

Job Creating LBOs¹

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This paper finds statistical evidence that LBOs may serve to finance corporate growth when they act as a substitute for weak capital markets. Using a large dataset on 830 deals in France, we look at the change in corporate behaviour following a leveraged ownership transfer, compared to an adequately chosen control group. We find that in the three years following an LBO, targets tend to grow faster than their peer group: the excess job growth is about 13%. We run various robustness checks to ensure that the methodology and sample are comparable with previous studies. We then provide evidence consistent with LBOs alleviating capital constraints in France. First, former divisions of larger firms, who were likely not constrained before the transaction, do not experience any post LBO growth. Second, the strongest post LBO growth is observed in financially dependent industries, i.e. industries where firms are usually reliant on external finance to grow.

1. Introduction

This paper provides some evidence that LBOs may foster firm growth by alleviating credit constraints. In the existing academic literature, the available evidence suggests that the main source of value creation in LBOs is cost cutting. Studying large public-to-private transactions of the 1980s, Kaplan (1989) shows that LBO targets increase their profitability by cutting down investment, selling off assets, while maintaining operating income constant. Lichtenberg and Siegel (1989) find that privately held LBO targets tend to reduce white collar employment and wages. Baghat et al. (1990) look at hostile takeover targets in the 1980s and find that job losses account for about 30% of the takeover premium. More recently, Amess and Wright (2007) and Davis et al (2008) find that initially privately held LBO targets experience some employment reductions in both the UK and the US over a longer period (1980-2004). Finally, Chevalier (1995) and Chevalier and Scharfstein (1996) have shown, using a sample of large supermarket chains that were LBO targets in the 1980s, that LBOs led to under-investment (in market shares). In addition to cutting costs through downsizing, there is evidence that LBOs prevent growth by forcing firms into “debt overhang”.

These findings may not, however, be fully representative of today’s typical LBO transaction, for two reasons. First, there are good reasons to update existing studies on LBOs with more recent data. The 1980s was a decade of intense corporate restructuring in the US, in the face of international competition and deregulation of many industries (Jensen, 1993). Since most studies focused on that period, it is highly probable that financial pressure was exerted on firms that needed the most cost cutting. This need not be true today (Stromberg, 2008). For instance, Guo et alii (2008) find weaker effects on profitability of recent large public to

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private deals, which suggests that the huge gains reaped by private equity investors in such transactions in the 1980s are no more there. One interpretation for this is that firms now cut their costs without outside intervention, under the pressure of either stockholders or product market competitors (Giroud and Mueller, 2008). Thus, since the 1980s, part of the private equity industry had to look for new sources of value creation: one possibility is that funds may select underdeveloped firms, and accelerate their growth.

Secondly, nearly all studies have concentrated on the US and the UK,⁵ where capital and credit markets are large and well functioning. In countries where this is not the case, LBOs may act as a substitute for the existing banking system by providing credit constrained firms with external finance. This could happen because private equity funds act as a monitor on the LBO target, thereby increasing its debt capacity vis à vis other lenders (notably banks). Another possibility is that private equity funds inject their own funds or financial expertise into the firm that they invest in.

By shifting the focus to France, this paper investigates the possibility that some LBOs aim to expand the scale and scope of the target's activities. The existence of this type of LBOs is best exemplified by one of our French data points: ABCD,⁶ a medium sized firm based in the French Alps that makes industrial furnaces. ABCD employs approximately 110 employees during the 1990s. In 2000, it becomes the target of a Management Buyout with the backing of a leading international private equity fund. According to the French business press, the aim of the deal is to "accelerate internal growth so as to reach its goal of doubling sales by 2006" (Les Echos, November 30, 2000). As our data show, ABCD has nearly doubled its workforce by 2006 (reaching 193 employees, see figure 1). It has also increased its sales by some 35%, and its assets by about 16% since 1999. As is apparent, ABCD was already starting to take off in the late 1990s, but growth clearly accelerated after the LBO.

France provides us with a natural testing ground for our contention that some LBOs may be motivated by growth considerations, for at least two reasons. First, France is a country with many family managed businesses (see e.g. Faccio and Lang, 2002, for evidence on publicly listed firms), which may sometimes lack the managerial and financial expertise needed to take advantage of all growth opportunities. Using a restricted sample of medium sized, privately held firms, Bloom and Van Reenen (2007) find that management practices tend to be poor in family managed firms. Besides, all studies find that family firms tend to be, on average, smaller than non family firms (see Sraer and Thesmar, 2007, for France). Thus, focusing on France allows us to study an economy with many "hidden gems" with significant margins of improvement and growth. Second, there are reasons to believe that French credit and stock markets may be less well developed than those of previously studied in the US and the UK, and that access to external finance may be more difficult for medium sized firms in France than in the UK or the US. According to Djankov, Mc Liesh and Shleifer (2006), the ratio of private credit to GDP in France is 0.9, as opposed to 1.4 in the UK and the US. According to recent data put together by Beck et al (2000), the ratio of private credit *plus* stock market capitalization to GDP is equal to 1.7 in France, versus 2,7 in the UK, 3.5 in the US. Finally, France scores low on many dimensions of investor protection, such as the creditor rights index reported in Djankov et al (2006). Against this background, it is at least plausible that private equity could offer an alternative source of finance for small and medium enterprises such as the ones we study.

⁵ The only exception we are aware of is Desbrières and Schatt (2002).

⁶ The name of this firm has been changed into ABCD to respect confidentiality.

We first identify 830 French deals over 1994 – 2004, using two sources of data: SDC Platinum and Capital IQ. We restrict attention to transactions which involve (1) the acquisition of 100% of ownership with the help of private equity funds and (2) the use of leverage to finance the deal. Our sample is representative of the typical LBO deal in international data. Its mean enterprise value is \$395m (in 2007 dollars), compared a mean deal size of \$280m in the UK, and \$389m in the US (figures from Stromberg, 2008, who uses Capital IQ). Hence, in France as in the UK or the US, public to private deals, involving a large publicly listed target are the exception rather than the norm. Our sample is, however, smaller than the UK sample of Amess and Wright (2007), who study 1,350 deals, and the US sample of Davis et al (2008), who look at more than 5,000 deals (over a longer period). The LBO market is thus slightly less dynamic in France than in the UK, and quite similar to that of the US, once we adjust for the size of the economy.

We then track the performance of targets before and after the deal using accounting data from tax files. We compare their evolutions with a carefully constructed “control group” of similar firms that remain independent. Like most existing studies, we find that LBOs lead to a large and statistically significant increase in profitability of the target. This is unsurprising but comforting. But in contrast to existing studies on US or British data, we find that LBO targets tend to grow *significantly more* than comparable firms, both in terms of jobs and assets. This effect is statistically significant and economically large: between the three years preceding the transaction, and the four years that follow it, excess job, asset and sales growths of LBO targets are respectively 13, 11 and 13%. This effect is extremely robust and is not due to differences in methodology with previous studies. First, we check that our findings are there both for LBOs occurring before and after 2000. Second, we verify that targets grow, not because of restructuring or the acquisition of other companies, but most likely through internal growth. Third, we find that targets are not more likely to disappear from the data than their comparable twins (either for bankruptcy or asset sale). Hence, even accounting for attrition, targets grow much faster than comparable firms. Fourth, we find that targets operating in industries with a stable, protected labor force, do not grow *faster*. This alleviates the concern that the protective French labor laws prevent us from observing the cost cutting LBOs that the existing literature has focused on. Fifth, in view of the current developments on credit markets, we ask how robust post LBO growth has been to the sharp economic downturn of 2000. We find no difference between deals done in 1998-1999 (when valuations were inflated and leverage was high) and deals realized in 2001-2002 (where valuations and debt ratios were lower).

Last, we propose an explanation for this intriguing finding: in France, private equity funds act as a substitute for weak capital markets. We bring two pieces of evidence in favour of this hypothesis. First, we would expect that former divisions of larger companies were less likely to be financially constrained before the transaction, than formerly family owned firms. Consistently with this hypothesis, we find that after a divisional buyouts are not accompanied with post transaction growth, while “private to private” deals are followed by very strong growth. Second, in the spirit of Rajan and Zingales (1998), we focus on industries where internal funds are typically insufficient to finance investment. We find that post LBO growth of targets is higher in these industries, but only for “private to private” transaction (there is no effect on divisional buyouts). These two pieces of evidence suggest that buyouts foster growth by alleviating financial constraints. Interestingly, the existing literature suggests the contrary: because LBO targets are highly levered, they struggle to pay back their debt, and therefore have to forgo valuable investment opportunities. Chevalier (1995), and Chevalier and Scharfstein (1996) find evidence of such debt overhang in the supermarket industry. The

reasons for this difference is that (1) we look at France, a less financially developed country, (2) we look at smaller, initially privately held, firms and (3) the LBO business model has evolved since the 1980s beyond cost cutting.

Section 2 describes the data used. Section 3 establishes the fact that target growth is accelerated following an LBO. Section 4 provides evidence that financial constraints are relaxed after the deal. Section 5 concludes.

2. Dataset

a. Data construction

To analyze the impact of LBO transactions at the company level, we resorted to three different databases: SDC Platinum and Capital IQ (to isolate transactions) and BRN (for financial statements).

First, we retrieve all the deals from the database SDC Platinum with the following characteristics: (i) they are **completed** between the **01/01/1994** and the **31/12/2004**, (ii) the Target company is incorporated in France, (iii) deals classified as “LBO” by this database.⁷ 603 deals match these criteria. We then improve our coverage with transactions from Capital IQ. There, we select all 972 deals that were (1) announced between 1994 and 2004, (2) either “closed” or “effective”, and (3) are reported by Capital IQ as being “LBOs”. The two datasets overlap: thus we start with 1,193 transactions.

Most of the targets are medium sized, privately held firms. Thus, we obtain financial statements from tax files (called BRN) available from the statistical office (INSEE).⁸ Our transaction and accounting data do not have the same identifier so we match them by company name. Names are not always identical in both databases, so in case of ambiguity we resort to company websites and annual reports. The matching process reduces sample size to 830 deals, of which 450 come from SDC and 492 come from Capital IQ.

One possible concern at this stage is that our data construction technique does not account for the group structure that is so prevalent among French firms. Many firms have subsidiaries that are 100% controlled and that may hold more assets or employees than the parent company. If an LBO is followed by a simplification of the corporate structure that leads to the consolidation of all assets and jobs in the target firm, we will overestimate the post LBO growth of the firm.

We deal with this important issue in three steps. First, notice that the asset of a subsidiary are in general already included in the fixed assets of the parent firm via the value of the parent’s equity holdings (in the financial fixed assets line). Second, for each LBO target, we try to make sure that we focus on the main entity with most real activity, instead of just a holding that owns various subsidiaries but has no operation. We do this using company websites and annual reports and by looking at employment and sales figures. Third, we use another data

⁷ Definition of an LBO according to SDC: an “LBO” occurs when an investor group, investor, or firm offers to acquire a company, taking on an extraordinary amount of debt, with plans to repay it with funds generated from the company or with revenue earned by selling off the newly acquired company’s assets. SDC considers an LBO if the investor group includes management or the transaction is identified as such in the financial press and 100% of the company is acquired.

⁸ See Bertrand, Schoar and Thesmar (2007) for a description of these data.

source, available from the statistical office, that collects ownership links between parents and subsidiaries (the survey is called LIFI, for “ownership links”, and is available from the French statistical office). The limitation of this database is that it is a survey, but coverage is good during the time period that we consider. Using this survey, we find that only 20% of our targets have one subsidiary or more. As a result, we do not report results using subsidiary data in most regressions, but use this information in various robustness checks.

A second concern is that we may have missed many divisional buyouts, as in such cases the target may not be an independent legal entity before the transaction (but just a division of the selling firm). As it turns out, in our 830 LBOs, there are still 234 divisional buyouts (28%) according to SDC and Capital IQ. This fraction is not changed much by the matching process: before matching, 31% of our transactions (out of 1,193 deals) are divisional buyouts. It means that sold divisions tend to be independent legal entity, with their own accounts, before the transaction. On this front, the group structure of the selling entity, very common in France, helps us in following the performance of the division spun off: both before and after the transaction, divisions typically have their own accounts, and make it available to the tax administration.

All in all, we find that the total number of employees of firms that underwent an LBO between 1994 and 2004 stands at 146,854. This represents approximately 1.1% of the employment in our accounting data, and some 0.7% of total French employment. This is smaller than the figure obtained by Davis et al (2008) in their study of US LBOs.

Using financial statements, we retrieve the following variables: number of employees, net assets, working capital, fixed assets, EBITDA, Net Income, industry classification (2 and 4 digit). We measure vertical integration as gross margin, the ratio of value added (sales minus intermediary inputs) divided by sales. The share of export is the ratio of foreign sales to total sales. Profitability is measured through ROA, i.e. EBITDA divided by total net assets. All ratios are winsorized above the 95th and below the 5th percentiles. We also report results on total fixed assets, tangible fixed assets and on working capital, which is computed as trade receivables plus inventories minus payables.

b. Building the Control Group

In order to analyze the impact of LBO operations, we compare the targets of such transactions to similar companies that did not go through a LBO. The choice of the adequate control group requires some caution, as our sample has mostly medium-sized, privately held, firms. Heterogeneity is much more dramatic than among listed firms: in a given 4 digit industry, size may go from 4 to 4000 employees. We thus cannot content ourselves with comparing firms with “industry average” (however precisely defined).

A matching company (a twin) meets the three following criteria:

- It belongs to the same 2-digit sector as the target
- Number of employees one year before the LBO is in the +/-50% bracket of the employment of target company
- Return on Asset one year before the LBO is in the +/-50% bracket of the ROA of the target company

If there are more than five twins, we just keep the five nearest neighbours to the target. The choice of ROA and employment is clearly driven by the fact that those measures will be the focus of our investigation, and that they tend to mean revert. Regarding the +/- 50% bracket,

there is a trade-off between matching accuracy and the need to get a twin for as many LBO targets as possible. At this 50% level, only 46 targets have no twin. If we require employment and ROA to be both at most 20% away from the target, the number of targets with no twin rises to more than 100.⁹

The matching methodology allow us to add 3,913 “twin” companies to the sample, i.e. 4,7 twins by target. By construction, the two groups are not too different, as evidenced by Table 1 Targets have on average 182 employees, and a turnover of some 167m€ The twins are smaller than the targets, in particular in the lower quartiles of the size distributions. The matching on ROA is much more successful, in particular in upper quartiles, which are nearly identical. Finally, pre LBO growth is very similar for targets and their twins, for jobs, sales as well as total assets. This is particularly comforting given that we did not match on pre-event growth. As a result, growth dynamics after the event will not be affected by the fact that targets grow differently before the deal.

c. How Different are French LBOs from the Rest of the World's

Figure 2 shows the number of LBO per year in our sample. Overall, the number of deals first peaks in 1999, after which LBO activity declines somewhat but does not collapse; it then picks up again in 2003 and 2004. This pattern is similar to the evolution recorded by Davis et al. (2008) in their US sample. But there are, in total, less deals in our sample (they have more than 5,000 deals over the 1981-2004 period). Part of the reason for this is that the US economy is a larger economy than the French one (GDP is six time bigger). Adjusted for size, French LBO activity looks comparable to the US one.

The types of sellers involved in our French transactions do not differ much from the typical LBO in the world. 6% of the deals are public to private transactions in France as well as in Stromberg (2008)'s sample of LBOs around the world. 51% are pure “private to private” transactions, in France as in the world. We have 28% of divisional buyouts, against 26% in Stromberg's sample. We have more secondary buyouts (19 versus 13%), i.e. transactions involving a financial vendor (most often another private equity fund). Finally, only 1% of our targets are labelled “distressed”, but this figure is also very small in Stromberg's sample (2%).

Deal size and capital structure of LBOs is very similar to international data. According to Stromberg (2008), who uses Capital IQ only, the median deal size (in terms of enterprise value) is \$64 millions in the US, and \$36 millions in the UK. In our French extract of Capital IQ, it is \$63 million. We also have all reasons to believe that the use of debt is as pervasive in our French sample as in the transactions studied in previous papers. While it is unfortunately impossible to obtain reliable data on the level of debt of deals in our sample, we can use figures from S&P to obtain the mean debt to EBITDA ratio of deals in France, the UK and the US. Sampling deals made between 2003 and 2006, S&P reports a mean debt to EBITDA ratio of 4.8 for France (232 observations) and the UK (240), and 4.2 for the US (410). Thus, we have good reasons to believe that our French transactions are very similar in terms of size and capital structure to international LBOs.

Finally, it seems that our transactions involve firms that are older than the US targets studied by Davis et al (2008). In their sample, about 50% of the firms are older than 10 years, while 25% are less than five year old. In our sample, 85% of our targets are older than 10, and only

⁹ However, regression results presented below are almost unchanged with this smaller sample.

5% younger than 5. It is important to notice that, on the age dimension, targets do not, however, differ from their twins, even though the twin selection was not made on age. This comforts us in thinking that our twins really are comparable to the targets they are designed to benchmark. This US – France comparison simply suggests that firms are, in general, older in France. It is also consistent with the idea that LBOs involve more mature firms in continental Europe than in the US or the UK.

d. Industry Level variables

In Section 4, we will use industry level measures of dependence on external finance and exposure to labor market rigidities.

We measure financial dependence at the industry level using the universe of non listed firms as represented by the Tax files (this excludes very small firms and non corporations). We follow the methodology of Rajan and Zingales (1998). For each firm in our sample, for each year, we calculate the difference between capital expenditures (CAPEX) and gross cash flows, normalized by CAPEX. Gross cash flows are computed by taking Net Income plus Depreciation and Amortization.¹⁰ This ratio thus measures the fraction of CAPEX that is financed externally (mostly via debt issue). We then remove outliers and compute a mean per 2 digit industry over the 1990 – 2006 period, using all firms present in the tax files.

We measure industry exposure to labor market rigidity by using the 1998 wave of the REPOSE survey.¹¹ This survey is run every six years by the French Ministry of Labor, and collects information about working conditions at the employee level in a large number of French firms. We use two variables that we first compute at the firm level. The first variable is the fraction of workers that belong to a union. It measures the ability of workers to resist restructuring. The second variable is the firm level fraction of workers that are hired under fixed term contracts. It measures the fraction of the labor force that is “flexible”, since, although it is costly to anticipate the termination of FTC, the firm does not have to renew them when they mature (typical duration is one year). We then separately aggregate these two firm level rigidity measures at the 2 digit industry level.

3. Post LBO growth: Evidence and Robustness

a. Main results

Figure 3 presents the evolution of targets “excess” performances before and after the transaction. In the spirit of Kaplan (1989), we first compute, for each target and each year before or after the LBO, the difference between its performance and the median performance of its twins taken the same year. We call this the “excess ROA” of the target. We then compute the change in excess ROA between each year t and 3 years before the operation.

¹⁰ In alternative (non reported) specifications, we used a measure closer to cash flows from operations (Gross cash flows *plus* interest payments). This alternative measure gives very similar results both in terms of statistical and economic significance. A second alternative is to use, instead of Gross cash flows, Gross cash flows *minus* change in operating working capital (increase in receivables plus increase inventories minus increase in payables). This second alternative is closer to the actual measure of cash flows from operations, and provides very similar estimates. In the main text, we report regression results with Gross cash flows because these are the ones used in Rajan and Zingales’ (1998) paper. As a third robustness check, we computed the ratio of financial dependence only for firms with more than 100 employees, which are presumably more immune to credit rationing; again our results went through.

¹¹ For a description of this dataset, see Acemoglu et al (2007)

Finally, we compute the mean of such evolutions of excess ROA, and report this in Figure 3. It appears very clearly that the average operation is followed by an improvement in operating profitability by *four percentage points*. The timing of the improvement offers convincing evidence that something massive happens to LBO targets around the deal, and serves as a validation of our data construction methodology. The relative flatness of the evolution of ROA prior to the deal year gives us confidence in the construction of our “twins”. Unreported t-tests (as well as Wilcoxon test of median equality) suggest that this sharp increase in ROA is highly significant (at 1%) from year 1.

To formalize our statistical tests, we perform the following regression which is in the spirit of the “natural experiment” literature:

$$Y_{jt} = \alpha_j + \delta_t + POST_t + POST_t \times LBO_j + \varepsilon_{jt} \quad (1)$$

where j is a firm index and t a time (year) index. $POST$ equals 1 for observations of targets (or twins) after the target’s LBO date up to the fourth year after the LBO date. LBO is equal to 1 for targets, and zero for twins. This regression includes firm and time fixed effects. As recommended by Bertrand, Duflo and Mullainathan (2003), we cluster error terms at the firm \times $POST$ level. Results are reported in Table 2. Y stands for ROA (column 1), the log of EBITDA (column 2), the log of fixed assets plus working capital (column 3), as well as other measure of size of operations: log sales (column 4) and log employment (column 5).

LBOs appear to be associated with an increase of some 6 percentage points in operating performance. This is economically large, as in the sample operating profitability is on average 30% and its standard deviation is about 50%. Perhaps more surprisingly, operating assets of LBO targets increase by 11% more than their control group. This strong increase in operating assets is accompanied by a strong increase in sales (13%) and employment (13%). These last results stand in sharp contrast with the findings of Kaplan (1989), who finds that the post LBO increase in profitability stems from a decrease in assets, while maintaining operating income constant. In our sample of (smaller) LBOs, firm size increases, but profits increase even more, suggesting that the firm is taking advantage of previously unexploited growth opportunities.

In the spirit of Figure 3, we supplement regression results of Table 2 with a display of the timing of job creation after the LBO. To make Figure 4, we first compute, for each firm in the target and control samples, the change in log employment between 3 years before the LBO and each year t . We then compute, for each target, the median value of such cumulative employment growth of twins, and subtract it from the target’s own cumulative growth. We then compute the mean of such “excess growth” for all targets, for each year starting three years before the LBO. Approximately a third of overall employment growth takes place in the year following the buyout. Differential job growth is statistically significantly positive, whether we use a Wilcoxon median test or a student test (whose results we do not report to save space).

b. How Does Value Creation Take Place?

In Table 3, we first try to look at further measures of firm behaviour that may explain the source of post LBO growth. One possibility is that targets outsource part of their production to more efficient domestic suppliers, or cost effective foreign firms. This can be measured through the ratio of intermediate input consumption to total sales, which we use as dependent

variable in column 1. As far as this ratio is concerned, there is no difference in evolution between LBO targets and their twins. In column 2 of Table 3, we look at the share of working capital in total assets. It is often argued that LBOs generate part of their wealth by reducing the need to finance working capital, with leaner inventories and quicker payments by customers. This tends to reduce financing needs for working capital, allowing the target to invest more in productive assets. Consistent with this view, it appears that LBO targets experience a relative decline (by 1 percentage point) in the share of WC in capital employed. This effect is statistically significant at 2% but is economically small: the sample mean of this ratio is 42%, and the cross sectional standard deviation about 30%. Finally, we ask if the growth in LBO targets can be explained by an expansion on international markets. Again, the effect is strongly significant, but economically small. The share of export in sales increases by 1 percentage point. For the sake of comparison, the sample mean of the share of exports in total sales is 12%. One possibility is that our linear model does not fit the data very well, as 40% of the firms in our sample do not export at all.

c. Robustness checks

The magnitude of these effects raises some concerns. First, it could be that private equity funds simply pick targets that are already growth very fast. To address this concern, we re-run regression (1) but include an interaction term designed to control for pre LBO growth:

$$Y_{jt} = \alpha_j + \delta_t + POST_t + POST_t \times LBO_j + POST_t \times GR_j + \varepsilon_{jt}$$

where GR is mean firm sales growth, in the three years preceding the transaction. The additional term on the right hand side captures the fact that LBO targets, compared to their twin firms, may initially start with stronger growth. We run these regressions in Table 4, panel A, for all five left hand side variables of Table 2. Unsurprisingly, pre LBO growth is a strong predictor of post LBO growth, but it does not affect our initial estimates.

Second, there could have been a change in the business model of leveraged buyouts. We check the robustness of our findings across subperiods in Table 4, Panel B, where we run the same regressions as in Table 2, separately for years before and after 2000. There does not appear to be a significant change across sub-periods in post LBO profitability and growth.

Second, we need to take into account the fact that targets may initially have subsidiaries, or “sister companies” that belong to the same group and who are part of the entity bought out. One possible outcome of the LBO could be a formal simplification where the buyout target is merged with its subsidiaries and its sisters. This would mechanically increase employment in the target. To check this, we use three alternative employment and asset measures in Table 5. First, we keep the target level measures of employment and assets but restrict the sample to firms that have no subsidiary (both twins and targets). This reduces the sample by approximately one third. This is done in columns 1 (log employment) and column 4 (log of fixed tangible assets, a subset of total fixed assets reported in Table 2). Post LBO growth is not affected, compared to estimates of Table 3. Second, we take all targets, but collapse employment and tangible fixed assets of targets and their potential subsidiaries.¹² This is done in column 2 (for employment) and column 5 (for tangible assets). Again, these estimates are

¹² We focus on tangible fixed assets since these are the assets than can be consolidated between a target and its subsidiaries. For a parent firm, another part of fixed assets is financial assets, which includes equity holding in, and loans to, subsidiaries. Consolidating such assets would amount to double counting the subsidiaries’ assets. This is why we focus on tangible assets.

barely affected by this manipulation. Last, we collapse the target’s employment and assets with its sister companies, i.e. companies that have the same parent firms. We do this because in some instances, we selected as target the firm with most operations possibly itself a subsidiary of a holding that was, in effect, the real target. This consolidation is done in columns 3 and 6, and again confirms that post LBO growth is about 12%.

A third concern is selection. While some buyouts create jobs, others may simply lead to firm destruction. When a firm closes a plant, it still appears in our sample the year after, so that the negative contribution of plant closure to firm job growth still appears in our data. But when the firm itself disappears from our sample, theoretical job growth should be -100%, while it is unreported in our data. One possible approach could be to extend each firm’s data by one observation, with employment equal to zero, in the fashion of existing studies on job destructions and creations (Davis et al, 1996). The limitation of this approach however is that firms may disappear from our tax files simply because their assets are merged with another entity: this has no reason to lead to job destruction. To get around this problem, we use the bankruptcy files at INSEE, which report the identifying numbers and date of filing of all bankrupt firms. Doing this, we find no difference in bankruptcy rates between targets and twins. 6.1% of targets and 6.1% of twins will be bankrupt at some point. 3.5% of both twins and targets will be bankrupt within the three years following the buyout. The attrition rate from our tax files is much larger: 14.9% for targets versus only 12.3% for twins. This is consistent with targets being sold off to groups that absorb their assets and jobs, not with targets going more often bankrupt.

A fourth concern comes from the fact that the rigidity of labor laws in France may perturb the results. For instance, the OECD ranks French law as the sixth most protective amongst the 28 member countries (OECD, 2004). Because it is difficult to lay off workers in France, we do not observe in our data the “cost cutting” buyouts that are possibly more prevalent in the US and the UK where labor markets are more flexible (the UK and US rank respectively second and first in terms of labor market flexibility in the 2004 OECD study). Hence, the observed mean post LBO growth should be mechanically higher in the French sample. To test for this selection effect, we ask if post LBO growth is on average higher in industries where employment rigidity is higher. We run the following modified version of (1):

$$Y_{jt} = \alpha_j + \delta_t + POST_t + RIGID_j \times POST_t + POST_t \times LBO_j + RIGID_j \times POST_t \times LBO_j + \varepsilon_{jt}$$

where Y stand for employment, assets (in logs). RIGID is one of the two measures of employment “rigidity” and is defined at the industry level using the REPOSE survey (see Section 2.d): fraction of unionized workers and minus the fraction of workers under fixed term contracts.

Estimates of the above equation are reported in Table 6. From the inspection of columns 1 (assets) and 2 (employment), it is apparent that post LBO growth is *no more prevalent* in industries where employment is rigid, which suggests that the selection effect described above may not be very strong. In the last column, we observe that, when employment is rigid, profitability increases more after the transaction. This is consistent with another selection effect: given how difficult it is to reduce the workforce, LBOs only occur when they are very profitable. This could be an explanation why the profitability of the typical French LBO could

be higher than in other countries (would not claim that it is), but not why it would be more based on growth strategies.

d. Economic Downturn and Post LBO Growth

The recent credit market squeeze has raised concerns about the sustainability of the private equity model. As we see it, the current crisis is hitting LBO targets through three channels:

- i. There is no credit around, neither from banks nor from the funds themselves. Hence, external finance is completely lacking for firms who seek to invest
- ii. The pre crisis period was a credit market bubble: as a result, valuations were inflated. The result is that targets will struggle to pay back the huge debt that was issued to purchase them. Even if they keep afloat, they will not manage to gather the resources necessary to invest and grow.
- iii. The global economic slowdown reduces demand. This reduces the ability of firms to pay back the debt used to finance the LBOs.

In this Section, we look at the impact of the 2001-2002 economic slowdown on LBO targets. This last slowdown is not exactly comparable to today's credit market meltdown: the late 1980s, and then the quasi nuclear winter of the early 1990s would probably be a better comparison, but this period is not in our sample. Such an analysis was performed, on large public to private transactions, by Kaplan and Stein (1993). In particular, they found that deals made during the overheated period of 1985-1989 were *twenty times* more likely to default than deals struck in 1981-1984. The credit market bubble of the late 1980s indeed led to inflated valuations and poorly designed capital structure that rendered ex post debt renegotiation difficult. These defaults led to bankruptcy courts – which does mean liquidation - in approximately one third of the cases. Unfortunately, however, the very large deals of Kaplan and Stein are unlikely to be representative of our modern day LBOs.

We think, however, that the 2001 crisis is informative for two reasons. First, economic growth in France slowed down as dramatically in the 2001-2002 period as it currently does (see Figure 5): between 2000Q2 and 2001Q2, quarterly growth went from 1% to -0.3%, and stayed around 0.1% for the better part of 2001 and 2002. Between 2007Q3 and 2008Q2, GDP growth went from about 0.6% to -0.3%. Thus, the reduction in demand between the two downturns may be of similar magnitude. Second, valuation and capital structure of deals were not very different in the pre-subprime crisis that they were before the burst of the high tech bubble. Using a global sample of large transactions from Capital IQ, Axelson et al (2007) show (their Figure 1) that the mean enterprise value to EBITDA ratio was about 8 in 2006, pretty much the same level as in 1998. Also, the 2006 mean Debt to EBITDA ratio was the same as in the late 1990s (about 5).

Thus, the post 2000 crisis and the current crisis may share similarities from the perspective of buyout targets. To see how the past crisis affected post LBO growth and survival, we simply ran regression (1) separately for buyouts started in 1998-1999, and buyouts started in 2001-2002. If the crisis affects post LBO growth, we would expect pre 2000 buyouts to suffer more as credit market and demand conditions tighten, than post 2000 buyouts who could take advantage of the 2003 recovery. Results are reported in Table 7 using (1) post LBO job growth, (2) post LBO asset growth and (3) probability of exiting the sample within three years after the deal. This probability of exit overestimates bankruptcy probability since many firms exit the sample because they are merged with another entity (such as an acquiring firm for instance).

As it turns out, post LBO growth is actually *lower* (but still positive) for deals made in 2001 than for deals made in 1999, but the difference is not statistically significant. It thus seems that the post 2000 economic downturn did not really reduce post LBO growth in a significant way.

4. Financial Constraints and Post LBO Growth

a. Why LBOs may alleviate financial constraints

The behaviour described above appears to be very dissimilar to pre-existing studies, in particular those focusing on large P2P transactions but also small private to private deals previously investigated in the literature (for recent evidence see Amess and Wright, 2007, and Davis et al, 2008). Both types of studies find evidence consistent with private equity funds implementing “cost cutting” measures that aim at downsizing the firms operation, while maintaining its ability to create value (ie holding EBITDA constant). Such a discrepancy between these results and ours begs for a more thorough investigation, which we attempt to provide here.

This difference may come from the fact that credit constraints are more prevalent in France. As recalled in the introduction, Djankov et al (2006) show that the provision of private credit is quite low in France. This may be due to the fact that the bankruptcy law scores low on their index (zero, out of 4): secured creditors are not first in line during liquidation, nor are they given control in the process of bankruptcy.

Against this background, our hypothesis is that small and medium sized enterprises in France are credit constrained, and that LBO funds alleviate these constraints by making the firm a “more credible” borrower. There are several plausible stories for which this could be the case. First, LBO funds may inject “fresh blood” in the executive suite, which may reassure bankers. Second, LBO funds bring financial expertise and connections to hitherto financially unsophisticated firms. Third, LBO firms may substitute for former family owners, as transparent and activist shareholders. Because they are active monitors (Shleifer and Vishny, 1986), they exert a positive externality on debt holders, who are more senior claimants.

Whatever the reason it may come from, such a backing may help firms with growth opportunities to raise capital (mostly bank debt, but also quasi equity such as mezzanine debt) to finance their investment. We provide in Appendix A a small toy model to formalize our intuition: pre LBO targets are financially constrained, while post LBO targets are not.

b. Private to Private Transactions versus Divisional Buyouts

One first implication of our hypothesis is that firms that are initially financially unconstrained should not grow after the LBO. Subsidiaries of larger firms are a good example of such firms, since they benefit from internal capital markets (see for instance, for evidence from Japanese groups, Hoshi, Kashyap and Scharfstein, 1991).

Following this intuition, in Table 8, we break the sample down into divisional buyouts, where the seller is a parent firm, and private to private transactions, who typically involve an individual or a founding family that wishes withdraw. In column 1, we look at operating performance (ROA): both types of operations are followed with an increase in profitability.

This increase is slightly larger for divisional buyouts than for initially “pure” private firms, but the difference is statistically significant. This is not entirely surprising since both types of operations are supposed to generate value for the private equity fund, but this leaves open the question whether the increase in profitability is achieved with the same method. In columns 2 and 3, we look at firm size (total assets and employment), and find striking differences. Post LBO growth is much smaller, and statistically insignificant, following divisional buyouts. Following a private to private transaction, post LBO job or asset growth is about 16%, significantly larger than zero. Post divisional buyouts are, however, not followed by any statistically meaningful growth.

c. Financial Constraints and Post LBO growth

A second implication of our hypothesis is that we should observe stronger post LBO growth when the target structurally needs external finance to grow, i.e. that retained earnings are not enough to sustain optimal growth. To test this, we follow Rajan and Zingales (1998) and compare industries with high dependence on external finance to industries with low dependence. We expect post LBO growth to be higher in industries with strong dependence on external finance. More specifically, we run the following set of regressions:

$$Y_{it} = \alpha_j + \delta_t + POST_t + FD_j \times POST_t + POST_t \times LBO_j + FD_j \times POST_t \times LBO_j + \varepsilon_{it}$$

for firm i in year t . Y stands for log employment or the log of assets. FD_j is the industry level measure of a firm’s dependence on external finance, whose construction is described in Section 2.d.

Regression results are reported in Table 9. Panel A focuses on private to private deals. Column 1 looks at post LBO asset growth. For private to private deals, the interaction term $POST \times LBO \times FD$ is statistically significant at 5%, which suggests that targets in financially dependent industries tend to grow significantly faster after the buyout. Going from the 25th percentile of financial dependence to the 75th percentile increases the level of financial dependence by about 0.3. Hence, the post LBO asset growth difference between these two industries would be 6% annual. This has to be compared to a mean excess post LBO growth, for private to private deals, of about 16% (Table 7). The employment regression in column 2, panel A, leads to the same conclusions, both in terms of statistical and economic significance. There is however, no difference in post LBO profitability growth, which is consistent with targets in non financially constrained industries achieving profit growth through cost cutting. In panel B, we run the same regression for divisional buyouts, who do not experience any post LBO growth (Table 7). Consistently with the idea that former divisions were not financially constrained, we find no growth difference across industries.

5. Conclusion

Like most commentators in the public debate, many financial economists have come to see LBOs as a way to implement drastic, “cost cutting” measures that the target was initially reluctant to put in place. This view is largely influenced by studies on large, US based, public to private deals in the 1980s, or more recent studies that focus exclusively on US and UK data. This paper provides some evidence that LBOs may actually alleviate credit constraints, and be an actual engine of growth for small and medium sized enterprises. In France, LBO targets

experience a very strong growth in sales, assets and employment, after the deal, in particular when they were previously more likely to be credit constrained. Hence, instead of reinforcing credit constraints, as was the case in the 1980s transactions, modern LBOs can alleviate them. This effect is large in France, but existing studies have not demonstrated that this motivation is absent from US or UK data.

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Appendix A: A Simple Model

Firms have initial wealth W , and maximise NPV as given by :

$$\frac{F(K)}{1+r} - rK$$

where K is total assets. We assume that the only mean of external finance is debt (there is no external equity market), and that debt capacity is given by: $(\gamma + \varepsilon)K$ where γ measures the country level of financial development (say, because of bankruptcy law) and ε the industry level of financial constraints (say, because of asset tangibility). Baker, Stein and Wurgler (2003) call ε the inverse of the degree of equity dependence. When ε is low, firms cannot pledge a big part of their assets, and therefore have to issue equity to finance investment.

We assume that former divisions of large firms, as well as post LBO targets are not constrained (for instance because they can tap unmodeled equity or quasi equity markets, or simply because they are able to convince bankers to lend to them). In this case, firm size is given by $K = K^* = F^{-1}(1+r)$.

Pre LBO family firms have no choice, they need to take on debt and choose $K = K^F = \frac{W}{1-\gamma-\varepsilon}$. In writing this, we implicitly assume that $K^F < K^*$.

Post LBO firm growth is given by:

$$\Delta K = F^{-1}(1+r) - \frac{W}{1-\gamma-\varepsilon}$$

which decreasing in W , γ and ε . Post LBO growth is smaller in countries with more developed financial systems (this is for the difference between our results and existing ones based on US or UK data). Post LBO growth is larger in industries where equity dependence is high (low ε). Post LBO growth is larger in industries where the need for external finance is high (low W).

A limitation of this model is that it does not explain why families are not able to convince bankers to breach the debt capacity constraint as large groups or LBO funds do. There can be several explanations:

1. Family owners lack the connections or expertise to issue risky debt or quasi equity. They also lack the backing of a large industrial or financial group (reference ? asset redeployability ?).
2. Non family shareholders would help in making the firm a more credible borrower (external monitors, in particular residual claimants, do have a positive externality on more senior debt holders – reference?).

Appendix B : Figures

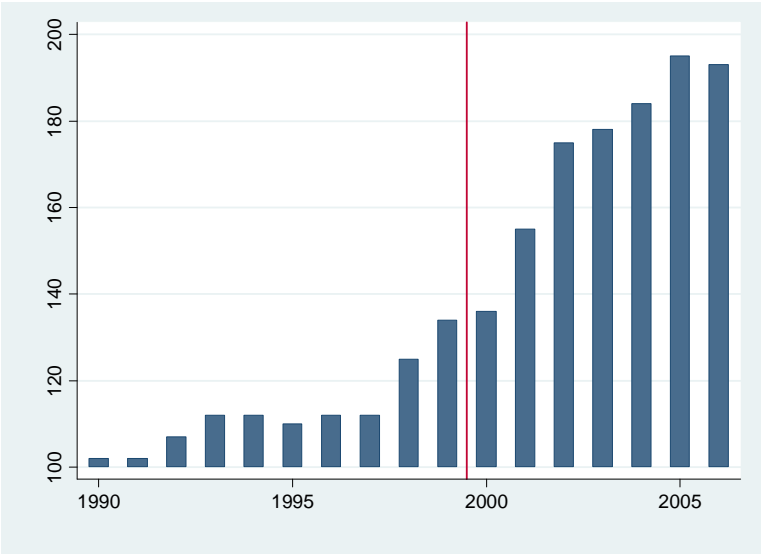


Figure 1: Employment at ABCD, an Industrial Furnace Maker Based in the French Alps (LBO taking place in 2000)

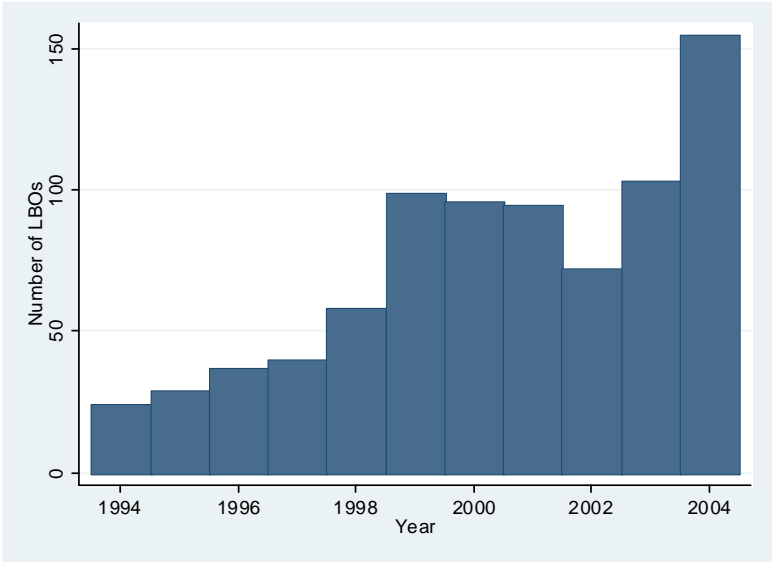


Figure 2: Number of LBOs per Year in the Sample

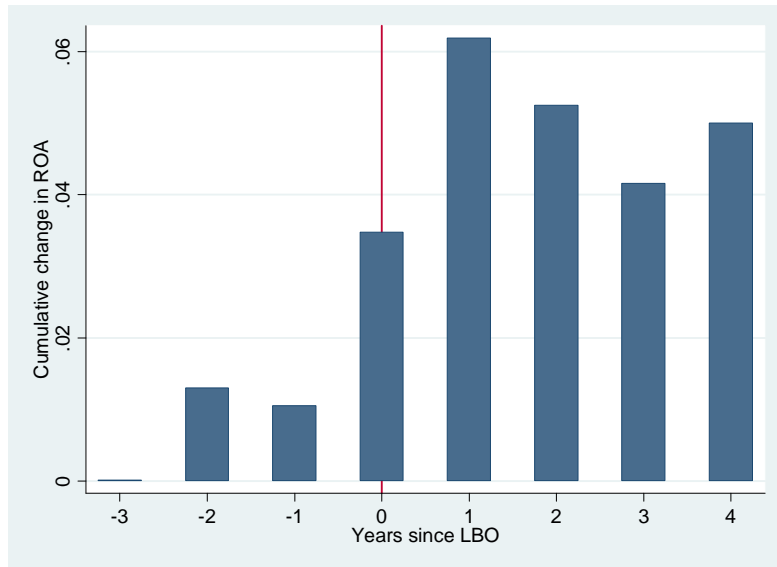


Figure 3: Mean Adjusted Profitability Increase Around the LBO

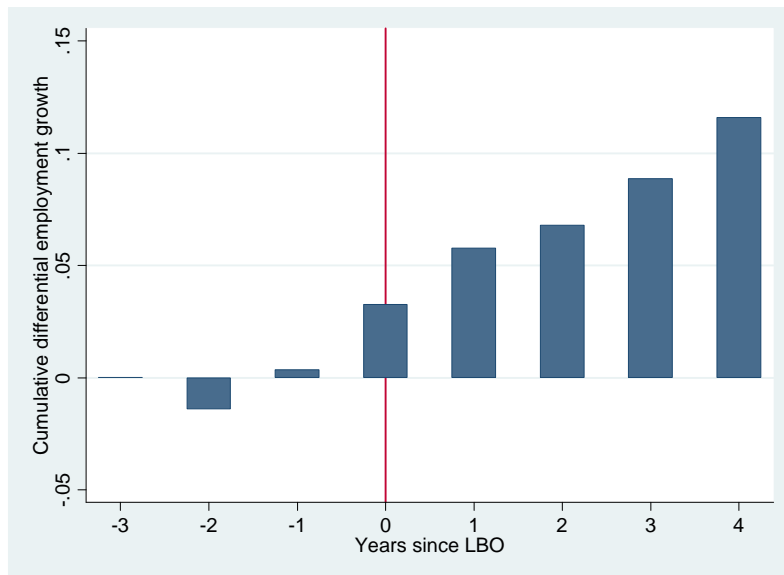


Figure 4: Mean Adjusted log(employment) Increase Around the LBO

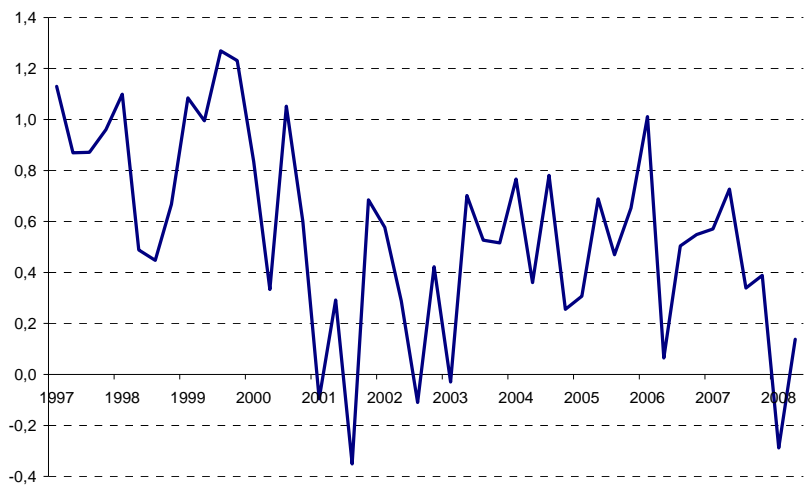


Figure 5: Quarterly GDP Growth in France: 1997Q2-2008Q3

Appendix C: Tables

Table 1: Financial characteristics of LBO targets and control firms

Variable	Mean	Q1	Q2	Q3	Obs
<i>Panel A: Targets</i>					
Sales (m€)	167	14	50	167	830
Employment	182	26	61	226	830
Fixed Assets	62	1	5	20	830
Economic Assets	75	3	10	32	830
Sales growth (%)	11	0	7	16	800
Employment growth (%)	4	-2	2	10	830
FA Growth (%)	12	1	8	21	774
EA Growth (%)	14	2	8	21	776
ROA	32	7	25	50	830
<i>Panel B: Twins</i>					
Sales (m€)	140	8	29	110	3,913
Employment	138	23	54	169	3,913
Fixed Assets	42	1	2	10	3,913
Economic Assets	51	1	4	18	3,913
Sales growth (%)	9	0	6	14	3,743
Employment growth (%)	6	-1	3	11	3,745
FA Growth (%)	6	1	7	17	3,692
EA Growth (%)	10	1	8	20	3,712
ROA	35	10	26	49	3,913

Note: For each firm, each variable is averaged over the three years before the transaction. This Table shows the distribution of this pre transaction outcome. Each twin is assigned to a given target, so that it also has a transaction date (even though it does not face any transaction). All variable names are self explanatory: Economic assets is the sum of fixed assets and operating working capital. ROA is EBITDA normalised by shareholder's equity plus debt minus trade payables

Table 2: Operating Profitability and Its Drivers

	ROA	log(EBITDA)	log(FA+WC)	log(Sales)	log(empl)
post x LBO	0.06*** (0.01)	0.15*** (0.03)	0.11*** (0.02)	0.13*** (0.03)	0.13*** (0.02)
post	-0.02* (0.01)	-0.07*** (0.02)	-0.04*** (0.01)	-0.12*** (0.06)	-0.05*** (0.01)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	28,053	26,614	32,375	32,631	32,512

Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels

Table 3: Firm Behaviour

	Intermediate inputs / sales	WC / (FA + WC)	Exports / sales
post x LBO	0.01 (0.01)	-0.01** (0.01)	0.01*** (0.00)
post	0.01 (0.01)	0.00 (0.01)	-0.00 (0.00)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	28,717	32,631	28,717

Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels

**Table 4: Robustness to Selection on Pre LBO growth
And to Period Selection**

	ROA	log(EBITDA)	log(FA+WC)	log(Sales)	log(empl)
<i>Panel A: including trend controls</i>					
post x LBO	0.06*** (0.02)	0.14*** (0.03)	0.10*** (0.02)	0.12*** (0.03)	0.11*** (0.02)
post x pre LBO sales growth	-0.01 (0.01)	0.30*** (0.03)	0.28*** (0.02)	0.36*** (0.03)	0.30*** (0.02)
Observations	25,619	25,502	32,463	26,973	30,396
<i>Panel B: Sub Period Robustness</i>					
<i>Year<2000</i>					
post x LBO	0.10*** (0.03)	0.07 (0.06)	0.10*** (0.04)	0.15*** (0.05)	0.11*** (0.04)
Observations	11,812	10,325	11,863	11,863	11,811
<i>Year>=2000</i>					
post x LBO	0.09*** (0.02)	0.17*** (0.04)	0.10*** (0.02)	0.12*** (0.04)	0.09*** (0.03)
Observations	16,629	16,643	20,600	16,864	20,701

*Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. Panel A controls for pre LBO growth by adding to the right hand side of Equation (1) an interaction between firm level pre LBO growth and the POST dummy. Panel B estimates the basic specification of Equation (1) separately for pre and post 2000 transactions. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels*

Table 5: Sensitivity to Employment and Asset Measures

	Log(employment)			Log(tangible fixed assets)		
	Stand Alones only	Target + Subsidiaries	Target + sisters	Stand Alones only	Target + Subsidiaries	Target + sisters
post x LBO	0.14*** (0.02)	0.13*** (0.02)	0.08*** (0.02)	0.14*** (0.03)	0.14*** (0.04)	0.10** (0.04)
post	-0.06*** (0.01)	-0.05*** (0.01)	-0.04*** (0.01)	-0.05*** (0.01)	-0.13*** (0.03)	-0.12*** (0.03)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,454	32,512	32,532	23,023	33,024	33,024

*Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels*

Table 6: Employment Rigidity and Post LBO Growth

	log(FA+WC)	log(empl)	ROA
<i>Panel A: Rigidity = unionization rate</i>			
post x LBO	0.15*** (0.04)	0.09** (0.04)	0.02 (0.04)
post x LBO x Rigidity	0.00 (0.00)	0.00 (0.00)	0.01** (0.00)
Observations	16,990	17,196	15,131
<i>Panel B: Rigidity = - fraction of FTC in industry</i>			
post x LBO	0.15*** (0.05)	0.13*** (0.05)	0.21*** (0.05)
post x LBO x Rigidity	0.01 (0.01)	0.01 (0.01)	0.02*** (0.01)
Observations	16,990	17,196	15,131

*Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. We estimate variants of Equation (1), where all terms are interacted with the industry level measure of labor market rigidity described in the main text. We report in Panel A the coefficients for post x LBO and post x LBO x rigidity when rigidity is measured through the fraction of unionized workers. In Panel B, rigidity is minus the fraction of workers under fixed term contracts. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels*

Table 7: Pre-Crisis Deals and Post LBO Growth

	Log(empl)		Log(FA+WC)		Exit	
	1999-2000	2001-2002	1999-2000	2001-2002	1999-2000	2001-2002
post x LBO	0.20*** (0.04)	0.11*** (0.04)	0.17*** (0.04)	0.09*** (0.03)	-	-
post	-0.06*** (0.02)	-0.02 (0.02)	-0.01 (0.03)	0.01 (0.02)	-	-
LBO	-	-	-	-	0.03 (0.03)	-0.01 (0.03)
P-value for equality	0.12		0.18		0.27	
Firm FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes
Observations	8 341	7 277	8 370	7 255	1 126	967

*Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. Dependent variables are log of target employment (columns 1-2), log of target economic assets (columns 3-4) and a dummy equal to 1 if the firm exits the sample in the three years following the deal (columns 5-6). Columns 1,3,5 restrict the sample to deals struck in 1999 or 2000, while columns 2,4,6 restrict the sample to deals made in 2001 or 2002. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels*

Table 8: Divisional Buyouts vs Private to Private Transactions

	ROA	log(WC+FA)	log(empl)
<i>Divisional BO</i>			
post x LBO	0.08*** (0.02)	0.03 (0.04)	0.05 (0.04)
Observations	7,792	8,828	8,880
<i>Private to Private</i>			
post x LBO	0.05*** (0.02)	0.16*** (0.02)	0.17*** (0.02)
Observations	16,797	18,830	18,891
Test equality	0.40	0.01***	0.01***

Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels

**Table 9: Post LBO growth:
Financially Dependent versus non Financially Dependent Industries**

	log(FA+WC)	log(empl)	ROA
<i>Panel A: Private to Private</i>			
post x LBO	0.02 (0.07)	0.05 (0.05)	0.04 (0.03)
post x LBO x Fin. Dep.	0.16** (0.08)	0.14*** (0.06)	0.01 (0.03)
Observations	18,830	18,891	16,797
<i>Panel B: Divisional BO</i>			
post x LBO	0.00 (0.10)	0.09 (0.07)	0.01 (0.07)
post x LBO x Fin. Dep.	0.03 (0.12)	-0.05 (0.08)	0.09 (0.08)
Observations	8,828	8,880	7,792

Note: Sample made of LBO targets and their twins (see text for details). OLS estimates. We estimate variants of Equation (1), where all terms are interacted with the industry level measure of financial dependence described in the main text. We report in Panel A the coefficients for post x LBO and post x LBO x Financial Dependence only, focusing on deals where the seller is a private person. In panel B, we focus on deals where the seller is a larger group / corporation. Error terms are clustered at the deal x post level. *, **, *** mean statistically significant at the 10, 5 and 1% levels