Bank Affiliation in Private Equity Firms:

Distortions in Investment Selection

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Abstract

Private equity firms that are affiliated with banks have become major players in the industry, raising billions of dollars in funds. Yet, the literature and anecdotal evidence imply that leveraged buyouts (LBOs) carried out by these affilited firms would underperform independent LBOs. This paper studies these deals from the perspective of target performance. I find that bank-affiliated LBOs have no positive effect on the target firms' operating performance. Furthermore, I investigate whether the implied underperformance is due to problems in managing or selecting investments. In doing so, I find that targets of bank-affiliated LBOs and independent LBOs differ systematically in size, profitability, liquidity, and risk. Moreover, targets of bank-affiliated LBOs do not underperofrm similar targets of independent LBOs. Instead, all firms that have the characteristics of targets of bank-affiliated LBOs show worse operating performance. These findings cannot be attributed to the private equity market cycle or a skill-based explanation. The overall results are consistent with the view that bank affiliation does not benefit the target firms due to distortions that affiliated firms face in selecting investments.

Keywords: private equity, banks, leveraged buyout

JEL Classification: G23, G24, G34

1 Introduction

The past three decades have seen significant changes in the role banks play in financial markets. Banks have expanded their activities from being financial intermediaries to directly participating in the market. The recent financial crisis, in particular, has sparked a heightened interest on the part of policy-makers in understanding the involvement of traditional financial institutions in alternative investment assets. Take the leveraged buyout (LBO) market as an example. Banks, through their asset management divisions, have carried out a large volume of LBOs. The annual number of LBOs sponsored by private equity firms affiliated with banks amount for up to 30% of all buyouts (see Figure 1), and some of the largest private equity firms are the investment arms of banks. For example, Goldman Sachs, JP Morgan, HSBC, and Citigroup have together raised over \$180.6 billion in private equity funds since 1990.[1]

Being a part of a large financial conglomerate provides an information advantage to all associated firms, not just private equity firms (Massa and Rehman (2008), Ritter and Zhang (2007), Bodnaruk et al. (2009),). However, this relationship also creates distortions as a result of conflicts of interest and agency problems. Fang et al. (2013) show that combining private equity and banking, particularly when the bank is both the equity and debt holder, has an impact on financing terms and ex-post outcomes due to banks' incentive to maximize volatility, promote cross-selling opportunities, and originate and distribute debt of their own risky deals. In addition, the problems that come with having a parent bank can manifest themselves in the stability of the affiliated program, incentive structure of the general partners, target quality of the deals, differing objectives of the parent firms, and so forth (Gompers and Lerner (1998)). Industry observers seem to share all these concerns about the impact of being affiliated with banks as well. According to some practitioners, investors are overwhelmingly cautious about bank-affiliated private equity firms due to concerns

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[1]The numbers are estimated by summing up fund size by year in Preqin.

over profit sharing with parent companies, conflicts of interest, and different objectives.

In this paper, I study two aspects of bank-affiliated LBOs from the perspective of target performance. First, while Fang et al. (2013) and anecdotal evidence are consistent with a negative view of bank-affiliated LBOs, deal outcomes and exits are not necessarily indicative of the value created by these deals. It is possible that bank-affiliated LBOs still have a positive impact on the target firms' performance. Consequently, the target firms and investors can still benefit from these deals. Second, the existing evidence points out a number of problems with these deals and implies an underperformance of bank-affiliated LBOs compared to independent LBOs. Therefore, I aim to identify whether the implied underperformance is related to problems in selecting or managing investments.

To analyze bank-affilited LBOs in detail, I use a hand-collected sample of public-to-private and private-to-private buyouts in the U.K. from 1997 to 2007. There are two main reasons for using a U.K. sample. First, data availability has been a constraint on private equity research. Private firms in the U.S. are not required to submit annual financial reports, unless firms have public debt outstanding or subsequently went public. The U.K., in contrast, requires all firms to report annually. Studying LBOs in the U.K. market thus provides a sample that is free of this selection problem. Second, the U.K. market is, after the U.S., the second most active buyout market worldwide. My final sample contains detailed consolidated accounting information for 102 bank-affiliated buyouts and 225 non-bank buyouts, of which 207 are sponsored by independent private equity firms.

When comparing bank-affiliated LBOs to independent LBOs, I find that targets of bank-affiliated and independent LBOs differ systematically in several ways. Probit regression results show that when larger, more profitable, and more liquid firms undergo a buyout, it is more likely than not to be a bank-affiliated buyout. In contrast, there is some evidence showing that higher risk is associated with a lower probability of a bank-affiliated LBO. These results are robust to controlling for industry and the overall buyout market conditions, and the exclusion of club deals.

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I examine the changes in target firms' operating performance to determine whether the affiliated LBOs have any positive effect on the targets. While the existing evidence implies an underperformance of affiliated LBOs, particularly during the peak of the market, these deals can still create value. If they did, the benefits of LBOs should manifest themselves in target firms' post-buyout operating performance gains (Kaplan (1989), Smith (1990)). However, I do not find this to be the case within three years after the bank-affiliated buyouts. Instead, target firms' profitability and productivity all decline significantly. The drops are particularly large in the third year after the buyout. These results are robust to industry-wide changes, firms' post-buyout expansions, and potential bias from successful firms exiting early.

I then compare the performance of bank-affiliated LBOs to those of independent buyouts with similar target characteristics. There are several reasons for doing this comparison. First, targets of bank-affiliated and independent buyouts are systematically different. Variations in the cross-sectional performance can potentially be attributed to differences in target characteristics. Second, the negative views of affiliated LBOs imply an underperformance of bank-affiliated LBOs. To further identify the type of distortions that leads to the underperformance, it would be useful to separate targets by their characteristics. If the underperformance is related to distortions in overseeing investments, bank-affiliated LBOs would underperform similar independent LBOs. In contrast, if the underperformance is attributed to distortions in selecting investments, firms sharing similar characteristics should all underperform other LBOs with different targets.

Because of the differences in target characteristics, I use propensity score matching (PSM) based on pre-buyout firm characteristics to find independent LBOs that are most similar to bank-affiliated LBOs. All firm attributes that significantly increase/decrease the likelihood of bank-affiliated LBOs in previous analyses are included in the PSM matching. The results from comparing bank-affiliated LBOs to matched independent LBOs show that, in the cross section, bank-affiliated LBOs do not underperform. Within the sample period, firms' operating performance do not show any significant difference between bank-affiliated and matched independent LBOs, both

in levels and in changes from one year before the buyout. However, when I compare the performance of bank-affiliated and similar LBOs to those of unmatched independent LBOs, the results reveal a significant underperformance of bank-affiliated and similar LBOs. This estimated underperformance is also economically large: depending on the measure of operating performance, the average underperformance is between 8% to 36%. To check the robustness of these results, I exclude club deals and LBOs carried out after 2004, a period with potentially overheated buyout market. I also use alternative measures of performance. The results do not change meaningfully.

Taken altogether, the results highlight further concerns of bank-affiliated LBOs. Fang et al. (2013) document that bank-affiliated LBOs have worse exits during peak years of the credit market. My sample shows that bank-affiliated LBOs do not create any value, and that they underperform independent LBOs that do not share the same target characteristics. These patterns can all have an impact on private equity investors' returns. Moreover, the fact that all firms, affiliated or independent, that share similar characteristics underperform implies that the source of the underperformance lies in target characteristics. In other words, the evidence suggests that affiliated LBOs have problems in selecting investments. While targets of bank-affiliated LBOs are more profitable firms before the buyout, these firms do not seem ideal buyout candidates.

Finally, I investigate an alternative explanation for the underperformance. The argument on distortions in selecting investments implies that the affiliated buyouts are the result of private equity firms pursuing strategies other than maximizing targets' performance gains and consequently, buyout returns. Alternatively, it is possible that the affiliated firms are acting in the best interest of the investors but end up with those underperforming firms. For example, one can argue for bad luck. However, the systematic nature of the underperformance is inconsistent with bad luck, which would exhibit more random patterns. A much more plausible explanation is that the managers of bank-affiliated LBOs are less skilled at identifying targets, an indirect effect of their compensation structure. Anecdotal evidence suggests that financial conglomerates do not pay their private equity

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arms as highly as do independent firms.[2] As a consequence, good fund managers often seek better opportunities elsewhere.

In the absence of data on fund managers' skill, I investigate whether the cross-sectional variation in performance is related to the reputation of the parent banks. Presumably, more prestigious banks would attract more skilled managers. Thus, the reputation of the parent bank can be used as a signal for fund managers' abilities. I create an indicator variable for the top 25 banks as of 2007, the end of the sample period. Assuming skill is reflected in the reputation of the parent bank, this indicator variable should be positively associated with higher operating performance gains. However, the results do not show any significant relationship between reputation and the cross-sectional variation in performance. I interpret this result as inconsistent with the skilled-based underperformance explanation.

Results in this paper contributes to our understanding of LBOs in several ways. First, while the traditional literature on private equity emphasizes how buyouts can create value (Jensen (1986), Kaplan (1989)), studies also suggest various motivations that result in less desirable outcomes. For example, Kaplan and Stein (1993) suggest that easy access to the credit market can lead to high LBO failures. Axelson et al. (2010) show that high credit supply can lead to general partners making value-decreasing investment decisions. Fang et al. (2013) study bank-affiliated and parent-affiliated LBOs and show that these affiliated buyouts have the largest market share during the peaks of private equity market, and that parent-affiliated deals obtain more favorable financing terms, particularly during the peak periods of the credit market. My paper supports the negative view of bank-affiliated LBOs, and detailed accounting data further allow me to discover that bank-affiliated buyout targets are fundamentally different firms. Moreover, being affiliated with banks is associated with distortions in the target selection that ultimately leads to an underperformance.

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[2]For example, as Reuters notes in an article on Morgan Stanley's private equity arm "but the promise of higher pay elsewhere has played a role in at least some Morgan Stanley fund executives looking for opportunities outside the bank, the sources said. Independent firms, such as GIP and Alinda Capital Partners, do not have a bank owner they have to share profits with." (See Reuters article, *Exclusive: Morgan Stanley infrastructure fund hit by Volcker rule*, published on September 18, 2012.)

This results holds even when the peak periods of the credit market are excluded from the sample.

More generally, this paper contributes to the larger literature on financial conglomerates and firms' organizational structures. Large financial institutions have attracted much controversy in recent years. Some studies show that financial conglomeration provide benefits (Bodnaruk et al. (2009), Massa and Rehman (2008)); others argue that bank-affiliated mutual funds underperform due to conflicts of interest (Hao and Yan (2012), Massa (2003)). My results add to the field by suggesting that financial conglomeration does not make for part of an effective organizational structure for the private equity industry. In particular, this affiliation leads to distortions in selecting portfolio companies.

This paper proceeds as follows. Section 2 reviews related literature. Section 3 describes the sample and target characteristics. Section 4 presents the empirical results the performance of bank-affiliated LBOs. Section 5 concludes.

2   Related Literature

The literature on the effect of LBOs have generally shown that LBOs create value in target firms through high leverage, improving the governance structures, and operational engineering (Jensen (1989), Lehn and Poulsen (1989), Kaplan (1989), Smith (1990), Baker and Montgomery (1994), Baker and Wruck (1991), Acharya et al. (2010)), although Guo et al. (2009) show that more recent deals have lower operating performance gains. In general, the success of private equity firms has been attributed to their organizational structures, which minimize moral hazard and information asymmetry problems (Jensen (1993), Shleifer and Vishny (1997)). The traditional private equity partnerships are formed as independent firms with fund managers sharing a substantial portion of the profits made from their investments. Departing from this structure can bring both benefits and problems.

Benefits of being affiliated with banks include information advantage, better financing, and

reducing debt and equity conflicts if the parent bank is also a debt provider. First, the affiliated firms have access to their banks' extensive business relations and vast resources. In particular, the superior information that banks collect on their clients may be shared with their affiliated firms. Massa and Rehman (2008) find that bank-affiliated mutual funds exploit inside information by increasing their holdings of stocks that subsequently outperform. Ritter and Zhang (2007) examine whether the lead underwriter uses allocations of IPOs to its affiliated funds to either support weak IPOs or reap additional benefits. Their results support the latter hypothesis. Bodnaruk et al. (2009) study the the behavior of investment banks advising the bidder in a merger and acquisition, while trading the stocks of the target. Their results are also consistent with the informational advantage of affiliated mutual funds. In addition to information sharing, having a close relationship with a bank can provide financing advantage as well. Hellmann et al. (2008) examine banks' investments in venture capital and show that having a relationship with a company at the venture capital stage increases the probability that a bank subsequently gets to grant a loan to that company. Fang et al. (2013) study the financial structure of bank-affiliated and parent-finance LBOs and document that affiliated LBOs enjoy better financing terms when their parent banks lead the loan syndicate.

Ideally, having those advantages should help the affiliated firms to identify better targets, create more value, and achieve higher returns for investors. This could lead to the certification effect. However, there are also many arguments against having a parent bank. Fang et al. (2013) present three of them: the incentives to maximize growth and volatility and making poor investments due to cross-selling opportunities; further, if the deals are financed by the parents banks, they further face banks originate and distribute the debt of their own risky deals. The study finds that bank-affiliated LBOs have worse exits during peak years, and they enjoy better financing if the parent bank is part of the lending syndicate. In addition to the these problems, there are also concerns when private equity firms are a part of a larger corporation. Gompers and Lerner (1998) study venture capital arms of corporations. They argue that this parent-subsidiary organizational structure gives rise to concerns over the stability of the program, as well as problems in the process

of investing and managing portfolio companies due to a lack of well-define mission, insufficient parent commitment, and inadequate compensation scheme. For example, affiliated firms often have a wide range of objectives, and their managers are not as well compensated as the managers of independent firms. These problems are not unique to affiliated private equity firms. Other Similar studies and reports on bank-affiliated mutual funds have also shown that affiliated mutual funds face conflicts of interest with their parent banks as well (Hao and Yan (2012), Dietz (2004)).

3   Data and Sample Statistics

3.1   Sample description

I base my sample on completed LBOs in the U.K. for two reasons. First, a U.S. sample faces the selection problem, since public data are only available for U.S. firms that subsequently went public or have public debt outstanding. Unlike the U.S. firms, all firms in the U.K. are required to submit annual financial reports. This allows for the collection of detailed accounting performance changes, instead of relying on noisy measures such as exits. Second, the U.K. has the second most active LBO market in the world, after the U.S., and the U.K. market is still growing in size, making it an ideal source for studying buyouts.

Because of the U.K. sample, I use Zephyr to identify buyout transactions.[3] According to a report by LexisNexis, Zephyr has better coverage of deals in Europe than SDC does, and it offers better coverage of smaller transactions. I start with all completed deals in Zephyr from 1997 to 2007, targeting companies in the U.K. I choose 2007 as the cutoff point to allow at least three years of post-buyout accounting information and to avoid potential impacts from the recent financial

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[3]Zephyr, which is published by Bureau van Dijk, provides information on mergers and acquisitions, IPOs, and private equity deals worldwide since 1997. As of January 2009, it contained information on 703,327 deals. Zephyr does not cover deals involving equity stakes of less than 2 percent, unless the consideration for the stake is greater than GBP 15 million (i.e., where the market capitalization of the target is over GBP 300 million). When the bidder is an investment trust or pension fund, the threshold is raised to 5 percent. If the purchase is considered to be significant, then it is entered regardless of the deal value.

crisis. I drop cases where a stake of less than 50% was acquired. This gives us a total number of 4,652 LBOs. I also eliminate target companies that do not have a registration number, leaving 3,706 deals. I further restrict my cases to private-to-private and public-to-private buyouts,[4] resulting in a total of 1,866 transactions, of which 1,053 have identified private equity sponsors. To identify bank-affiliated buyouts, I track down the holding companies of private equity sponsors. I classify a private equity firm as *bank-affiliated* (277 firms) if the firm is a subsidiary of a bank. If a transaction has multiple sponsors, I classify the transaction as bank-affiliated if at least one of the sponsors is bank-affiliated. Private equity firms that are not affiliated banks are classified as *Non-bank* (776 firms). Within non-bank private equity firms, I also identify independent private equity firms, classified as *Independent*, as those not affiliated with any parent (693 firms).

I hand collect firms' accounting information from their annual financial reports. However, target firms' accounting information are often consolidated under a new shell company after the buyout. Therefore, I identify the immediate as well as the ultimate holding companies from each target firm's annual financial statements. To ensure accurate representation of firms' accounting performance, I drop cases where unconsolidated statements are not available. These include very small target firms and firms whose parents are consolidated outside of the U.K.[5] After dropping firms without consolidated financial statements, the final sample consists 102 bank-affiliated LBOs and 225 non-bank transactions, out of which 207 are independent LBOs. The number of firms in the initial and final sample is presented in Table 1. The large percentage of bank-affiliated private equity firms is evident in this table. The average annual percentage of bank-affiliated LBOs is close to 30% for both LBOs in the initial and final sample. Detailed descriptions of the buyout types,

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[4]Divisional buyouts are excluded from the sample due to the lack of data distinguishing the performance of the division from its parent company. Secondary buyouts are also excluded, since they are motivated by the financial constraints of private equity firms and market conditions (Wang (2012)).

[5]In the U.K., a parent company need not prepare group accounts or send them to the Registrar if the group is small or medium-sized and none of its member companies is: a public company, a person who has permission under Part 4 of the Financial Services and Markets Act 2000 to carry on a regulated activity, or a person involved in insurance market activity. To qualify as small, a group of companies must meet at least two of the following conditions: aggregate turnover must be £5.6 million net (£6.72 million gross) or less; the aggregate balance sheet total must be £2.8 million net (£3.36 million gross) or less; the aggregate average number of employees must be 50 or fewer.

outcomes, and industry distribution of firms in the initial sample are described in Appendix I.

For a breakdown of the buyout types in the final sample, Panel A of Table 2 divides the buyouts to public-to-private (*Public*), private-to-private (*Private*), and club deals. Consistent with the existing literature, the majority of LBOs, regardless of acquirer affiliation, are buyouts of private firms. A small number of deals are also club deals. However, more bank-affiliated LBOs are club deals (16 deals) compared to non-bank (10 deals) and independent LBOs (8 deals). Panel B of this table displays the deal outcomes by acquirer affiliation. IPOs are often considered the most successful exits for LBOs. Out of all exited bank-affiliated deals, only one (1%) exited through an IPO. This percentage is similar to those of non-bank and independent LBOs. Across all acquirer affiliations, most targets that have exited were acquired by strategic buyers followed by secondary buyouts.

Table 3 shows the Fama-French 10 industry distribution by acquirer affiliation. Compared to independent private equity firms, bank-affiliated LBOs have a higher percentage of firms in *Manufacturing, Wholesale and Retail*, and a lower percentage in *HiTech and Business Equipment*. The distribution of firms in other industries is similar across acquirer affiliations.

Having a close relationship with a bank might help the affiliated private equity firm secure more debt or obtain more financing for deals. Fang et al. (2013) documents better financing terms of affiliated LBOs if the parent banks are part of the lending syndicate. I don not restrict my sample of LBOs to the syndicated market in the U.K. Instead, I examine the changes in target firms' leverage fro before to after the buyout. Multivariate results show that targets of bank-affiliated and independent LBOs do not show any difference in short-term debt, total debt, and bank debt from one year before the buyout to one year after it. Bank-affiliated LBOs are not priced differently from independent LBOs either. Those results are robust to controlling for target and industry characteristics, time trend and excluding club deals and deals carried out after 2006. Appendix II reports detailed leverage changes and deal pricing.

3.2 Target characteristics

In this section, I compare the target characteristics of bank-affiliated LBOs with those of independent LBOs. I divide target characteristics to four categories: *size*, *profits*, *profitability*, and *liquidity and risk*. Panel A of Table 4 displays the mean and median values.

To measure size, I use both sales and the natural logarithm of total assets. Because the sample includes both public-to-private and private-to-private buyouts, there are considerable differences between the mean and median values. Both size measures show that targets of bank-affiliated LBOs are larger firms, compared to targets of non-bank as well as independent LBOs. The difference is more pronounced between bank-affiliated and independent LBOs.

I use two measures for profits: EBITDA and earnings to account for returns to investors. Consistent with larger size, targets of bank-affiliated LBOs also have higher profits, evident in significantly higher EBITDA. There is some evidence that targets of bank-affiliated LBOs have higher earnings. However, all profitability ratios, except for asset turnover, show that the median values of bank-affiliated targets are not significantly more profitable than those of non-bank and independent LBOs.

Finally, I examine the liquidity and risk of the target firms. Given the much tighter regulations on banks and the lower tolerance for risk, it might be the case that bank-affiliated private equity firms would seek less risky targets. Alternatively, one of the negative views presented in Fang et al. (2013) argue that banks could carry out buyouts because of their incentives to increase equity value and maximize volatility. If this were the case, then one would expect the targets of bank-affiliated LBOs be riskier. In assessing the risks of public firms, historical stock prices can be used to estimate firms' betas, assuming that investors are diversified. However, most LBOs in my sample are buyouts of private companies. The absence of historical prices for these private firms and the failure on the part of many private firm owners to diversify means that firms' risk cannot be estimated by beta. Therefore, I estimate targets' liquidity and risk using current ratio, PP&E/total assets, three-year EBITDA volatility, and three-year EBITDA/sales volatility. There

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is some evidence that targets of bank-affiliated LBOs are more liquid. However, the three-year EBITDA volatility ratio also show significantly higher risk for these firms.

Taken together, the univariate comparisons show that targets of bank-affiliated LBOs are larger and have higher profits. However, macroeconomic conditions and industry-wide changes all need to be taken into consideration when analyzing firm characteristics. Therefore, I proceed with more detailed regression models.

I use Probit models to estimate the likelihood of bank-affiliated LBOs conditioning on an LBO taking place. Because I am most interested in the potential differences between bank-affiliated and independent LBOs, I use a sample of these two types of firms from this point onwards. In the Probit models, the dependent variable equals one if the buyout is a bank-affiliated buyout, and zero if it is an independent buyout. The control variables include firm characteristics, industry and the overall buyout market conditions. To absorb residual variation related to time trend, all regressions include year dummies. Because the same industry condition enters the equation multiple times whenever firms fall in the same industry, I also cluster standard errors by industry. All firm characteristics listed in Table 4 are tested individually. However, for brevity, I only report estimated results for five firm characteristics in Table 5.

The Probit regression results show that targets of bank-affiliated LBOs are indeed different from those of the independent LBOs. Consistent with the results in Table 5, larger firms are more likely to go through a bank-affiliated LBO. Moreover, EBITDA, earnings, EBITDA/PP&E, and ROA are all significantly associated with a higher probability of a bank-affiliated LBO, suggesting that targets of bank-affiliated are firms with higher profits and profitability. In addition, different from what the argument about banks' incentive to maximize volatility would predict, the evidence shows some support bank-affiliated LBOs having less risky targets. Both three-year EBITDA and EBITDA/sales volatility before the buyout are correlated (10% significance level) with a lower probability of a bank-affiliated LBO.

Given that some deals in the sample are sponsored by a consortium of private equity firms, it

is possible that these differences in target characteristics are driven by club deals. Therefore, I re-estimate the probit models using a sample excluding club deals (results untabulated). The results do not change meaningfully. The evidence thus far indicate that targets of bank-affiliated and independent LBOs are systematically different. In the following section, I explore the operating performance of bank-affiliated LBOs and the impact of those differences in target characteristics on firms' operating performance.

4   Operating performance of bank LBOs

Existing literature often points to target firms' operating performance gains as a testable benefit of LBOs. Therefore, in this section, I analyze the changes in target firms' operating performance. To minimize noise from potential interfering events, I restrict my post-buyout window to three years.

4.1   The effect of bank-affiliated LBOs

Panel A of Table 6 reports the effect of bank-affiliated LBOs on firms' size, profits, profitability and productivity. Because of accounting write-ups related to mergers and acquisitions, PP&E, instead of total assets, along with sales are used to proxy for size. Profits are measured by both EBITDA and earnings to account for firms' operating cash flows and investors' returns. Due to the sample size, only median percentage changes from year i to year j are reported. Wilcoxon rank-sum tests are performed to determine whether the median percentage changes are significantly different from zero. To account for industry-wide shocks, I also adjust the performance changes by subtracting industry median values.

Industry-adjusted changes in PP&E show a slight insignificant drop in the first two years followed by a bigger drop in the third year. Sales numbers grew significantly in the first two years after the buyout. However, industry-adjusted percentage changes do not indicate any significant

growth. The changes in profits show a similar pattern. Industry-adjusted EBITDA increases by 11.2% and 14.1% (however insignificant) in the first two years, respectively. It then decreases by 18.7% in the third year. The drop in earnings is significant in all three years but particularly large in the third year. This is due to a combination of a lack of improvement in operating cash flows and high interest payments from increased leveraged after the buyout.

Previous literature shows that the value created in buyouts is evident in the improvements in the firms' efficiency. However, I do not find bank-affiliated target firms to be more efficient after the buyout. EBITDA/sales and profit margin (earnings/sales) both show significant drops for all three years after the buyout. Changes in EBITDA/PP&E and return on PP&E further show that the productivity of firms' tangible assets decreased significantly as well.

One possibility for the deterioration in efficiency and productivity is that the observed pattern is mechanically driven by changes in firm size. To address this issue, I fix sales and PP&E at their levels at one year before the buyout. The results are reported in Panel B of Table 7. The magnitude of the performance changes decreases. However, the industry-adjusted changes continue to show significant drops, particularly in the third years after the buyout. Therefore, the operating performance drops are not entirely driven by a larger size.

All results show a clear lack of operating performance gains as documented by the previous literature on buyout performance (Kaplan (1989), Smith (1990)). One potential concern is survivorship bias. If successful firms exit early (i.e., before the end of the event window), the results could be biased downward. Given the small number of firms that have exited, the results are unlikely to be affected by this concern. Nonetheless, I exclude all firms that have exited. The results remain the same (table untabulated).

The evidence in Fang et al. (2013) supports a negative view of bank-affiliated LBOs due to the better financing terms of those deals and their worse exits during peak of the credit market. The observed changes in firms' operating performance thus far warrant further concerns of bank-affiliated LBOs, even given that recent LBOs show less operating performance gains (see Guo

et al. (2009)). The negative views of bank-affiliated LBOs also imply an underpformance of these deals. However, the source of the distortions differ. I then explore the relative performance of bank-affiliated LBOs and the source of their potential underperformance in the following section.

4.2 Target firm's operating performance across acquirer affiliation

Being a part of a large financial conglomerate can potentially subject the affiliated private equity firm to a series of problems. These problems include incentives to maximize growth and volatility, making poor investment decisions to promote cross-selling services, and originate and distribute loans backing poor quality deals (Fang et al. (2013)). Given the target quality of bank-affiliated LBOs, it is unlikely that any underperofrmance is a results of banks' incentives to increase volatility. However, being affiliated with a parent, not necessarily a parent bank, creates additional additional problems related to general partners' incentives, the stability of the private equity program, and more conflicts of interest (Gompers and Lerner (1998)). While there are many channels through which these problems can manifest themselves and result in an underperformance, all the negative views are related to either distortions in selecting or managing investments. To distinguish these two sources of distortions, I first compare the performance of affiliated LBOs to those of similar independent buyouts. If affiliated firms face distortions in overseeing investments, bank-afffiliated LBOs should underperform similar independent LBOs. Alternatively, if there is an underperformance attributed to problems in selecting targets, all firms sharing the same characteristics as those bank-affiliated targets would perform worse.

To find independent LBO targets that are similar to those of affiliated LBOs, I use a one-on-one propensity score matching (PSM) process within the nearest neighborhood to match on observable firm characteristics. All firm characteristics that are associated with a significantly greater/lower likelihood of bank-affiliated LBOs are included in the matching process (see Table 5 for those characteristics). In addition, I also match on industries. This process produces 89 targets of independent LBOs that are most similar to bank-affiliated LBOs. Then t-tests on the mean

values of the matched firms are used to determine whether the matching yields good results. The results are reported in Panel A of Table 7. The mean values of the matched independent buyout firms exhibit slight insignificant differences, indicating a good match.

Panel B of Table 8 then reports OLS results comparing the operating performance of bank-affiliated LBOs to those of their matched independent buyouts. To account for industry-wide changes, all profitability measures are industry-adjusted. The dependent variables are industry-adjusted EBITDA/sales, EBITDA/PP&E, and profit margin in levels and changes. The levels are computed as of three years after the buyout; the changes are computed as the percentage changes from one year before the buyout to three years after it. The natural logarithm of the firm's tangible assets in the third year after the buyout is used as a proxy for firm size. Guo et al. (2009) show that leverage is an important factor in explaining post-buyout operating performance. I control for the level of leverage at one full year before the buyout and the percentage changes in leverage. I also use the size of the board after the buyout as a rough proxy for the governance of the target firms. To account for pre-buyout profitability, I include pre-buyout three-year EBITDA/sales volatility as an independent variable. Time-related variation is an important factor in buyout performance. Therefore, all regressions use buyout-year fixed effects.

The indicator variable *Bank-affiliated* is the variable of most interest. It equals one if the buyout is sponsored by a bank-affiliated private equity firm, zero if it is a matched independent LBO. If bank-affiliated LBOs underperform (outperform) their matched independent counterparts on average, I expect this indicator variable to have a negative (positive) and significant coefficient estimate. However, the results do not support this hypothesis: *Bank-affiliated* does not show any significant difference for all measures of operating performance.[6]

Other variables that seem to be correlated, to a certain extent, with post-buyout operating performance include size, risk, and pre-buyout profitability. A larger board is positively associated

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[6]Here and in every other table in which I report regression results with fixed effects, results are similar if I also include parent-bank fixed effects.

with EBITDA/sales and profit margin changes. The results are significant at the 10% level. Lower pre-buyout firm risk and higher pre-buyout operating performance also show some association with better performance measures.

These results suggest that potential distortions in managing investments do not cause any underpeformance. Distortions in selecting investments, on the other hand, cannot be addressed by comparing performance of similar firms. Whether those distortions are due to conflicts of interest or differing objectives with the parent, they imply that the affiliated private equity firms pursue targets that are not optimal for buyouts. If the changes in operating performance are a product of the targets not being ideal buyout candidates, the performance of unmatched independent LBOs should be observably different from that of bank-affiliated and matched independent LBOs.

Therefore, I create an indicator variable, *Bank-affiliated and similar firms*, and run the same OLS regressions as in Table 7 but with the full sample of bank-affiliated and independent LBOs. I report my findings in Table 8. This table shows that all firms that share similar characteristics as the bank-affiliated LBO targets perform worse than the unmatched independent LBOs. The coefficient estimate of the indicator variable is significant in all regressions and economically large. Having the firm characteristics of bank-affiliated LBO targets is associated with approximately 8% lower changes in EBITDA/sales and the profit margin, and a 35.7% lower EBITDA/PP&E change.

The estimated results also show that leverage matters. Having more debt before the buyout and higher percentage changes in debt are both associated with a better post-buyout operating performance. Pre-buyout performance also affects EBITDA/sales, EBITDA/PP&E, and changes in profit margin. The better the pre-buyout performance, the less room there is for post-buyout improvements. Similar to Chung (2011), I find that private-to-private buyouts are also associated with lower performance gains.

Overall, the combined evidence indicates that when considering the value created in buyouts, it is not advantageous for a private equity firm to be part of a larger financial conglomerate. This is consistent with the view presented in Fang et al. (2013). However, unlike Fang et al. (2013) who

show that affiliated firms have worse exits during peak years, I find that target firms' operating performance drops after undergoing bank-affiliated LBOs. More importantly, bank-affiliated LBOs underperform independent LBOs as a result of the underlying target characteristics, rather than management problems on the part of bank-affiliated private equity firms. In other words, the evidence is consistent with the story of distortions in selecting investments. While the targets of bank-affiliated LBOs are profitable firms before the buyout, their characteristics do not make them ideal buyout candidates.

4.3 Evidence on skill-based underperformance

It is possible that underperformance can occur for reasons other than the affiliated firms facing distortions when selecting investments. One can argue that the performance of bank-affiliated LBOs is a result of "random" choice or bad luck. However, the systematic nature of the underperformance is inconsistent with this argument. A more likely explanation is that the pay structure of the affiliated firms results in a lack of skilled managers. Private equity firms typically follow a pay structure with strong performance incentives.[7] Being a part of a financial conglomerate, the affiliated private equity firms' fees are often siphoned away by their parent bank. In turn, the lower pay causes some skilled managers to leave the affiliated firm for better opportunities in independent firms.[8]

The challenge for testing this alternative explanation is the lack of data. There is no direct measure of fund managers' skill, and private equity firms do not publish data on fund managers' pay. Therefore, I cannot directly test the skill-based explanation. Instead, I consider a subsample of bank-affiliated firms, in which I expect the fund managers to be more skilled. Presumably, higher ranked and more prestigious parent banks are more likely to attract skilled managers. To construct

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[7]GPs of private equity firms usually have a 2/20 pay structure: 2% management fee and 20% carried interest that is paid upon successful exits of deals.

[8]For an example of this problem, please see Reuters' article, *Exclusive: Morgan Stanley infrastructure fund hit by Volcker rule*, published on September 18, 2012.

this ranking, I use parent banks' total assets as of 2007, the end of my sample period. If the parent bank is one of the 25 largest banks worldwide by total assets, the indicator variable, *Prestigious bank-affiliated PE firm*, equals one, and zero otherwise.

If buyouts underperform due to a lack of fund managers' skill in identifying ideal targets, then buyouts affiliated with more prestigious banks should exhibit a better performance. In other words, *Prestigious bank-affiliated PE firm* should be positively associated with post-buyout operating performance. In the analyses presented in Table 9, I do not find results consistent with this hypothesis. The indicator variable shows that the buyouts of prestigious bank-affiliated private equity firms do not perform significantly differently from other bank-affiliated firms.

Overall, the systematic underperformance of bank-affiliated LBOs shows that acquiring underperforming targets is not due to bad luck. More importantly, the evidence based on the reputation of the parent bank is inconsistent with the notion that the poorer target selection is attributed to a lack of skill.

4.4   Robustness checks of underperformance

In this section, I perform a series of robustness checks on the results. All regression analyses of performance comparisons are identical to those reported in Tables 7 and 8. Therefore, I only report coefficient estimates of *Bank-affiliated* and *Bank affiliated and similar firms*.

Given that some of the deals in my sample are club deals sponsored by a consortium of private equity firms, one might argue that the results are driven by club deals. In previous analyses, I controlled for the potential effects of club deals by including an indicator variable *Club PE*. To be explicit, I also exclude all club deals from my sample. In Panel A of Table 10, I compare the performance of bank-affiliated LBOs to that of PSM-matched firms. Not surprisingly, bank-affiliated LBOs do not show any significant difference in performance. In Panel B, I examine whether bank-affiliated and matched firms perform differently from the rest of the independent LBOs. The results confirm the underperformance of bank-affiliated buyouts and matched independent buy-

outs. Therefore, the results excluding club deals are consistent with previous results suggesting that bank-affiliated LBOs underperform due to their target characteristics.

I also replicate the results excluding the period after 2004. Fueled by private equity firms' abilities to finance deals, LBO transactions increased substantially after 2004. Kaplan and Stein (1993) show evidence consistent with an overheating buyout market leading to worse deal structures. Fang et al. (2013) also show that bank-affiliated LBOs have worse outcomes if carried out during the peaks of the credit market. The overall results reported in Table 11 do not support the hypothesis that the underperformance is driven by a "hot" buyout market. The underperformance of bank-affiliated deals persists even after the the peaks of the credit market is excluded.

All results thus far are based on performance measures within the three years after the buyout. I chose this short window to reduce the noise from potential interfering events. However, it is plausible that the targets of bank-affiliated LBOs might take longer to restructure. Consequently, a short event window would not capture the full effect of a buyout. To test this hypothesis, I examine firms' restructuring efforts and exits as alternative performance measures.

When considering exits, I focus on the probability of exiting instead of the exit type. While IPOs are perceived to be the most successful exit type, a firm's ability to exit through an IPO depends on its fundamentals and life cycle. In addition, private equity firms are exit-focused, whether the exit is sales to strategic buyers, another private equity firm, or an IPO. I use a higher probability of exiting as a rough proxy for better performance. To measure restructuring efforts, I follow Cao (2011), who shows that LBO duration is a good proxy for buyout sponsors' restructuring efforts. I interpret a longer duration as more efforts spent on restructuring.

Duration can only be calculated once an exit has been observed. Therefore, analyses of exits and duration face the self-selection problem and the truncated data problem. To mitigate these problems, I use the Heckman (1979) two-stage selection model. In stage one, I investigate the probability of a firm exiting, controlling for acquirer type, buyout sponsor's reputation, and firms' pre-buyout size and profitability. In stage two, I examine whether bank affiliation is associated

with any cross-sectional variation in buyout duration, controlling for firm fundamentals and equity market condition at the time of exit. I report the findings in Table 12.

Columns (1) and (2) report analyses of duration and exit probability using a subsample of bank-affiliated and PSM matched independent buyouts. Results from these two columns show that compared to similar independent LBOs, bank-affiliated LBOs are not more likely to exit. However, there is some evidence that bank-affiliated LBOs take longer to restructure. Columns (3) and (4) of Table 13 report results testing whether bank-affiliated LBOs and similar firms are more likely to exit and have longer buyout durations. Compared to unmatched independent LBOs, bank-affiliated and similar LBOs are not more likely to exit. Moreover, there is no significant difference in the amount of time different sponsors spend on restructuring the portfolio companies. In each analysis, the Wald test of independence of the selection equation and principal equations shows that concerns over selection do not pose a problem here.

The overall analyses performed in this section do not change the previous results. Bank-affiliated LBOs do not underperform similar firms. Rather, all firms that share the same characteristics as the targets of affiliated LBOs perform worse, regardless of the credit market condition. In other words, there is an underperformance attributed to target characteristics. This evidence is consistent with an underperformance due to bank-affiliated firms having distortions in target selection rather than problems in overseeing investments.

5   Conclusion

As the private equity industry grew, so did banks' direct involvement in private equity. As much as 30% of annual deals are sponsored by bank-affiliated private equity firms. Being a part of a large financial conglomerate can provide the private equity firms with benefits such as information advantage. However, theories and anecdotal evidence also suggest that bank affiliation faces distortions from conflicts of interest with the parent bank, differing objectives, and so forth. Ul-

timately, these distortions can have an impact on the performance of an LBO, affecting both the target firm and the private equity investors. In this paper, I investigate the effects of bank-affiliated LBOs on the target firms by 1) studying whether bank-affiliated LBOs create value; 2) comparing firms' operating performance induced by bank-affiliated LBOs to those of independent LBOs, and identifying the type of distortions associated with the underperformance of bank-affiliated LBOs.

Using detailed hand-collected accounting information for firms in the U.K., I find that bank-affiliated LBO targets are systematically different from the targets of independent LBOs. Specifically, the results from Probit regressions show that conditioning on firms going through LBOs, larger firms with higher profits, profitability, and liquidity are more likely to go through bank-affiliated LBOs. There is also some evidence that those targets have slightly lower risk. These results do not change when excluding club deals with a consortium of buyout sponsors.

While targets of bank-affiliated LBOs show some operating performance gains prior to the buyout, their profitability and productivity decrease significantly after the buyout, particularly in the third year. This result is robust to expansions in firms' assets, industry-wide changes, and potential bias from successful firms exiting early. More importantly, having targets with systematically different firm characteristics plays a role in the post-buyout operating performance changes. To account for different firm characteristics, I use PSM to match bank-affiliated LBOs to similar independent buyouts based on industry and pre-buyout target characteristics. The results show that affiliated LBOs do not underperform their matched independent LBOs. Rather, all firms that share those characteristics as targets of bank-affiliated LBOs underperform. These findings are robust to the exclusion of club deals and the time period after 2004, when the buyout market could be overheated. The findings also do not change when firms restructuring efforts and the probability of existing as an alternative performance measure are considered. I interpret the results as being consistent with the notion that being a part of a large financial conglomerate gives rise to distortions in selecting investments.

I also investigate a skill-based alternative explanation for the underperformance. I use the par-

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ent banks' reputation as an indicator for the affiliated fund managers' abilities, as more prestigious banks are more likely to attract skilled managers. I find that LBO targets of private equity firms affiliated with more prestigious banks do not show any difference in performance within the event window. This suggests that the selection of targets that ultimately underperform is not due to affiliated firms lacking skilled managers.

To summarize, bank-affiliated private equity firms manage billions of dollars of private equity investments. In this paper, I show that LBOs carried out by these affiliated firms do not create value in target firms. Moreover, bank-affiliated firms face distortions in the investment selection process that result in their targets underforming those of independent LBOs that do not share the same characteristics. This result holds true regardless of the market cycle. Overall, the evidence presented in this paper supports a negative view of bank-affiliated LBOs and further casts doubt on the returns that investors receive from these buyouts.

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Figure 1: Bank-affiliated Buyouts Across Time

The figure shows the number of total buyouts and bank-affiliated buyouts across time from 1985 to 2009. The numbers are taken from Fang et al. (2013). Bank-affiliated LBOs are leveraged buyouts sponsored by the private equity units of banks. Total LBOs represent the total number of leveraged buyouts in a given year. The x-axis is the buyout year. The y-axis is the number of deals in a given year.

Bank-affiliated Buyouts Across Time
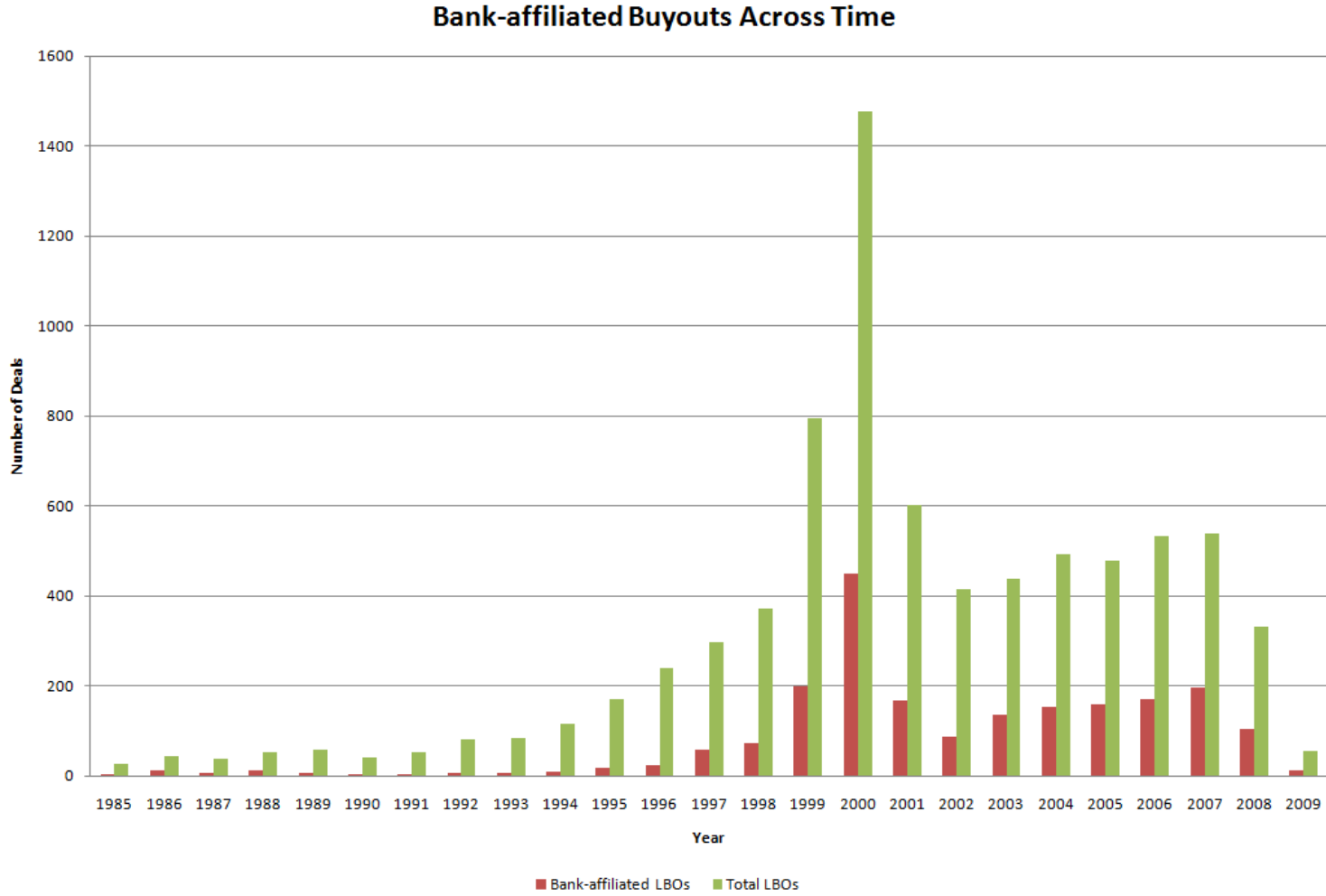
Table 1: Bank-affiliated Buyouts across Time

The table shows the number of bank-affiliated and non-bank leveraged buyouts (LBOs) identified from Zephyr from 1997 to 2007. The initial sample is restricted to: 1) target companies in the U.K. and complete cases where a more-than-50% stake was acquired (4,652 deals), 2) target companies with registration numbers (3,706 deals), 3) private-to-private and public-to-private buyouts (1,866 deals), 4) deals with identifiable sponsors (1,053 deals). Panel A shows the number of deals in the initial sample. The final sample shown in Panel B is further restricted to cases where 1) the pre- and post- buyout consolidated financial statements are available, and 2) the buyout is not an add-on acquisition. A buyout is classified as bank-affiliated if the sponsors is a private equity division or a subsidiary of a bank. If an LBO has multiple sponsors, the buyout is classified as bank-affiliated if one or more sponsors are affiliated with a bank. Independent buyouts represent the cases where all of the buyout sponsors are independent private equity firms without a parent company.

Panel A: Initial Sample

Buyout year	Total	Bank-affiliated	Non-bank	Independent
1997	44	8	36	36
1998	43	14	29	28
1999	95	29	66	56
2000	67	18	49	44
2001	76	37	39	38
2002	63	18	45	42
2003	87	24	63	56
2004	119	23	96	85
2005	124	31	93	87
2006	162	40	122	108
2007	173	35	138	13
Total	1053	277	776	693

Panel B: Final Sample

Buyout year	Total	Bank-affiliated	Non-bank	Independent
1997	8	1	7	7
1998	12	4	8	8
1999	15	3	12	12
2000	19	8	11	11
2001	33	18	15	15
2002	20	6	14	13
2003	39	13	26	22
2004	44	8	36	33
2005	48	18	30	29
2006	71	19	52	46
2007	18	4	14	11
Total	327	102	225	207

Table 2: Buyout Types and Outcomes

The table presents the number of LBOs by their types and exit routes across acquirer types and buyout year. In Panel A, buyout types are divided into public-to-private (*Public*) and private-to-private (*Private*). *Club Deals* represents the number of buyouts sponsored by a consortium of private equity firms. In Panel B, *IPO* show the number of firms that eventually went public. *Acquired* and *SBO* indicate that the target was sold to a strategic buyer and another private equity firm, respectively. *Bankruptcy* represents the number of firms that eventually filed for bankruptcy, and *No Exit* shows buyouts that have not achieved an exit as of February, 2010. Buyout types and outcomes for the full sample of LBOs are shown in Table A1 in Appendix I.

Panel A: Deal types across time in the final sample

Buyout year	Bank-affiliated			Non-bank			Independent			Club Deals		
	Total	Public	Private	Total	Public	Private	Total	Public	Private	Bank-affiliated	Non-bank	Independent
1997	1	0	1	7	0	7	7	0	7	0	0	0
1998	4	1	3	8	0	8	8	0	8	0	0	0
1999	3	1	2	12	8	4	12	8	4	1	2	2
2000	8	2	6	11	5	6	11	5	6	1	0	0
2001	18	7	11	15	3	12	15	3	12	2	0	0
2002	6	1	5	14	3	11	13	3	10	2	0	0
2003	13	4	9	26	9	17	22	7	15	1	1	0
2004	8	0	8	36	4	32	33	3	30	4	1	0
2005	18	4	14	30	6	24	29	6	23	3	3	3
2006	19	2	17	52	17	35	46	13	33	1	2	2
2007	4	2	2	14	4	10	11	4	7	1	1	1
Total	102	24	78	225	59	166	207	52	155	16	10	8

Panel B: Deal outcomes

Affiliation	IPO	Acquired	SBO	Bankruptcy	Other / unknown	No exit	Total
Bank	1	17	9	1	1	73	102
Non-bank	3	30	19	3	1	169	225
Independent	2	30	15	3	1	156	207

Table 3: Target Industry Distribution

The table shows the number and percentage distribution of target firms in each industry in the final sample. Industries are categorized according to the Fama-French 10 industry classification, based on the target firm's primary business. *Others* includes firms that operate in mines, construction, building material, transportation, hotels, bus services, entertainment, and finance. Industry distribution for the full sample of firms is listed in Table A2 in Appendix I. *Bank-affiliated*, *Non-Bank*, and *Independent* deals are all defined in Tables 1.

Industry	Bank-affiliated		Non-Bank		Independent	
Consumer Nondurables	10	9.8%	19	8.44%	17	8.21%
Consumer Durables	5	4.9%	3	1.33%	3	1.45%
Manufacturing	13	12.75%	36	16%	34	16.43%
Enrgy, Oil, Gas, and Coal	0	0%	0	0%	0	0%
HiTech and Business Equipment	8	7.84%	19	8.44%	17	8.21%
Telecom	1	0.98%	3	1.33%	2	0.97%
Wholesale and Retail	29	28.43%	40	17.78%	37	17.87%
Health, Healthcare, Medical Equipment, and Drugs	0	0%	7	3.11%	7	3.38%
Utilities	1	0.98%	3	1.33%	3	1.45%
Others	35	34.31%	95	42.22%	87	42.03%
Total	102	100%	225	100%	207	100%

Table 4: Pre-buyout Target Characteristics

The table shows the target characteristics of bank-affiliated, non-bank, and independent LBOs. The number of observations, the mean and median values are reported. All acquirer types are defined in Table 1. The mean and median values are calculated as of the last full fiscal year before the buyout completion year. *Sales*, *Total Assets*, *EBITDA*, and *Earnings* are measured in £million. *EBITDA volatility* and *EBITDA/sales volatility* are the standard deviation of EBITDA and EBITDA/sales within three years before the buyout, respectively. Two-tailed Wilcoxon rank-sum tests are performed to test whether the median values are significantly different. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

	Bank-affiliated (1)			Non-bank (2)			Independent (3)			Diff (1-2)	Diff (1-3)
	N	Mean	Median	N	Mean	Median	N	Mean	Median		
Size											
Sales	96	200.2	31.77	204	90.75	19.64	187	93.26	17.67	12.13***	14.1***
Total assets	102	284.55	15.99	222	530.62	10.5	203	113.26	10.24	5.49**	5.75**
Profits											
EBITDA	100	16.94	3.31	207	13.52	1.83	189	13.45	1.73	1.48**	1.58***
Earnings	100	7.32	4.58	207	10.03	0.89	189	4.81	0.88	3.69*	3.70*
Profitability											
EBITDA/sales	95	1.79	0.11	200	0.26	0.10	183	0.12	0.1	0.01***	0.01
EBITDA/PP&E	100	0.31	0.78	206	2.26	0.88	188	2.31	0.85	-0.10	-0.07
Profit margin	95	0.09	0.05	200	0.04	0.05	183	0.04	0.05	0.00	0.00
ROA	100	0.16	0.08	207	0.14	0.07	189	0.08	0.07	0.01	0.01
Asset turnover	96	2.00	1.84	204	1.85	1.66	193	2.04	1.91	0.18	-0.07
Liquidity and risk											
Current ratio	100	1.23	0.84	207	0.92	0.75	189	0.91	0.75	0.09*	0.09*
PP&E/total assets	100	0.24	0.21	207	0.26	0.20	189	0.29	0.20	0.01**	0.01
EBITDA volatility	94	3.77	1.04	202	5.13	0.59	184	4.99	0.56	0.45**	0.48**
EBITDA/sales volatility	90	0.23	0.02	189	0.06	0.03	172	0.05	0.03	-0.01	-0.01

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Table 5: Conditional Probability of a Bank-affiliated Buyout

The table shows the probability of a firm being a bank-affiliated buyout target, conditional on the firm undergoing an LBO. The dependent variable equals one if the buyout is a bank-affiliated buyout, and zero if the buyout is an independent buyout. Buyouts affiliated with non-bank financial companies and corporations are excluded from this sample. *Log sales* is used to proxy for the size of the firm. *Current ratio, EBITDA/sales, ROA* and *Asset turnover* each measure firms' liquidity, profitability, and efficiency, respectively. All of the above variables are measured at one full fiscal year before the buyout. *EBITDA volatility* is the volatility of EBITDA during the three years prior to the buyout. *1-year Industry sales growth* is the 1-year median sales growth of all firms in the same Fama-French 10 industry in the buyout year. *Log aggregate PE inflow* of the logarithm of the total size of the private equity industry for the buyout completion year. Other variables from Table 4 that are significantly associated with the probability of a bank-affiliated buyout but not reported in this table (to be brief) include the logarithm of total assets, earnings, asset turnover, EBITDA/sales volatility, EBITDA and EBITDA/PP&E at one year before the buyout. Year dummies are included in all regressions. Robust standard errors clustered by industry are in parentheses. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Log sales	0.047***					0.096***
	(0.010)					(0.018)
Current ratio		0.048**				0.081***
		(0.020)				(0.027)
EBITDA volatility			-0.001*			-0.007***
			(0.001)			(0.001)
EBITDA/sales				0.030*		0.063***
				(0.016)		(0.005)
ROA					0.118**	0.166**
					(0.051)	(0.073)
1-year industry sales growth	0.494*	0.534**	0.484*	0.441	0.557**	0.480**
	(0.253)	(0.252)	(0.281)	(0.279)	(0.261)	(0.217)
Log aggregate PE inflow	0.134	-0.026	0.032	-0.006	-0.009	-0.018
	(0.095)	(0.111)	(0.107)	(0.093)	(0.102)	(0.104)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	283	284	273	273	284	259
Adjusted R^2	0.057	0.048	0.038	0.038	0.043	0.099

Table 6: The Effect of Bank-Affiliated Buyouts on Target Firms

The table presents the median percentage changes in the targets' operating performance from year i before the buyout to year j after it. Industry-adjusted changes are computed by subtracting the corresponding industry median from each variable. Industry medians are based on all private firms in the U.K. in the same Fama-French 10 industry. Panel A reports operating performance changes from two years before the buyout to three years after it. Panel B presents results with *Sales* and *PP&E* fixed at their levels at one year prior to the buyout. Wilcoxon rank-sum tests are performed to test whether the changes are significantly different from zero. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Operating performance changes from year i to year j

Variable	-2 to -1	-1 to +1	-1 to +2	-1 to +3
Size				
Tangible Fixed Assets (PP&E)				
Median change	0.062***	0.013*	0.038	-0.172
Industry-adjusted median change	0.006	-0.04	-0.021	-0.119
Sales				
Median change	0.146***	0.153***	0.165**	0.065
Industry-adjusted median change	0.18***	0.177**	0.146	0.139
Profits				
EBITDA				
Median change	0.168***	0.076	0.135	-0.190
Industry-adjusted median change	0.169***	0.112	0.141	-0.187
Earnings				
Median change	0.200***	-0.935***	-0.959***	-1.077***
Industry-adjusted median change	0.217***	-0.944***	-0.725***	-1.345***
Profitability and productivity				
EBITDA/Sales				
Median change	0.004	-0.016***	-0.010*	-0.037**
Industry-adjusted median change	0.001	-0.033***	-0.019*	-0.064***
Profit Margin				
Median change	0.003	-0.051***	-0.056***	-0.057***
Industry-adjusted median change	0.002*	-0.053***	-0.044***	-0.054***
EBITDA/PP&E				
Median change	0.033**	-0.083	-0.110**	-0.200**
Industry-adjusted median change	0.025*	-0.207**	-0.118*	-0.406**
Return on PP&E				
Median change	0.022**	-0.385***	-0.550***	-0.664***
Industry-adjusted median change	0.027**	-0.415***	-0.318***	-0.469***

Panel B: Profitability and productivity changes with fixed firm size

Variable	-1 to +2	-1 to +3
EBITDA/Sales		
Median change	0.009	-0.022
Industry-adjusted median change	-0.007*	-0.028**
Profit Margin		
Median change	-0.058***	-0.050***
Industry-adjusted median change	-0.033***	-0.042***
EBITDA/PP&E		
Median change	0.105	-0.143
Industry-adjusted median change	0.008	-0.052
Return on PP&E		
Median change	-0.392***	-0.586***
Industry-adjusted median change	-0.187***	-0.282***

Table 7: Operating Performance Changes of Propensity Score Matched Sample

The table reports operating performance comparisons based on a propensity score matched sample. Using the target firms' pre-buyout characteristics, a one-on-one nearest neighborhood propensity score matching is used to find independent LBOs that are similar to bank-affiliated LBOs. All firm characteristics that are found to be systematically different between bank-affiliated and independent LBOs are used for the matching. This process matches 89 independent LBOs that are similar to bank-affiliated LBOs. Panel A reports an assessment of the quality of the matching. t-tests are performed to determined whether the mean values of the matched groups are significantly different. Panel B reports the comparison of operating performance changes based on the matched sample. The independent variables in Columns 1, 3, and 5 are firms' industry-adjusted operating performance in the third year after the buyout. The independent variables in Columns 2, 4, and 6 are industry-adjusted operating performance changes from one year before the buyout to three years after it. *Bank-affiliated* is an indicator variable that equals one if the buyout is bank-affiliated, and zero if it is a matched independent LBO. *Board size* is the number of directors as of the third year after the buyout. The *Public-to-private indicator* equals one if the target of the buyout is a public corporation, and zero if it is private. *Club PE* is also an indicator variable that equals one if the buyout is sponsored by a consortium of private equity firms, zero otherwise. Year fixed effects are included in all regressions. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A. Assessing the quality of matching

Variable	Mean Values		%difference	t-statistics	p-value
	Bank-affiliated	Independent			
Fama-French 10 industry	8.03	8.24	-2.62	-0.52	0.602
Log sales	3.76	3.70	1.60	0.27	0.79
Log total assets	3.32	3.11	6.33	0.82	0.413
Current ratio	1.25	0.94	24.80	0.96	0.339
EBITDA volatility	3.97	4.15	-4.53	-0.11	0.911
EBITDA/sales volatility	0.24	0.04	83.33	1.41	0.16
EBITDA	18.88	14.36	23.94	0.78	0.436
Earnings	8.21	5.66	31.06	1.04	0.299
EBITDA/sales	0.28	0.12	57.14	0.84	0.404
ROA	0.09	0.10	-11.11	-0.39	0.699
Asset turnover	2.00	2.05	-4.70	-0.33	0.74

Panel B. Industry-adjusted operating performance changes

Dependent variable:	(1) EBITDA/sales	(2) EBITDA/sales Δ	(3) EBITDA/PP&E	(4) EBITDA/PP&E Δ	(5) Profit Margin	(6) Profit Margin Δ
Bank-affiliated indicator	0.026	0.073	0.049	0.299	0.036*	0.093
	(0.020)	(0.055)	(0.124)	(0.260)	(0.021)	(0.057)
Log PP&E	0.016	0.051	-0.081	-0.283**	0.010	0.036
	(0.010)	(0.031)	(0.082)	(0.119)	(0.010)	(0.031)
Pre-buyout leverage	-0.016	-0.031	-0.009	0.133	-0.022*	-0.048
	(0.012)	(0.030)	(0.097)	(0.161)	(0.013)	(0.033)
Leverage change	-0.002	-0.004	0.009	0.010	-0.002	-0.005
	(0.002)	(0.005)	(0.016)	(0.018)	(0.002)	(0.005)
Board size	0.012*	0.037*	0.046	0.045	0.013*	0.040*
	(0.006)	(0.020)	(0.036)	(0.058)	(0.007)	(0.021)
Public-to-private indicator	0.011	0.118	-0.256	-0.387	0.001	0.093
	(0.051)	(0.167)	(0.172)	(0.321)	(0.053)	(0.176)
Club PE	-0.061	-0.252	-0.022	0.157	-0.053	-0.221
	(0.068)	(0.217)	(0.176)	(0.402)	(0.071)	(0.220)
Pre- buyout EBITDA/sales volatility	-0.159**	0.493	-0.063***	0.331	-0.203	0.040
	(0.067)	(0.750)	(0.024)	(2.701)	(0.127)	(0.936)
Pre-buyout EBITDA/sales	0.462	-1.471				
	(0.298)	(0.945)				
Pre-buyout EBITDA/PP&E			0.093***	0.000		
			(0.014)	(0.135)		
Pre-buyout profit margin					-0.112	-1.527**
					(0.229)	(0.767)
Intercept	0.333*	0.720	1.139***	0.905	0.692***	-0.194
	(0.186)	(0.541)	(0.334)	(0.617)	(0.098)	(0.328)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	143	142	136	110	143	142
Adjusted R^2	0.435	0.350	0.254	0.179	0.146	0.288

Table 8: Operating Performance of Bank-affiliated and Similar LBOs vs. Independent LBOs

The table shows comparisons of firms' industry-adjusted operating performance from one year before the buyout to three years after it. OLS regressions are based on the full sample of bank-affiliated and independent LBOs (both matched and unmatched). Columns 1, 3, and 5 report comparisons of operating performance in levels. Columns 2, 4, and 5 report comparison results based on the percentage changes from one year before the buyout. *Bank-affiliated and similar firms* is an indicator variable that equals one if the buyout is a bank-affiliated or PSM matched independent buyout. All other variables are defined in Table 8. Year fixed effects are included in all regressions. Robust standard errors are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variable:	(1) EBITDA/sales	(2) EBITDA/sales Δ	(3) EBITDA/PP&E	(4) EBITDA/PP&E Δ	(5) Profit Margin	(6) Profit Margin Δ
Bank-affiliated and similar firms	-0.097***	-0.079**	-0.178	-0.357**	-0.097***	-0.083**
	(0.031)	(0.034)	(0.176)	(0.180)	(0.037)	(0.041)
Log PP&E	-0.044*	-0.051*	-0.497***	-0.575***	-0.048*	-0.048
	(0.023)	(0.026)	(0.077)	(0.083)	(0.026)	(0.029)
Pre-buyout leverage	0.073**	0.085**	0.344***	0.399***	0.068	0.070
	(0.036)	(0.040)	(0.104)	(0.112)	(0.043)	(0.047)
Leverage change	0.008***	0.007***	0.029***	0.040***	0.004***	0.003**
	(0.002)	(0.002)	(0.007)	(0.006)	(0.001)	(0.001)
Board size	0.004	0.001	0.099**	0.067	0.005	0.008
	(0.006)	(0.008)	(0.044)	(0.041)	(0.008)	(0.009)
Public-to-private indicator	-0.057*	-0.072*	-0.245	-0.322	-0.049	-0.096*
	(0.030)	(0.040)	(0.200)	(0.236)	(0.042)	(0.055)
Club PE	-0.094	-0.089	-0.043	0.099	-0.083	-0.023
	(0.058)	(0.096)	(0.292)	(0.610)	(0.070)	(0.112)
Pre- buyout EBITDA/sales volatility	0.554***	-0.352	0.048	-2.665	0.253	-1.045
	(0.126)	(0.624)	(0.031)	(2.396)	(0.249)	(0.862)
Pre-buyout EBITDA/sales	-0.123***	-0.303				
	(0.036)	(0.312)				
Pre-buyout EBITDA/PP&E			0.004*	-0.012		
			(0.002)	(0.008)		
Pre-buyout profit margin					-0.452	-1.105*
					(0.449)	(0.618)
Intercept	-0.027	-0.013	0.239	0.224	-0.004	0.037
	(0.066)	(0.077)	(0.299)	(0.511)	(0.074)	(0.079)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	222	221	204	166	222	220
Adjusted R^2	0.358	0.214	0.436	0.471	0.176	0.206

Table 9: Operating Performance of LBOs Affiliated with Prestigious Banks

The table shows bank-affiliated LBOs under prestigious banks outperform other bank-affiliated LBOs in terms of target firms operating performance after the buyout. OLS regressions are based on the sample of bank-affiliated buyouts. Columns 1, 3, and 5 report post-buyout operating performance in levels three years after the buyout. Columns 2, 4, and 5 report operating changes from one year before the buyout to three years after it. *Top 25 bank* is an indicator variable that equals one if the buyout sponsor is a affiliated with one of the largest 25 banks worldwide, and zero otherwise. The ranking of banks is determined by their assets as of 2007. All other variables are defined in previous tables. Year fixed effects are included in all regressions. Robust standard errors are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) EBITDA/sales	(2) EBITDA/sales Δ	(3) EBITDA/PP&E	(4) EBITDA/PP&E Δ	(5) Profit Margin	(6) Profit Margin Δ
Top 25 bank	0.022	0.022	0.164	-0.445	0.074	0.067
	(0.047)	(0.046)	(0.414)	(0.600)	(0.068)	(0.074)
Log PP&E	-0.016	-0.019	-0.295*	-0.421**	-0.040	-0.043
	(0.018)	(0.020)	(0.173)	(0.212)	(0.025)	(0.028)
Pre-buyout leverage	0.015	0.022	-0.020	0.212	0.021	0.024
	(0.025)	(0.027)	(0.283)	(0.251)	(0.041)	(0.044)
Leverage change	0.001	0.002	-0.019	0.016	0.001	0.002
	(0.004)	(0.004)	(0.048)	(0.030)	(0.005)	(0.005)
Board size	0.018*	0.021*	0.169	0.097	0.019	0.022
	(0.010)	(0.011)	(0.110)	(0.078)	(0.013)	(0.014)
Public-to-private indicator	-0.064	-0.061	-0.444	-0.675	-0.099	-0.104
	(0.065)	(0.070)	(0.438)	(0.688)	(0.093)	(0.095)
Club PE	-0.194**	-0.036	0.013	1.704	-0.288	-0.466
	(0.084)	(0.591)	(0.057)	(4.008)	(0.244)	(0.840)
Pre- buyout EBITDA/sales volatility	0.034	0.027	-0.004	-0.174	0.109	0.110
	(0.051)	(0.059)	(0.251)	(0.579)	(0.088)	(0.091)
Pre-buyout EBITDA/sales	0.740***	-0.386				
	(0.286)	(0.310)				
Pre-buyout EBITDA/PP&E			0.085***	-0.013		
			(0.025)	(0.032)		
Pre-buyout profit margin					0.505	-0.741*
					(0.438)	(0.416)
Intercept	0.016	-0.006	1.023	1.151	0.091	0.091
	(0.115)	(0.124)	(0.823)	(1.369)	(0.164)	(0.174)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	69	68	61	60	68	67
Adjusted R^2	0.118	0.018	0.224	0.101	0.011	0.025

Table 10: Operating Performance Comparisons without Club Deals

The table presents results on operating performance comparisons based on a sample of bank-affiliated and independent LBOs with only one buyout sponsor. The regression analyses are identical to those reported in Tables 7 and 8. Therefore, the table only reports the coefficient estimates for the variables of most interest. Panel A presents the results of performance comparisons between bank-affiliated and their PSM matched independent buyouts. The matching process and the indicator variable *Bank-affiliated* are all described in previous tables. Panel B compares the operating performance of bank-affiliated and PSM matched firms to that of unmatched independent LBOs. Year fixed effects are included in all regressions. Robust standard errors are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Bank-affiliated vs. matched firms

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	EBITDA/sales	EBITDA/sales Δ	EBITDA/PP&E	EBITDA/PP&E Δ	Profit Margin	Profit Margin Δ
Bank affiliated	0.019	0.031	0.063	0.284	0.050	0.047
	(0.014)	(0.036)	(0.117)	(0.259)	(0.037)	(0.043)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	128	128	124	102	128	128
Adjusted R2	0.290	0.242	0.235	0.104	0.130	0.289

Panel B: Bank-affiliated and similar firms vs. unmatched firms

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	EBITDA/sales	EBITDA/sales Δ	EBITDA/PP&E	EBITDA/PP&E Δ	Profit Margin	Profit Margin Δ
Bank affiliated and similar firms	-0.036**	-0.077*	-0.208*	-0.346**	-0.054**	-0.128***
	(0.014)	(0.040)	(0.121)	(0.166)	(0.021)	(0.049)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	201	201	188	154	201	201
Adjusted R^2	0.393	0.343	0.439	0.336	0.198	0.285

Table 11: Operating Performance Comparisons of Buyouts Prior to 2005

The table presents operating performance comparisons based on buyouts completed before 2005. All LBOs completed between 2005 and 2007 are dropped from the sample. Variables used in the regression analyses are reported in Table 7 and 8. Coefficient estimates for the variables of most interest are reported in this table. Panel A presents the results of performance comparisons between bank-affiliated and their PSM matched independent buyouts. Panel B shows operating performance comparisons between bank-affiliated and PSM matched firms and unmatched independent LBOs. Year fixed effects are included in all regressions. Robust standard errors are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Bank-affiliated vs. matched firms

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	EBITDA/sales	EBITDA/sales Δ	EBITDA/PP&E	EBITDA/PP&E Δ	Profit Margin	Profit Margin Δ
Bank affiliated	0.027	0.081	0.002	0.211	0.036	0.130*
	(0.023)	(0.063)	(0.131)	(0.231)	(0.024)	(0.070)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	91	90	90	76	91	90
Adjusted R2	0.341	0.253	0.548	0.417	0.133	0.244

Panel B: Bank-affiliated and similar firms vs. unmatched firms

	(1)	(2)	(3)	(4)	(5)	(6)
	EBITDA/sales	EBITDA/sales Δ	EBITDA/PP&E	EBITDA/PP&E Δ	Profit Margin	Profit Margin Δ
Bank affiliated and similar firms	-0.045**	-0.098**	-0.210*	-0.262*	-0.043*	-0.120**
	(0.021)	(0.046)	(0.123)	(0.139)	(0.022)	(0.051)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	166	162	162	136	165	161
Adjusted R^2	0.371	0.267	0.490	0.492	0.173	0.176

Table 12: Buyout Exit Probabilities and Duration

The table presents results using Heckman's selection model to estimate buyout exit probabilities and duration. Stage one predicts the probability of exiting (Columns (1) and (3)), and stage two estimates buyout duration, measured by the logarithm of holding period in months (Columns (2) and (4)). Results reported in Columns (1) and (2) show estimations of bank-affiliated LBOs versus similar PSM matched LBOs. Columns (3) and (4) report results of bank-affiliated and similar firms versus the rest of independent LBOs. *Log (post-buyout firm size)* is the logarithm of target firm's PP&E after the buyout. *Industry IPO vol* is the Fama-French 10 industry IPO volume in the year of exiting. *EBITDA/PP&E* and *Number of directors* are measured at their levels in the third year after the buyout. *EBITDA/PP&E growth* shows the increase in EBITDA/PP&E from one year before the buyout to three years after it. *Acquirer reputation indicator* equals one if the acquirer is one of the largest private equity firms as of 2007. *Pre-buyout EBITDA/PP&E* and *Log(pre-buyout firm size)* each measures EBITDA/PP&E and logarithm of PP&E at one year before the buyout, respectively. Industry and year fixed effects are included in all regressions. Robust standard errors clustered by industry are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variable:	(1) (Exit)	(2) (Duration)	(3) (Exit)	(4) (Exit)
bank-affiliated / Bank and similar firms indicator	-0.135	0.047**	0.046	-0.002
	(0.134)	(0.021)	(0.161)	(0.069)
Log (post-buyout firm size)		-0.018		-0.021**
		(0.032)		(0.008)
Industry IPO vol		0.100		0.040
		(0.086)		(0.045)
EBITDA/PP&E		-0.007		-0.023**
		(0.021)		(0.009)
Number of directors		0.006		0.001
		(0.033)		(0.023)
EBITDA/PP&E growth		-0.017***		-0.000***
		(0.005)		(0.000)
Acquirer reputation indicator	-0.362		-0.022	
	(0.754)		(0.176)	
Pre-buyout EBITDA/PP&E	-0.21		-0.018	
	(0.017)		(0.015)	
Log(pre-buyout firm size)	-0.196***		-0.134***	
	(0.050)		(0.017)	
Intercept	-0.848***	2.937***	-1.291***	3.307***
	(0.209)	(0.531)	(0.191)	(0.340)
Industry fixed effect		Yes		Yes
Year fixed effect		Yes		Yes
Number of observations		176		283
Wald test of independence of equations		0.04		0.71

Appendix I: Description of the Initial Sample

In this Appendix, I present a more detailed description of the initial sample. LBOs in the initial sample are not restricted to only target firms with consolidated financial statements. The full sample includes 1,053 LBOs, out of which 277 are bank-affiliated LBOs and 776 are non-bank LBOs, including 693 independent LBOs. Panel A of Table A1 presents the deal types cross LBO year and acquirer types. Similar to the pattern observed in the final sample, the majority of all LBOs across all acquirer types is buyouts of private firms. This result is consistent with the overall buyout pattern (see Strömberg (2008)). A small percentage of LBOs sponsored by each acquirer type is also club deals. Panel B of this table further shows exit outcomes by acquirer type. Also similar to the final sample, majority of the firms have not exited yet. Among firms that have exited, most are sold to strategic buyers (*Acquired*), followed by sales to other private equity firms (*SBO*). Among bank-affiliated LBOs, Only 18 (6.5%) of the firms exited through IPOs. This percentage is slightly lower that those of non-bank (7.9%) and independent LBOs (7.7%).

Table A2 further shows the Fama-French 10 industry distribution of of LBOs in the initial sample by acquirer type. As with the final sample of LBOs, most of the target firms, regardless of acquirer type, fall in the *Others* category. Compared to non-bank and independent LBOs, bank-affiliated LBOs have a higher percentage of targets in *Whole sale and Retail*, and a lower percentage of targets in *HiTech and Business equipments*. For each acquirer type, a very small fraction of the firms have no industry classification. These firms are classified as *Non-classified*. Overall, the initial sample shows patterns similar to those observed in the final sample restricted to firms with consolidated financial statements. These similar patterns should mitigate the concern that the final sample is not representative of the market.

Table A1. Initial Sample Buyout Types and Outcomes

The table presents different buyout types and outcomes of firms in the initial sample that is not restricted to firms with consolidated financial statements. The initial sample includes 1,053 LBOs, divided to three categories according to the acquirer type: 277 are bank-affiliated LBOs (Column *Bank-affiliated*); 776 are non-bank LBOs (Column *Non-bank*), and 693 are independent LBOs (Column *Independent*). Panel A shows deal types by acquirer type and and the buyout year. Panel B presents LBO exit outcomes by the acquirer type. All deal types and exit outcomes are defined in Table 2.

Panel A: Deal Types Across Time in the Initial Sample

Buyout year	Bank-affiliated			Non-bank			Independent			Club Deals		
	Total	Public	Private	Total	Public	Private	Total	Public	Private	Bank-affiliated	Non-bank	Independent
1997	8	0	8	36	0	36	36	0	36	2	1	1
1998	14	1	13	29	0	29	28	0	28	1	1	1
1999	29	1	28	66	14	52	56	12	44	2	8	6
2000	18	4	14	49	13	36	44	12	32	2	8	5
2001	27	2	25	39	5	34	38	5	33	3	2	1
2002	18	3	15	45	7	38	42	7	35	1	0	0
2003	24	5	19	63	12	51	56	11	45	2	6	3
2004	23	1	22	96	6	90	85	5	80	1	4	2
2005	31	4	27	93	8	85	87	8	79	4	4	4
2006	40	5	35	122	20	102	108	16	92	3	6	5
2007	35	5	30	38	20	118	113	16	97	4	1	1
Total	277	41	236	776	105	671	693	92	601	25	41	29

Panel B: Initial Sample Deal Outcomes

Affiliation	IPO	Acquired	SBO	Bankruptcy	Other/unknown	No exit	Total
Bank	18	48	14	2	3	192	277
Non-bank	61	92	25	5	5	588	776
PE only	53	86	22	5	4	523	693

Table A2. Target Industry Distribution of Firms in the Initial Sample

The table shows the number and percentage distribution of target firms in each industry in the initial sample not restricted to firms with consolidated financial statements. Industry distribution is classified according to the Fama-French 10 industry classification. *None-Classified* includes firms with missing industry codes in Zephyr. All other industries and variables are defined in Tables 1 and 3.

	Bank		Non-bank		Independent	
Consumer Nondurables	21	7.58%	70	9.02%	63	9.12%
Consumer Durables	13	4.69%	21	2.71%	18	2.6%
Manufacturing	54	19.49%	120	15.46%	112	16.21%
Energy, Oil, Gas, and Coal	2	0.72%	8	1.03%	7	1.01%
HiTech and Business Equipment	15	5.42%	94	12.11%	81	11.58%
Telecom	6	2.17%	11	1.42%	9	1.3%
Wholesale and Retail	60	21.66%	123	15.85%	112	16.06%
Health, Healthcare, Medical Equipment, and Drugs	8	2.89%	29	3.74%	27	3.91%
Utilities	3	1.08%	6	0.77%	5	0.72%
Others	94	33.94%	291	37.5%	257	37.19%
Non-classified	1	0.36%	3	0.39%	2	0.29%
Total	277	100%	776	100%	693	100%

Appendix II: Deal characteristics

Appendix II describes changes in target firms' financial structure and deal pricing as part of deal characteristics. Due to the small sample size, I use two-tailed Wilcoxon rank-sum tests to determine whether the median values between bank-affiliated and non-bank/independent LBOs are significantly different. Panel A of Table A3 reports changes in the median values of short-term debt, total debt, and bank debt of bank-affiliated, non-bank, and independent LBO targets. Debt levels are measured at one year before and after the buyout. Wilcoxon tests of post-buyout debt levels show that compared to both non-bank and independent LBO targets, bank-affiliated targets carry more debt after the buyout. The total amount of short-term debt and bank debt, in particular, are significantly higher. However, these firms also have more debt before the buyout. Once scaled by firms' tangible assets, there is no evidence that bank-affiliated LBOs have more debt.

To account for target characteristics in leverage changes, I also use multivariate equations to predict the changes in both the level and percentage changes of debt from one year before the buyout to one year after it. In those equations, I control for the affiliations of the buyout sponsor, the natural logarithm of firms' tangible assets, profitability, and pre-buyout debt level. To absorb residual variations from time and industry trends, I also include buyout year fixed effects and industry fixed effects. In untabulated results, I do not find that bank-affiliated LBO targets have higher levels of debt or higher percentage changes in debt from the buyout. The same results also hold when excluding club deals and deals after 2006.

Panel B of Table A3 shows the median values of deal pricing measured by enterprise value (EV), EV/sales, and EV/EBITDA. Wilcoxon rank-sum tests indicate that bank-affiliated LBOs do not have higher enterprise values compared to both non-bank and independent LBOs. However, they have higher enterprise multiples. To better account for firm characteristics and market conditions, I then use Ordinary Least Squares (OLS) regressions of deal pricing matched on a three-year window.[9] The results show that bankffiliated LBOs are not priced differently compared to indepen-

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[9]For every target firm, I form a matching portfolio of non-buyout acquisitions in the same industry in the U.K.

dent LBOs using either enterprise value or enterprise multiples. Since no differences were found, I do not report the tables for brevity.

Targets of bank-affiliated LBOs are systematically different from those of independent LBOs. To better account for those differences, I further repeated the above analyses using a sample of bank-affiliated LBOs and PSM matched independent LBOs. The results also do not show any difference either (results untabulated). Overall, I do not find that bank affiliations are associated with different deal characteristics in terms of leverage changes and deal pricing.

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and compute the deal pricing, measured by EV, EV/sales, and EV/EBITDA, for that portfolio. Then I calculate the percent difference between deal pricing for each deal in my sample and the average pricing of deals in the the matching portfolio. The percent differences are regressed on buyout sponsor affiliation, firm size, EBITDA one-year growth, club deals indicator, debt ratio, and debt market condition. All regressions are clustered by buyout year as well.

Table A3. Leverage Changes and Deal Pricing

The table shows the median values of leverage and deal pricing of bank-affiliated, non-bank, and independent LBOs. *N* represents the number of observations in each group. Panel A shows the changes in short-term debt, total debt, and bank debt. Pre- and Post-buyout leverage are measured at one full year prior to and post the LBO. Debt values in levels are all measured in $ million. Panel B shows deal pricing measured by enterprise values (*EV*) in $ million and enterprise values as multiples of sales and EBITDA. Two-tailed Wilcoxon rank-sum tests were performed to determine whether the median values of two groups are significantly different. ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Leverage changes

	Bank-affiliated (1)			Non-bank (2)			Independent (3)			Diff (1-2)	Diff (1-3)
	N	Pre-buyout	Post-buyout	N	Pre-buyout	Post-buyout	N	Pre-buyout	Post-buyout		
Short-term debt	100	1.74	2.32	207	0.50	1.74	190	0.48	1.63	0.58**	0.69**
Short-term bank debt	100	0.60	1.89	207	0.17	1.02	190	0.17	1.01	0.87***	0.88***
Total debt	100	7.16	31.62	207	4.03	27.57	190	3.83	25.5	4.05	6.12
Total Bank debt	100	1.22	9.96	207	0.42	8.29	190	0.4	8.01	1.67	1.95
Debt/PP&E	100	1.73	8.84	205	1.76	8.41	188	1.79	7.88	0.43	0.96
Bank debt/PP&E	100	0.27	3.18	205	0.24	2.51	188	0.25	2.33	0.67	0.85
Bank debt/total debt	100	0.22	0.49	206	0.16	0.39	189	0.16	0.38	0.10**	0.11**

Panel B: Deal pricing

	Bank-affiliated (1)		Non-bank (2)		Independent (3)		Diff (1-2)	Diff (1-3)
	N	Median	N	Median	N	Median		
EV (in $ million)	77	28.52	161	25.07	149	26.24	3.45	2.28
EV/Sales	74	0.9	152	1.29	141	1.33	-0.39**	-0.43**
EV/EBITDA	74	7.76	140	9.74	130	10	-1.98**	-2.24**