439–460

Davis S., Haltiwanger J., Jarmin R., Lerner J., Miranda J., (2008), "Private Equity and Employment." U.S. Census Bureau Center for Economic Studies Paper CES-WP-08-07.

Demiroglu C., James C. (2010), "The role of private equity group reputation in buyout financing", Journal of Financial Economics, May, 96(2), 306-330.

Desbrieres P., Schatt A. (2002),"The Impacts of LBOs on the Performance of Acquired Firms:The French Case", Journal of Business Finance & Accounting, 29(5):695-729

Guo S., Hotchkiss E., Song W.(2011), " Do Buyouts (Still) Create Value?", Journal of Finance, 66 (2),479–517.

Harris R., Siegel D., Wright M. (2005),"Assessing the Impact of Management Buyouts on Economic Efficiency: Plant-Level Evidence from the United Kingdom", The Review of Economics and Statistics,87(1):148-153

Jensen M. (1986), "Agency Cost Of Free Cash Flow, Corporate Finance, and Takeovers." American Economic Review, 76(2): 323-329

Jensen M. (1989), "Eclipse of the public corporation", Harvard Business Review, 67(5):61-74.

Jensen M. (1993), "The modern industrial revolution: exit and the failure of internal control systems", Journal of Finance, 48(3):831–880

Kaplan S. (1989a), "The Effects of Management Buyouts on Operating Performance and Value." Journal of Financial Economics, 24(2):217-254.

Kaplan S. (1989b), "Management buyouts: Evidence on taxes as a source of value", Journal of Finance, 44(3):611-632

Kaplan S., Stromberg P. (2009), "Leveraged buyouts and private equity", Journal of economic perspectives, 23(1): 121-126

Lehn K., Poulsen A. (1989),"Free cash flow and stockholder gains in going private transactions", Journal of Finance, 44(3):771-787

Leslie P., Oyer P. (2008). "Managerial Incentives and Value Creation: Evidence from Private Equity", NBER Working Papers 14331, National Bureau of Economic Research, Inc.

Levis M. (2008),"The London markets and private equity backed IPOs", Report prepared for The British Private Equity and Venture Capital Association (BVCA) and London Stock Exchange

Lichtenberg F., Siegel D., (1990). "The effects of leveraged buyouts on productivity and related aspects of firm behavior", Journal of Financial Economics, 27(1):165-194

Mc Kinsey (2004) "Internal rate of return: a cautionary tale", McKinsey Quarterly, August.

Muscarella C., Vetsuypens M. (1990). "Efficiency and Organizational Structure: A Study of Reverse LBOs.", Journal of Finance, 45(5): 1389-1413.

Nikoskelainen E., Wright M., (2007), "The impact of corporate governance mechanisms on value increase in leveraged buyouts", Journal of Corporate Finance, 13(4): 511-537

Officer, M.S., Ozbas, O., Sensoy, B.A. (2010) "Club deals in leveraged buyouts" Journal of Financial Economics, 98 (2), pp. 214-240.

Palepu Krishna G., 1990, "Consequences of leveraged buyouts", Journal of Financial Economics, 27(2): 247-262.

Penman S. (2007), "Financial statement analysis and security valuation", Boston, Mass., McGrawhill, 3rd Ed.

Phalippou L (2008), "The Hazards of Using IRR to Measure Performance: The Case of Private Equity", Journal of Performance Measurement", Fall., 12 (4).

Phalippou L., Zollo M., "What Drives Private Equity Fund Performance?", Working Papers - Financial Institutions Center at The Wharton School, Vol. 2005

Phan P., Hill C. (1995), "Organizational Restructuring and Economic Performance in Leveraged Buyouts: An Ex Post Study", The Academy of Management Journal,38(3):704-739

Renneboog, L.; Simons, T.; Wright, M.(2007)., "Why do firms go private in the UK?", Journal of Corporate Finance, 13(4):591-628

Shivdasani, A. and Wang, Y. (2011), "Did Structured Credit Fuel the LBO Boom?", Journal of Finance, 66(8), 1291-1328

Smith A. (1990), "Corporate ownership structure and performance : The case of management buyouts", Journal of Financial Economics, 27(1):143-164

Sorenson O., Stuart T. (2001). "Syndication Networks and the Spatial Distribution of Venture Capital Investments.", The American Journal of Sociology, 106(6):1546-1588.

Stromberg P. (2007), "The new demography of Private Equity", Swedish Institute for Financial Research, Stockholm School of Economics Working Paper

UDC-United District Court of Massachusetts Case1:07-cv-12388-EFH, 2011

Wright M., J. Gilligan and K. Amess (2009), "The economic impact of private equity: what we know and what we would like to know", Venture Capital ,11(1):1-21

Figure 1

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)

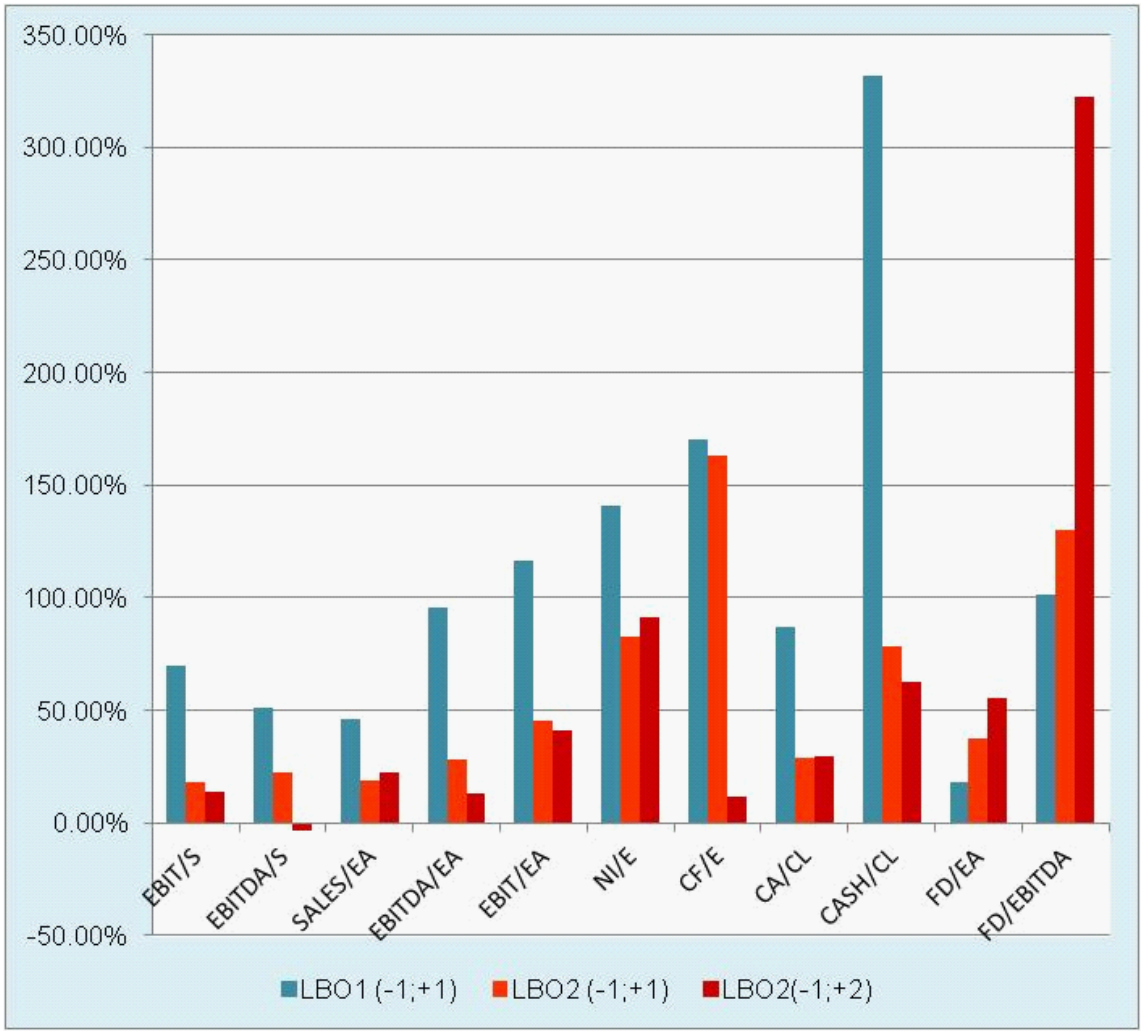

Table 1

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. Difference in means and medians significance 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.

	SBO				Other exits				Total			
	Mean	St. Dev	Median	Obs.	Mean	St. Dev	Median	Obs.	Mean	St. Dev	Median	Obs.
Number of deals				1,107				1,804				2,911
Revenue Multiple	3.99	(21.46)	1.13*	545	26.85	(534.80)	1.33	820	17.72	(414.78)	1.26	1365
EBIT Multiple	240.43	(2,990.74)	14.54	297	138.49	(1,411.31)	14.34	427	180.39	(2,200.85)	14.34	725
EBITDA Multiple	72.27**	(586.63)	10.00**	319	23.47	(68.18)	10.73	459	43.48	(379.68)	10.42	778
Deal Value	360.65***	(596.42)	153.00***	741	227.38	(472.28)	76.00	1257	276.80	(525.84)	95.50	1998
Total Debt Funding	386.97	(571.03)	226.67	165	384.71	(474.31)	202.08	8	386.87	(565.74)	222.16	173
Months Held	43.30***	(21.17)	39.00***	505	38.56	(21.85)	35.00	617	40.65	(21.65)	37.00	1122

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 buyout year.

PANEL A - Deal-level statistics

	Mean	St. Dev	Median	Obs.
Revenue Multiple	3.7	16.1	1.4	121
EBIT Multiple	36.4	116.0	13.4	85
EBITDA Multiple	26.5	99.1	10.0	86
Deal Value	424.2	589.2	189.0	141
Total Debt Funding	354.0	448.9	202.1	40
Months Held	36.7	17.4	34.0	93

PANEL B Firm-level statistics

	Mean	Sta. Dev	Median	Obs.
Total assets	184.3	396.46	33.7	163
Sales	188.7	386.0	46.2	163
P/L after tax	9.3	22.6	2.6	163
Cash flow	12.3	25.9	2.6	163
EBIT	14.0	28.0	4.4	163
EBITDA	18.8	33.5	5.9	163
Loans	20.4	49.3	1.6	163
Financial Debt	51.3	107.2	5.4	163

Table 3

Operating margins

This table reports results of the target companies operating margins measured by EBITDA over Sales and EBIT over Sales in five different points in time and changes in during the two buy-outs: LBO1-1 indicates one year before the first buyout; LBO+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 buyout; LBO2+2 indicates two years after the second buy out; 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 results for absolute values where: Abnormal Performance is the difference between the performance indicator of each company minus the industry median, as in Barber and Lyon (1996), and Sector Adjusted is the difference between the performance indicator of each company minus the industry median, divided by the industry median standard, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Panel B reports results for Performance changes metrics where: Abnormal %Change is the difference between the percentage change in absolute Abnormal Performance minus the percentage change in the industry median; Sector-volatility Adjusted % Change is 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) and a non-parametric Wilcoxon signed-rank test (Z). Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

PANEL A

	EBIT/S					EBITDA/S				
Abnormal Performance	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	163	163	163	163	152	159	159	159	158	146
Y (mean)	2.63%	4.89%	4.48%	4.11%	2.24%	3.01%	4.55%	3.66%	4.37%	1.33%
t	2.44***	5.53***	4.54***	4.00***	1.12	2.43***	4.74***	3.04***	3.92***	0.65
Z	4.06***	5.54***	5.99***	5.09***	4.65***	3.61***	4.89***	3.39***	5.07***	3.37***
Sector-volatility adjusted	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	163	163	163	163	152	159	159	159	158	146
W (mean)	19.68%	42.97%	37.96%	46.27%	39.56%	26.60%	45.58%	35.81%	47.26%	25.67%
t	1.61**	3.93***	2.85***	4.17***	1.88*	1.94**	4.84***	2.98***	4.28***	1.60*
Z	3.26***	5.14***	5.03***	5.14***	4.36***	3.27***	5.11***	4.98***	5.06***	3.39***

PANEL B - CHANGES IN RATIOS

	EBIT/S			EBITDA/S		
Abnormal % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	163	163	152	159	159	146
D%Y (mean)	69.69%	18.19%	13.60%	50.96%	22.73%	-3.03%
t	5.86***	1.08	0.30	3.39***	2.34**	-0.14
Z	6.09***	2.52**	3.51***	4.42***	3.78***	2.73***
Sector-volatility adjusted % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	163	163	152	159	159	146
D%W (mean)	48.37%	5.29%	38.15%	51.27%	35.60%	29.48%
t	3.16***	0.28	1.78*	2.43***	2.34**	1.38
Z	5.16***	2.78***	3.56***	2.83***	3.19***	3.06***

Table 4

Turnover

This table reports results of the target companies Turnover measured by Sales over Assets in five different points in time and changes in during the two buy-outs: LBO1-1 indicates one year before the first buyout; LBO+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 buyout; LBO2+2 indicates two years after the second buy out; 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 results for absolute values where: Abnormal Performance is the difference between the performance indicator of each company minus the industry median, as in Barber and Lyon (1996), and Sector Adjusted is the difference between the performance indicator of each company minus the industry median, divided by the industry median standard, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Panel B reports results for Performance changes metrics where: Abnormal %Change is the difference between the percentage change in absolute Abnormal Performance minus the percentage change in the industry median; Sector-volatility Adjusted % Change is 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) and a non-parametric Wilcoxon signed-rank test (Z). Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

PANEL A

	SALES/EA				
Abnormal Performance	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	152	162	156	156	138
Y (mean)	164.78%	184.71%	142.77%	143.31%	159.06%
t	4.85***	4.13***	4.26***	3.91***	2.16**
Z	3.67***	3.97***	3.51***	3.61***	2.83***
Sector-volatility adjusted	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	152	156	155	155	134
W (mean)	84.20%	78.76%	58.14%	57.53%	63.44%
t	3.26***	3.32***	3.23***	2.76***	2.87***
Z	2.24**	2.88***	2.26**	2.28***	2.46**

PANEL B

	SALES/EA		
Abnormal % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	152	156	138
D%Y (mean)	46.04%	18.68%	22.13%
t	1.96**	2.06**	1.80*
Z	1.15	-0.11	-0.08
Sector-volatility adjusted % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	152	155	134
D%W (mean)	99.78%	-2.88%	58.83%
t	2.21**	-0.05	1.18
Z	1.32	-0.05	0.10

Table 5

Return on Investment

This table reports results of the target companies return on investments measured by EBITDA over Assets and EBIT over Assets in five different points in time and changes in during the two buy-outs: LBO1-1 indicates one year before the first buyout; LBO+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 buyout; LBO2+2 indicates two years after the second buy out; 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 results for absolute values where: Abnormal Performance is the difference between the performance indicator of each company minus the industry median, as in Barber and Lyon (1996), and Sector Adjusted is the difference between the performance indicator of each company minus the industry median, divided by the industry median standard, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Panel B reports results for Performance changes metrics where: Abnormal %Change is the difference between the percentage change in absolute Abnormal Performance minus the percentage change in the industry median; Sector-volatility Adjusted % Change is 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) and a non-parametric Wilcoxon signed-rank test (Z). Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

PANEL A

	EBITDA/EA					EBIT/EA				
Abnormal Performance	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	149	153	152	152	142	154	157	156	157	146
Y (mean)	21.46%	43.63%	45.27%	18.52%	9.91%	20.16%	41.31%	41.95%	19.98%	11.97%
t	6.07***	1.89**	1.94**	6.82***	3.76***	5.81***	2.10**	2.12**	5.25***	4.23***
Z	5.87***	6.71***	7.21***	6.34***	4.02***	6.24***	7.44***	7.45***	6.83***	5.07***
Sector-volatility adjusted	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	147	151	150	150	138	152	155	154	155	142
W (mean)	62.57%	72.22%	63.87%	66.01%	57.06%	127.81%	186.97%	180.30%	173.30%	78.02%
t	4.13***	5.26***	5.05***	4.75***	3.65***	5.32***	6.19***	5.17***	5.16***	3.78***
Z	4.43***	5.33***	5.21***	5.11***	3.76***	6.44***	7.52***	7.30***	7.31***	4.40***

PANEL B

	EBITDA/EA			EBIT/EA		
Abnormal % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	149	153	152	154	153	146
D%Y (mean)	95.90%	28.43%	13.41%	116.73%	45.72%	40.87%
t	2.75***	1.62*	0.66	3.02***	1.47*	0.67
Z	4.05***	1.57	1.81*	4.45***	1.01	2.31**
Sector-Volatility adjusted % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	147	150	138	152	154	142
D%W	57.78%	22.94%	36.33%	108.63%	72.12%	96.41%
t	2.21**	1.49	2.31**	3.63***	2.61***	1.56
Z	3.28***	0.81	1.99**	3.85***	1.73*	2.45**

Table 6

Return on Equity

This table reports results of the target companies level measures of operating performance measured by Net Income over Equity and Cash Flow over Equity in five different points in time and changes in during the two buy-outs: LBO1-1 indicates one year before the first buyout; LBO+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 buyout; LBO2+2 indicates two years after the second buy out; 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 results for absolute values where: Abnormal Performance is the difference between the performance indicator of each company minus the industry median, as in Barber and Lyon (1996), and Sector Adjusted is the difference between the performance indicator of each company minus the industry median, divided by the industry median standard, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Panel B reports results for Performance changes metrics where: Abnormal %Change is the difference between the percentage change in absolute Abnormal Performance minus the percentage change in the industry median; Sector-volatility Adjusted % Change is 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) and a non-parametric Wilcoxon signed-rank test (Z). Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

PANEL A

	NI/E					CF/E				
Abnormal Performance	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	157	158	158	161	156	140	155	156	154	142
Y (mean)	21.50%	28.37%	28.34%	36.94%	26.35%	36.66%	34.00%	171.82%	49.73%	44.82%
t	6.78***	3.74***	3.59***	5.44***	2.64***	1.41*	3.21***	1.39*	4.43**	2.38**
Z	7.34***	7.67***	7.75***	7.82***	6.19***	1.72*	2.99***	4.82***	4.84***	2.52**
Sector-Volatility Adjusted	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	155	156	156	159	143	135	147	147	149	137
W (mean)	75.98%	73.92%	109.71%	165.99%	105.58%	-24.81%	146.85%	101.97%	163.58%	-120.07%
t	6.11***	2.95***	3.43***	3.84***	3.36***	0.35	0.46	2.72***	2.89***	-0.73
Z	7.17***	7.01***	6.92***	7.39***	5.85***	-1.34	0.01	2.35**	2.77***	2.34**

PANEL B

	NI/E			CF/E		
Abnormal % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	157	158	156	140	156	142
D%Y (mean)	140.78%	82.76%	91.41%	170.48%	163.26%	11.47%
t	2.10**	3.12***	1.76*	3.99***	3.21***	1.50*
Z	3.99***	4.53***	4.38***	4.97***	3.07***	2.46**
Sector-Volatility adjusted % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	155	156	143	135	147	137
D%W	31.15%	22.76%	32.99%	139.95%	46.69%	46.95%
t	1.99**	1.75*	1.96*	3.32***	1.62	1.00
Z	3.93***	3.34***	4.38***	4.42***	2.46**	2.01**

Table 7

Liquidity

This table reports results of the target companies liquidity measured by Current Assets over Current Liabilities and Cash and Cash Equivalents over Current Liabilities, in five different points in time and changes in during the two buy-outs: LBO1-1 indicates one year before the first buyout; LBO+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 buyout; LBO2+2 indicates two years after the second buy out; 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 results for absolute values where: Abnormal Performance is the difference between the performance indicator of each company minus the industry median, as in Barber and Lyon (1996), and Sector Adjusted is the difference between the performance indicator of each company minus the industry median, divided by the industry median standard, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Panel B reports results for Performance changes metrics where: Abnormal %Change is the difference between the percentage change in absolute Abnormal Performance minus the percentage change in the industry median; Sector-volatility Adjusted % Change is 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) and a non-parametric Wilcoxon signed-rank test (Z). Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

PANEL A

	CA/CL					CASH/CL				
Abnormal Performance	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	158	154	157	160	141	161	159	160	161	141
Y (mean)	5.38%	1.85%	-1.21%	-2.98%	-6.48%	-0.77%	26.99%	24.71%	13.04%	41.99%
t	1.30	1.92**	0.32	0.53	1.85**	0.08	1.94**	2.21**	1.15	3.70***
Z	0.57	-0.90	-2.39**	-3.91***	-3.89***	-2.02**	0.24	1.10	-0.40	2.91***
Sector-volatility adjusted	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	159	157	157	159	137	166	156	160	165	142
W (mean)	-6.28%	14.21%	7.36%	-0.02%	32.01%	22.43%	11.78%	6.09%	3.27%	-9.56%
t	0.67	1.05	0.81	0.01	2.21***	1.38*	1.39*	0.67	0.22	1.34*
Z	-2.27***	-0.38	0.02	-0.99	1.82*	-0.61	-0.68	-2.32**	-3.61***	-4.19***

PANEL B

	CA/CL			CASH/CL		
Abnormal % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	158	157	141	161	160	141
D%Y (mean)	87.12%	28.93%	29.46%	331.81%	78.12%	62.46%
t	1.75**	2.73***	2.60***	2.21**	2.68***	2.54***
Z	3.01***	1.33	2.41**	1.96**	1.3	0.74
Sector-volatility adjusted % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	159	157	137	163	163	140
D%W (mean)	51.89%	49.68%	70.59%	66.69%	47.20%	22.15%
t	3.18***	1.93*	2.73***	2.14**	1.84*	0.34
Z	2.33**	1.46	2.25**	0.66	1.61	0.55

Table 8
Capital Structure

This table reports results of the target companies capital structure measured by Financial Debt over Total Assets and the financial multiple measured by Financial Debt over EBITDA, in five different points in time and changes in during the two buy-outs: LBO1-1 indicates one year before the first buyout; LBO+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 buyout; LBO2+2 indicates two years after the second buy out; 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 results for absolute values where: Abnormal Performance is the difference between the performance indicator of each company minus the industry median, as in Barber and Lyon (1996), and Sector Adjusted is the difference between the performance indicator of each company minus the industry median, divided by the industry median standard, calculated as in Desbieres and Schatt (2002) substituting industry means with medians. Panel B reports results for Performance changes metrics where: Abnormal %Change is the difference between the percentage change in absolute Abnormal Performance minus the percentage change in the industry median; Sector-volatility Adjusted % Change is 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) and a non-parametric Wilcoxon signed-rank test (Z). Significance at the 1%, 5%, and 10% level is denoted by ***,**, and * respectively.

PANEL A

	FD/EA					FD/EBITDA				
Abnormal Performance	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	138	141	142	143	134	145	148	149	149	119
Y (mean)	4.05%	10.72%	6.46%	6.98%	3.90%	40.14%	197.99%	20.89%	195.70%	41.40%
t	1.26	1.63	1.79*	2.47**	1.34	0.99	2.26**	0.31	2.25***	1.12
Z	0.29	1.38	1.14	2.24**	0.89	0.05	0.21	0.58	0.91	0.28
Sector-volatility adjusted	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2	LBO1-1	LBO1+1	LBO2-1	LBO2+1	LBO2+2
N	136	136	138	139	125	143	147	150	150	123
W (mean)	6.56%	25.62%	10.36%	17.64%	15.56%	51.51%	14.66%	26.73%	-18.69%	19.16%
t	0.48	1.26*	0.76	1.33*	1.40*	1.74**	0.43	1.84**	0.45	0.82
Z	-0.29	0.44	0.31	1.50	1.35	0.36	1.11	0.17	0.87	0.01

PANEL B

	FD/EA			FD/EBITDA		
Abnormal % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	138	142	134	145	149	119
D%Y (mean)	18.45%	37.82%	55.82%	101.55%	130.34%	322.34%
t	0.98	2.52**	2.83***	1.89**	2.72***	1.52*
Z	-0.17	1.35	2.12**	0.47	2.92***	1.89**
Sector-volatility adjusted % Change	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)	LBO1 (-1;+1)	LBO2 (-1;+1)	LBO2(-1;+2)
N	136	138	125	143	150	123
D%W (mean)	-27.94%	20.79%	61.67%	87.55%	275.99%	168.21%
t	-0.28	0.49	1.32	0.91	2.09**	1.41*
Z	-0.07	0.17	1.85*	-0.23	2.84***	1.32

Table 9

Modified IRR

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 equity MIRR computed as in Phalippou (2008) and the differences in the interim cash flows contribution to MIRR. Panel B reports differences in Enterprise Value MIRR computed as in Phalippou (2008) excluding interim cash flows and net Financial Position at entry and exit; Panel C 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 - Equity MIRR

	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	1.102	0.507	0.811	0.149	3.911***	1.592*	6.754***
	(1.195)	(0.789)	(0.909)	(0.392)			
Median	0.786	0.334	0.602	0.114	10.024***	0.813	20.337***
Dividends/ Cash Flows (mean)	0.121	0.295	0.434	0.166	4.483***	5.732***	1.112
	(0.457)	(0.488)	(0.483)	(0.405)			
Obs.	89	87	47	40			

PANEL B - 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 C - Write-offs

	Global Dataset	Full sample (actual)	Full sample (actual+estimated)
Write-offs	115	4.000	10
	(12.97%)	(4.60%)	(11.49%)
Obs.	887	47	87

Table 10

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			-0.23
				(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 11

Collusion - Deal Frequencies

This table reports the frequency matrix of SBO transactions between Top funds and non top funds, wehere 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	36	69%	16	31%	52	
	67%		47%			
						3.32*
Top Buyer	18	50%	18	50%	36	
	33%		53%			
TOTAL	54		34		88	

Table 12

Collusion-Deal Characteristics

This table reports mean and medians of a set of deal characteristics between Top funds and non top funds, wehere 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	1.990	1.824	2.717*	2.075
	60		55		13		16	
EBIT Multiple	20.811	14.118	27.635*	18.207**	15.350	15.681	25.813*	17.344
	33		32		10		12	
EBITDA Multiple	13.824	11.2	14.129	11.9048	11.880	11.711	17.118*	12.717
	37		35		10		12	
P/E multiple	44.093	23.535	62.821*	48.307	39.576	23.801	38.245	22.962
	29		25		10		7	
Deal Value	399.597	309.000	934.942***	1029.000***	341.400	290.000	1002.833***	1004.500***
	77		69		15		18	
Total Debt Funding	346.419	248.872	669.181***	544.17***	201.308	209.435	619.308***	527.553**
	16		27		3		11	