Financial Profile of Leveraged Buyout Targets: Some French Evidence

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Abstract : This paper investigates whether firms, which are taken over on the French market through Leveraged Buyouts (LBOs), possess characteristics prior to the change which differentiate them from firms which are not acquired through LBOs. Contrasting 175 LBO targets on the French market with an industry-matched comparison group, we first run univariate analysis and then multivariate analysis (logit regression). Beyond the underscoring of the LBO targets' financial features, we conclude that subdividing our sample according to the vendor and bidder type is beneficial. We thus notice that the so-called outperformance of LBO targets prior to the deal hides in fact different cases.

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1. INTRODUCTION

Leveraged buy-outs (LBO) are facing an increasing success in France. The amounts invested in these transactions were 600 million euros in 1997 and almost 2 billion euros in 2001. In 2002, because of some large operations, the invested amount was about 4,5 billion euros (AFIC, 2002a). France is a leader in this market in Continental Europe, but it is still far behind the United Kingdom.

LBO transactions can be defined as acquisitions of a significant equity stake of a company by private venture capital investors using additional debt financing. They comprise both the case of Management Buy-outs (MBOs) and Management Buy-ins (MBIs). In a MBO, current management with the aid of financial investors takes over the company's equity from its previous owners, whereas in a MBI, an external management team funded by outside investors takes over the control of a given target company. At the end of the 1990's, Investor-led Buy-outs (IBO) also developed (Wright and Robbie, 1996). They are deals in which venture capital investors initiate and carry out the transaction, management playing a minor role. The main sources of buy-outs are, on the one hand, groups which desinvest subsidiary companies and, on the other hand, family companies encountering succession problems. Sometimes groups decide to sell one part of their subsidiary companies in order to focus on their core business or because of financial difficulties. Since the evolution of the LBO as a common form of takeover of public or private firms in the 1980s, several companies, hereafter referred to as « LBO firms », specialized in making this type of investment with venture capital raised in the private equity market.

Throughout the past two decades, one of the chief purposes of LBO studies has been to examine if LBO transactions influence the target's ex-post performance. Anglo-Saxon studies show unanimously that LBO targets outperform their industry

counterparts after the transaction. Among the different factors that can explain this result we find the tax savings argument (Kaplan, 1989) and the free cash flow (FCF) hypothesis developed by Jensen (1989). According to the author, high debt is one way of better allocating cash to corporate investors. By reducing management's opportunity for inefficiency, increased leverage may make the firm more efficient. Among other things, managers have less leeway to involve the firm in negative Net Present Value (NPV) projects.

The Anglo-Saxon LBO literature tends to use datasets that sample public companies, that is to say public-to-private (PTP) transactions, and this work implicitly assumes that conclusions drawn from large, public companies apply equally well to small, private ones. However, given the substantial qualitative differences between public and private companies, the validity of this assumption may be problematic. Drawing conclusions from samples of public targets potentially undermines the generalizability of the interpretations and weakens the external validity of the evidence. Moreover, only a handful of PTP are completed in France each year because of a number of issues, arising from French legislation, that make PTPs more difficult than elsewhere (AFIC, 2002b)[1].

In fact, recent research undertaken in France (Desbrières and Schatt, 2002a, 2002b) provides initial evidence suggesting that the implications of LBOs do vary across private and public targets and across countries. Desbrières and Schatt (2002a), for instance, found that, for a sample of private French LBO targets, an abnormal falling of their economic return and margins occured after the transaction.

This study seeks to extend prior research on LBOs in three ways. First, we focus on LBOs on French private firms in particular. Second, we investigate through a logit regression essential financial differences between LBO versus non-LBO targets in

order to study to what extent French LBO targets' financial characteristics prior to the deal can explain their underperformance after the transaction. Third, we distinguish between LBO targets according to the vendor type and deal objectives.

The remainder of this paper is organized as follows. Section 2 presents the theoretical arguments and research hypotheses. After a description of the research design in section 3, a discussion of the empirical findings appears in section 4. A discussion of the implications of our findings and new avenues for research concludes in section 5.

2. THEORY AND HYPOTHESES

Several theories have been offered to explain the sources of value which make LBOs feasible. These theoretical explanations for LBOs, which can be described as the FCF hypothesis and the tax savings hypothesis, can be used to predict the types of firms likely to engage in LBOs. Moreover, we present the specific criteria that are used by LBO firms in their acquisition rationale.

(i) Free Cash Flow Hypothesis

In his well-known FCF hypothesis that applies concepts from agency theory (e.g., Jensen and Meckling, 1976) to the LBO setting, Jensen (1986, 1989) argues that managers in firms with large FCF[2] have an incentive to waste organizational resources on negative NPV projects, rather than pay out the excess cash to shareholders through dividends or share repurchase schemes. Jensen argues that the impact of FCF on organizational inefficiencies is most pronounced in low growth firms because such firms have few positive NPV investment opportunities. The FCF hypothesis has generated tremendous interest in the finance literature and has been empirically verified (Maupin, 1987; Lehn and Poulsen, 1989; Singh, 1990; Ambrose

and Winters, 1992; Opler and Titman, 1993). For instance, Singh (1990) finds in his study that firms undergoing buyouts have higher levels of liquidity than their industry counterparts. In France, Desbrières and Schatt (2002a) show that acquired firms exhibit an excellent liquidity compared to their rivals prior to the transaction, which can be explained by Jensen's theory of FCF. This leads to the first hypotheses H1 and H2.

H1: The likelihood that a firm becomes an LBO target should be positively related to its level of FCF.

H2: The likelihood that a firm becomes an LBO target should be negatively related to its growth opportunities.

(ii) Tax Savings Hypothesis

Another proposed factor to explain LBO activity is the potential leverage-induced tax savings involved in these operations. The tax-savings hypothesis has received much attention in past research. It follows from the tax shield of interest payments on the increased debt in an LBO. Marais, Schipper and Smith (1989) present evidence that tax savings are correlated with the LBO premium. Kaplan (1989) also finds that the tax benefits are a large source of wealth in LBOs. The tax savings hypothesis, H3, states the following.

H3: The likelihood that a firm becomes an LBO target should be positively related to its level of income taxes.

(iii) Hypotheses Related to the LBO Firms' Acquisition Rationale

LBO firms look for a variety of characteristics in potential investments. Best acquisition targets should exhibit a distinctive profile. Gottschalg (2002) notes that

« unlike strategic acquirers, LBO firms typically do not put much emphasis on aspects like resource relatedness or strategic fit between existing portfolio companies and potential takeover candidates. In their acquisition rationale, they primarily rely on a set of generic criteria regarding industry-level dynamics and financial benchmarks ». Thus, many LBO firms are similar in their basic criteria for takeovers candidates (mature industries, stable cash flows, low operational risk).

The purpose of LBO firms is double. They seek, first, to maximize their future capital gain from the sale of shares and, second, to minimize the risk of non-payment of the acquisition debt. LBOs create heavy leverage that may be inefficient for firms that expect unstable earnings or plan to engage in new projects. Moreover, heavy leverage may carry with it costs associated with an increased likelihood of insolvency. Since the company's cash flow is used to service the debt, *« the most significant risk in an LBO is that the company will not achieve the cash flow necessary to service the large acquisition debt »* (Maupin, 1987). Consequently, LBO firms and lenders are most interested in the target's future and past capacity to generate large and steady levels of cash flow. In France, Desbrières et Schatt (2002a) clearly show that companies undergoing LBOs are the ones which have the greatest ability to remunerate the funds provided by investors and lenders. They find that acquired firms are more profitable than industry average prior to the LBO, which is consistent with the results of Singh (1990). They also point out a significant lower gearing of LBO targets prior to the transaction : *« before the LBO, firms enjoyed on the average a higher borrowing capacity than their industry counterparts, which can be considered as a key factor in the successful set up of the financial structure of the operation ».*

Several characteristics make it possible to define an eligible target for LBO transactions. Thoumieux (1996) and Grange et al. (2003) quote various criteria to be

respected when evaluating an LBO target (related to its market, strategic position, social situation, organization, products and financial health). Our study examines only financial optimal characteristics of LBO targets. A description of financial criteria used by LBO firms to evaluate potential targets follows.

First, one widely accepted conclusion is that the level of financial leverage a firm can bear is a function of its business risk. Kale et al. (1991) assert that it is a consensus that business risk is one of the primary determinants of a firm's debt capacity and capital structure. According to this reasoning, firms with high degrees of business risk have less capacity to sustain high financial risk, and thus, can use less debt. Firms with risky income streams are less able to assume fixed charges in the form of debt interest. Johnson (1997) states that firms with more volatile earnings growth may experience more states where cash flows are too low for debt service. For this reason, LBO firms avoid investments in highly cyclical businesses, stability of earnings and cash flow being critical to the success of an LBO.

H4: The likelihood that a firm becomes an LBO target should be negatively related to its level of business risk.

Second, an LBO target's activity must not require heavy investments. In capital intensive enterprises relatively large amounts of tangible capital assets are required. During the LBO, new investments have to be limited. Consequently, the target's production equipment has to be adapted, so that the company, after the entry of new shareholders, is not obliged to invest massively, which would have the consequence of reducing LBO leverage. Moreover, its expected growth has to be positive but not too high[3] because a high rate of growth would create high working capital requirements.

H5: The likelihood that a firm becomes an LBO target should be negatively related to its industry capital intensity.

Third, its profitability ought to be historically high and well controlled with, possibly, sources of improvement[4].

H6: The likelihood that a firm becomes an LBO target should be positively related to its recurring profitability.

Fourth, its financial structure should be characterized by a shareholders' equity (net worth) close to the transaction price, a significant amount of distributable reserves, and a limited long- and medium-term debt. The distributable reserves can be used through an exceptional dividends distribution just after the acquisition of the target by the holding company in order to reduce its borrowing. Moreover, a high borrowing capacity will be a key factor in the successful set up of the financial structure of the LBO (Desbrières et Schatt, 2002a).

H7: The likelihood that a firm becomes an LBO target should be negatively related to its financial leverage.

H8: The likelihood that a firm becomes an LBO target should be positively related to its amount of distributable reserves.

Fifth, assets composition should be characterized by modern production equipment, requiring few investments, limited working capital requirements, a positive cash position, and an important amount of tangible assets. Firms with substantial tangible assets are favored since they give creditors better guarantees in the event of failure. Non-strategic assets, easily transferable in case of financial difficulty, also increase a firm's attraction to carry out an LBO.

H9: The likelihood that a firm becomes an LBO target should be positively related to its cash position.

H10: The likelihood that a firm becomes an LBO target should be negatively related to its level of working capital requirements.

H11: The likelihood that a firm becomes an LBO target should be positively related to its amount of transferable assets.

H12: The likelihood that a firm becomes an LBO target should be negatively to its age of assets.

Subdividing the LBO sample according to the respective transaction form may also be beneficial. As a matter of fact, there are three types of sources for LBOs : family businesses succession, divestiture of subsidiaries from groups and exits by venture capitalists (sometimes after a first LBO). In the former case, LBOs are a means to hand on small and medium companies, i.e. family-run firms (among which some are in financial distress or in receivership), above all when there is no family successor. In the second case, LBOs are a means of divesting subsidiaries controlled by industrial and commercial groups. This distinction allows us to create three sub-samples according to the vendor type : family or individual (I), group (G), venture capitalist (F).

Agency costs should be higher in subsidiaries since the firm could be more diffused in ownership than a family-run firm. As a consequence, the variables related to Jensen's argument (FCF divided by sales and turnover growth) are expected to have a greater importance in the subsidiaries' sub-sample. On the contrary, family or more generally independant firms, and those with a venture capitalist in their capital shoud face less agency costs because of the concentration of ownership in the first ones and because of the active monitoring introduced by venture capitalists in the second ones.

Moreover, sources of improvement should be greater in subsidiaries because groups usually decide to divest non strategic (non core) and/or less profitable businesses. In a

multidivisional firm or in a group structure, organisational problems are frequently encountered. They are related to internal capital or labour markets failures and the developement of deviant behaviour in contractual relations between shareholders, CEOs, divisional managers, employees (Desbrières and Schatt, 2002a). Consequently, former subsidiaries and divisions could exhibit prior to the deal a less favourable financial profile from the LBO firms' viewpoint but these financial weaknesses are expected to disappear after the LBO since divestments should lead to positive consequences (increase in profitability if new managers adopt more efficient control systems (Hite and Vetsuypens, 1989) and carry out investments that create more value (Denis, 1992)). For this type of targets, LBO firms should take into account in their acquisition rationale the future of the company (sources of improvement) and not only the past accounting data.

We also propose distinguishing between LBOs according to the bidder type : management or investors. This enables us to create two other sub-samples : MBOs, in which the management holds the majority of the holding's shares and IBOs, in which LBO firms lead the transaction. This distinction should be significant and beneficial for our analysis because the deal objectives are different according to the bidder type. The former is used to perpetuate the firm after the founder's retirement, sometimes as an alternative to a sale to a competitor. The latter is used with a more financial objective. LBO firms plan their exit strategy as soon as they enter the capital and they seek to maximize their gains. Consequently, we expect LBO firms to be more careful in their acquisition rationale when they are leaders on a transaction. On the contrary, companies that do not fill all the LBO firms' financial criteria could nevertheless undergo MBOs because they are a means to transfer companies when there is no other candidate or solution.

Based on the above discussion, we develop the following complementary hypotheses for our sub-samples :

H13: The impact of free cash flow variables on the likelihood of an LBO transaction should be more perceptible in the groups subsidiaries sub-sample than in the other ones.

H14: Groups subsidiaries are expected to exhibit a less favourable financial profile prior to the deal.

H15: LBO firms' financial criteria should have a greater impact on the likelihood that a company becomes an LBO target in the IBO sub-sample than in the MBO one.

3. DATA AND METHODOLOGY

(i) Sample Selection and Data Sources

The list of deals is collected from the Zephyr database of the BvD Suite for mid-1997 to mid-2002, and from the French review *Capital Finance* for the first semester 1997 and for the year 1996. In order to assess the financial characteristics of LBO target firms before the deal, we require each firm to have financial data available for the four years preceding the deals. This restriction on data availability reduces the sample from more than 500 deals between 1996 and 2002 to 175 deals between 1996 and 2002. Table 1 gives the distribution of these deals by year and by industrial sector. Although no significant difference in the industrial distributions between our sample and the French economy appears[5], we can see that some sectors are overrepresented (textile, clothes and furs, leather and shoes, chemistry) and others underrepresented (car retail and reparation, land transports and in a least extent hotels and restaurants).

A brief look at these industrial sectors didn't reveal any salient performance characteristics[6].

We also divide our sample into several sub-samples according to the vendor (or target) type and according to the bidder type[7]. First, we distinguish between transfers of independent firms (58 observations), divestments from groups (61 observations) and exits by venture capitalists (23 observations). Second, we distinguish between MBOs (72 observations), IBOs (84 observations) and MBIs (7 observations).

(ii) Methodology

In order to assess the financial characteristics of LBO target firms, we compare our sample of LBO firms to a control sample. Each LBO company is paired with a similar non-LBO company. The non-LBO (paired) company has: 1) the same activity as the LBO company at the NAF 4-digit level and 2) the turnover the closest to those of the LBO company at the end of the fiscal year preceding the deal. All the variables were extracted from Diane database. In the following tables, we report only variables that are computed on the three years before the deal.

Our variables definitions are presented in table 2. However several variables deserve further explanations.

FCF (H1)

For hypothesis H1 a proxy for the company's FCF is needed. We use the same definition of FCF as Lehn and Poulsen (1989). FCF is measured as the post-tax cash flow that is not distributed to security holders as dividends or interest payments. It represents the cash flow that is available to the firm to reinvest in its operations. More precisely, it is the operating income before taxes and depreciation less taxes paid less interest expense less preferred and common dividends[8]. We adjust for firm size by

standardizing the FCF estimate by the firm's turnover. A similar measure for operating FCF is used, among others, by Lang et al. (1991)[9].

Growth prospects (H2)

To proxy for the growth prospects of hypothesis H2, we follow Lehn and Poulsen (1989), who use the (average) growth rate of turnover. Since the firms in our sample are private, we cannot use the Tobin's q ratio, which is usually used to measure growth opportunities.

Business risk (H4)

The coefficients of variation of turnover growth, FCF divided by turnover, ROIC and ROE are used as different measures of business risk. We estimate the coefficient of variation using the previous three years. It is suggested that since the volatility of a firm's future income is the chief factor in determining a firm's ability to meet interest charges, earnings and turnover volatility is an indication of business risk (Ferri and Jones, 1979). Various measures are used in the literature to measure business risk. For instance, Chakraborty et al. (1999) use the coefficient of variation of cash flow as a measure of cash flow uncertainty[10].

Capital intensity (H5)

Our proxy of capital intensity is the tangible assets divided by total assets ratio. It evaluates the needs for investment in tangible assets.

Distributable reserves (H8)

The retained earnings divided by total assets ratio is a proxy for the amount of distributable reserves.

Transferable assets (H11)

We use as a proxy variable for the presence of transferable assets in the target's balance sheet tangible assets (divided by total assets) and financial assets (divided by

total assets). The justification for this is that financial assets should be easily transferable in case of difficulty since they are not used directly for the operations. Tangible assets are also used as a proxy for transferable assets because if a large volume of assets is tangible then it gives target's creditors better guarantees as it can be sold in the event of failure.

Age of assets (H12)

We use the Total Assets (net)/Total assets (gross) ratio to evaluate the age of assets.

Table 3 summarizes the LBO likelihood hypotheses developed, the proxy variables used within the empirical tests, and the expected sign for each variable. A positive expected sign implies that an increase in the corresponding variable increases the likelihood of a forthcoming LBO transaction.

Two types of tests are conducted: first univariate and then multivariate. Although this study focuses primarily on the multivariate analysis of the financial determinants of LBO likelihood, we also report univariate descriptive statistics. Whereas multivariate analysis controls for the interactions between the explanatory variables, univariate descriptive statistics consider each variable separately.

Thus, in a first step, we conduct tests of differences between LBO and control companies for all our financial variables, for the three years preceding the deal and for the mean of this three-year period. The main objective of the univariate descriptive statistics is to identify the salient financial characteristics of LBO target companies compared to non-LBO companies. As it can be seen in table 4, sample means for our variables show extreme values. Consequently, we rely on the median Wilcoxon tests when interpreting the results. These tests were conducted in a « static »way, simply by analysing the differences between our samples for each variable each year, and in a

« dynamic » way by computing the differences between the changes in our variables between a year and the following year.

In a second step, the multivariate analysis attempts to distinguish among a sample of companies those, which will be subject to an LBO transaction on the basis of a functional relationship between a firm's financial characteristics and its LBO likelihood in a given period (year n). Thus, the main objective is to classify the company being considered either as an LBO candidate or a non-LBO candidate. As our dependant variable is an ordinal one (1 if a company is an LBO target, 0 if it is non-LBO), we use a logistic regression to evaluate variables that significantly influence LBO likelihood. In related areas, Lehn and Poulsen (1989) and Powell (1997) among others employ the concept of the multivariate logit probability models.

Our hypotheses address financial and operating factors as potential distinguishing characteristics in our analysis of firms, which undergo an LBO. Identifying features of firms, which undergo LBO from other firms in their respective industries, are *ex ante* FCF factors, taxation factors and operating and financial factors. The model takes the form:

$$P\,(\mathrm{LBO_n}) = F\,(\text{FCF factors, taxation factors, operating and financial factors, error})$$

where $\mathrm{LBO_n}$ is a qualitative dependent variable, taking the value one if the firm undergoes an LBO in the accounting year n, and zero if the company is not taken over.

We construct our logit model by adding twelve variables. In order to avoid correlations between variables, we retain the coefficient of variation of ROIC as the only measure of business risk and ROE as our only measure of profitability. However some of our variables being quite close (in the way they are computed), we also look at the correlations between variables to avoid multicollinearity problem in our model

estimations. We find that all the correlations between our variables are relatively moderate. Moreover, we ran several regressions putting different variables in and out of the model and the coefficients did not seem to be affected. Finally, we don't face the classical symptom of multicollinearity (big R-squared but small z-statistics). Consequently, we conclude that multicollinearity should not be a problem in our study.

4. EMPIRICAL RESULTS

(i) Results from Univariate Analysis

Let's remind that, considering the special features of our variables (see section 3), we base our interpretation on the median (Wilcoxon) tests. Table 4 presents the results of the univariate analysis for the LBO versus non-LBO sample. In addition to the sample medians for each proxy variable, the table reports the tests of (static) differences between the LBO target companies and the non-LBO companies for the average variables on the 3 year-period preceding the deal. We also ran the tests on each of the 3 years preceding the deal. There were some statistically significant differences between LBO and non-LBO firms on our variables for these years but it could be that some of these results were a consequence, not a cause of the LBO: firms anticipating the deal would try to show the best picture. As a result, it is important to check if these features are stable over time. That's why results for each year are not reported, but just quoted if necessary.

Prior to the deal, LBO target companies present several features compared to non-LBO companies: they are less leveraged and they have more financial assets. They also outperform their industry counterparts with regard to performance ratios (ROIC and ROE) and cash generation capacity (only for the year n-1). This outperformance

results in higher income tax expense level. Our results are consistent with those of Desbrières and Schatt (2002a) on the French market. The authors show that return on equity is higher for LBO targets two years before the deal, and that return on investment is greater two years before and the year preceding the deal. In their study, LBO targets also appear significantly less indebted than their counterparts. Although they measure liquidity and cash flows variables in a different way, they also show that LBO targets have larger FCF and more liquid assets before the deal. Our supplementary variables complete the picture, showing that LBO targets' working capital requirements level are statistically higher than those of other firms (similar to Desbrières et Schatt, 2002b). Other assets characteristics are quite similar for sample firms and control group as their fixed assets characteristics (estimated age, level, depreciation politics) and their available funds are very similar to those of non-LBO companies.

Based on these results, LBO targets appear to be more efficient companies compared to their counterparts, which use this performance to lower their leverage and invest in financial medium- and long-term financial assets instead of investing in their internal growth. It could also be that a high level of liquid (financial) assets and a low level of debt compensate for the unexpected risky profile of LBO targets.

Indeed, in contradiction with our expectation (hypothesis H4), business risk is not lower for LBO targets than for other firms. On the contrary, our results show a larger variability of ROIC and ROE for LBO targets than for non-LBO on the 3 years preceding the deal.

As we have already stated, LBO targets don't seem to be overrepresented in specific industrial sectors. Moreover, the coefficient of variation of turnover growth is not higher for LBO than for non-LBO targets. Hence, it seems that the risky profile of

LBO targets doesn't derive from a higher risk in the product market of LBO targets. This risk is rather a consequence of business characteristics[11] of LBO firms.

This analysis allows us to turn to temporary conclusions regarding our hypotheses. Our evidence clearly supports hypotheses concerning profitability, taxation and capital structure. LBO companies outperform (H6 corroborated) and they are less indebted (H7 corroborated) than their counterparts. Altogether, this evidence certainly explains the high income tax expense they bear (H3 corroborated). Evidence that LBO targets have a high level of financial assets in their assets structure also supports our hypothesis H11 (assets composition) and in a sense hypothesis H9 (target's ex ante cash position) as financial assets are easily transferable. However, contrary to hypothesis H10, we find that LBO targets face higher levels of working capital requirements than their industry counterparts.

Other hypotheses don't receive clear support. Jensen's hypothesis is not corroborated. Ex-ante level of FCF is significantly higher only the year preceding the deal, not on a long time-frame (H1). There is no evidence that the targets' growth opportunities are weaker than for their counterparts (H2). The targets' propensity to invest in financial assets can be seen as evidence that these firms don't have any internal or business growth opportunities. But we can also reverse the analysis: a good economic performance, coupled with these high financial investments, could reveal that target firms don't jump at internal growth opportunities and voluntary limit their business growth[12]. This voluntary limited growth could also be consistent as a mean of limiting default risk. Since LBO targets are more risky (economically), they could prefer not to be too leveraged and to possess more liquid or transferable (financial) assets.

Finally, evidence allows us to reject some hypotheses. The age of assets (H12), which can be estimated by the net to gross book value of fixed assets (TA/TAg), as well as

other variables regarding fixed (tangible and intangible) assets, are very similar for LBO and non-LBO companies. This result differs somewhat with those of Desbrières and Schatt (2002b). The amount of distributable reserves is also not significant (H8). The low business risk hypothesis (H4) is rejected: profitability seems to be more volatile for LBO targets than for their rivals.

To conclude the first part of our analysis for the total sample, we can notice that some of our results are unstable and astonishing. FCF levels are positively significant only the year preceding the deal (not reported), but not in average 3 years before. To study these facts thoroughly, we examine if some trends in the variables appear before the deal. More precisely, we look at the changes in the variables between a year and the following year in order to see if there are significant, consistent, changes before the deal. Our results (not reported) show few significant variations of our variables. Moreover, we can't draw any consistent explanation from the significant variations. For example, the only significant (at a 90% confidence level) variations in our variables between n-2 and n-1 (where n is the deal's year) are the FCF and leverage variables. LBO targets increase their FCF and decrease their indebtedness significantly more than other firms the year preceding the deal. But significant variations appear neither between n-3 and n-2 nor between n-3 and n-1. In fact, these results do not permit to go deeper in our analysis on the total sample. Nevertheless, we can go deeper by studying differences between sub-samples. We first analyse the three sub-samples according to the vendor type: family or individual (58 LBOs), group (61 LBOs) and venture capitalist (23 LBOs).

Independent LBO targets present very marked features (table 5). They outperform their industry counterparts in terms of growth, profitability and capacity to generate cash prior to the deal. However this greater performance goes with a higher level of

business risk. They also have significantly less debt and tangible assets and more financial assets in their balance sheets. The age of assets seems to be lower for LBO targets in this sub-sample. These are economically risky but effective targets. Actually, independent targets before the deal are consistent with the predictions of our hypotheses, except for the business risk, which is higher, and the working capital requirements, which are not statistically different from other firms.

By contrast, former subsidiaries show fewer differences, sometimes with an opposite sign, in comparison with other firms (table 6). Former subsidiaries from groups do not exhibit a greater performance prior to the transaction. On the contrary, their financial performance is significantly lower than their counterparts' one but it is also less volatile. Several assets characteristics are statistically different in this sub-sample. Levels of working capital requirements and financial assets in total assets are higher for this type of LBO targets. Assets seem to be older for former subsidiaries that undertake an LBO than for the control sample. These results corroborate our hypothesis H14.

The results for the third sub-sample of this first classification are not reported. With a limited size of 23 deals, we find that only two variables are statistically different between LBO targets that had a venture capitalist in their capital and their control sample. LBOs have a higher financial performance (ROE) and more financial assets than other firms.

In fact, two sub-samples show very distinctive features. Targets from previously independent firms are really efficient (in terms of performance ratios, FCF, age of assets) with a risky income stream. They are also less leveraged than their counterparts and possess more financial and other transferable assets. These last features could compensate for their risk. By contrast, former subsidiaries are not

efficient (older assets) and not less indebted but they are less risky (in terms of cash-flows volatility) prior to the deal. They also have more financial assets than their counterparts but it certainly refers to their former path of growth and group affiliation rather than to a limitation of default risk.

We also observe differences when constructing sub-samples according to the bidder type but the features of each sub-sample (Management Buy-Out vs. Investor Buy-Out) are somewhat less pronounced.

MBO targets are not more profitable than their counterparts but they exhibit a higher level of taxes. They have less debt and cash whereas they have more financial assets and working capital requirements (table 7).

When the main bidder is a LBO firm (not a manager), we only observe higher working capital requirements and financial assets in the LBO targets' balance sheets, but no other financial criterion is statistically different (table 8). These results run against our expectations as we expected financial bidders to follow more closely financial criteria in their targets' acquisition rationale. The most striking fact is that when bidders are investors, the target possesses about 7 times more financial assets than other firms.

To conclude this section, sub-samples show clear differences. But these features don't directly and clearly support one explanation (FCF, tax, other rational) for the LBO activity. They rather draw different pictures of LBO targets, depending on the vendor and the bidder type.

The most striking sub-sample is the Independent targets one. These targets exhibit a higher turnover growth. They are also really efficient (whatever the measure used), riskier (whatever the measure used), they have a bit more financial assets, less tangible assets and these assets are younger than for other firms. Finally, they pay

more taxes (compared to turnover) than their counterparts. Together, these features draw a picture of small firms, with good growth opportunities, but too small to optimize their fiscal management. In these firms, the tax saving hypothesis could be a valid motive for the deal. The free cash flows story is harder to support since the agency costs prior to the deal are probably limited (the manager is the owner) and the growth opportunities are quite good so that negative NPV projects are scarce. Other features of these firms are consistent with the LBO firms' acquisition rationale, except their risky profile, which could be compensated by a low indebtedness and a quite high level of financial assets. This sub-sample contrasts very sharply with the targets from groups. The features of targets from groups show them as non-core or less profitable business units from groups, which are divested. Indeed these targets are low performers (with a low risk, which in turn depicts these firms as lacking of dynamics), with old assets, and important working capital requirements to finance, corroborating H14. These firms possess more financial assets than other firms. In fact, the motive for the bidder when acquiring this kind of targets is probably the sources of improvement that lie in these firms, and the transferable (financial) assets. Agency costs are probably higher in these firms. Our free cash flows variable is not sufficient to show it, but doesn't dismiss it. The low ROE can be a sign of past low (or even negative) NPV investments[13].

The pictures are less clear when we analyse sub-samples according to the bidder type. It seems that managers acquire their company[14] when it pays more taxes, is less indebted and has more working capital requirements (WCR) and financial assets. In fact, it seems that the targets' potential liquidity of assets (through transferability of financial assets, improvement in WCR management, and the fiscal deductibility of debt's interests) and indebtedness capacity (due to a low leverage) are the main

motives for these bidders. Motives for the IBO cases, where bidders are investors (not managers) are perhaps similar but less clear. In fact, these bidders undergo deals on firms with only two features similar to the formers: high WCR and financial assets to total assets ratio. But these firms are not less indebted that other non-LBO target companies.

Multivariate models, explaining the likelihood of an LBO deal by the target's financial characteristics, complement our analysis of LBO motives.

(ii) Results from Multivariate Analysis

Since the preceding (univariate) analysis considered each proxy variable independently, the coefficients might loose reliability in determining the variable's significance in the presence of other variables. Therefore, multivariate analysis is employed to estimate the common effects on the LBO likelihood. Based upon the earlier discussion there is strong evidence that the effects of some variables on a company's decision to undergo an LBO depend upon the levels of other proxy variables.

The results of the multivariate analysis are reported in Table 9. All models incorporate the average values of variables measured the three years preceding the LBO. Model I includes the total sample whereas models II, III, IV and V are estimated on our different sub-samples. The relatively weak correlations among our explanatory variables should evacuate any multicollinearity problem.

Table 9 gives several indicators of the model goodness-of-fit. The highest Mc Fadden R-squared is 21,06%. It is obtained with the logistic regression estimated on the independant targets sub-sample. This result indicates that the variables retained in the regression can explain 21,06% of the probability of undergoing an LBO for

independant companies. Although the McFadden R^2 likelihood ratio index is important, the main criteria for the model selection are the AIC criterion and the Schwarz criterion. In general, one judges a model with a lower value of the criterion to be preferable to alternative models[15].

All five models are significant at the 10% level which means that the variables retained in the five regressions bring a significant quantity of information to explain the probability of occurrence of an LBO.

According to the results for Model I, the only significant variable predicting the likelihood of LBO is Financial assets to total assets. This result shows that LBO targets are more likely to have financial assets in their balance sheet, which is consistent with hypothesis H11 since financial assets are easily transferable assets ($p<0,001$ in Model I). It also proves that LBO targets manage a pronounced external growth policy. But as previously shown, the common sample conceals different companies and motives. Consequently, we have to refer to the model run for each sub-sample to assess the motives of the deals.

Model II, run on the independent sub-sample (firms which were independent, often family owned prior to the deal) shows that for these performing, with young assets and high growth opportunities firms, only the Tax variable impacts positively the likelihood of being acquired through an LBO. It seems that the tax savings hypothesis is the main motive. In fact, as previously noticed, this type of companies are often small family owned businesses for which there is no family successor. As a consequence, the main motive for the LBO transaction on these companies is not directly the fiscal one. But as they are small and very efficient, they can't completely optimize their fiscal management and have to pay income taxes. That's probably why the fiscal variable appears to be significant.

Model III, run on the targets from groups, shows a different picture and motive. The likelihood that a subsidiary is divested through an LBO is a positive function of its part of financial assets in the total assets, and a negative function of the age of its (tangible) assets. It means that the more the target offers some transferable (financial) assets, the more it can be divested through an LBO. The more the assets are old, depicting a non-core subsidiary in a group, the more the subsidiary will be divested through an LBO. We can't corroborate our hypothesis H13, which stated that the impact of free cash flow variables (and free cash flows problems) on the likelihood of an LBO transaction should be greater in the case of group subsidiaries. Nevertheless, some signs show that these targets suffer from management problems, which can be stated as reflecting agency problems prior to the deal: their assets are older and less (financially) profitable.

Model IV is run on the targets, which were bought by the incumbent management prior to the deal. As we can see, the likelihood of such a deal evolves positively with the tax variable and negatively with the net cash variable. In these targets, with a low debt level and a high transferability of assets, it is clear that the tax saving hypothesis can be a valid motive for LBO. Hence, managers use their company's borrowing capacity to make the most of the related tax savings. The reason why the net cash position has a negative impact on the likelihood of LBO is less clear and quite difficult to analyse.

Finally, model V, run on the Investor-led Buy-outs, shows that, contrary to our hypothesis H15, financial criteria have less impact on the likelihood that a company undergoes an LBO. The only criterion, which is significant, is the financial to total assets ratio. LBO firms when they are leaders on a transaction are particularly sensitive to the level of financial assets because some of them could be sold after the

deal. It could be that LBO firms in IBOs are only sensitive to transferable assets, or more probably, that they are more able to manage the financial assets, resulting from investments or firms' acquisitions.

5. SUMMARY AND DISCUSSION OF FINDINGS

Although several papers have attempted to empirically investigate the financial characteristics for companies undergoing LBO transactions within the Anglo-Saxon region, the authors have failed to expand their analysis to Continental European countries in general, and to France in particular. This gap in the academic literature is especially critical for France as recent research undertaken in France (Desbrières and Schatt, 2002a, 2002b) provides initial evidence suggesting that the implications of French LBOs are very specific (sources, targets' *ex post* performance…).

To remedy this shortcoming, this study exclusively examined the LBO phenomenon for French private companies. Specifically, we attempted to explain the motives for an LBO transaction and to empirically examine whether the financial characteristics of French LBO targets are distinguishable from firms, which have not undergone an LBO.

The study confirms some expected and beforehand shown features of LBO targets on the French market. Hypotheses concerning financial structure and assets composition are corroborated. LBO targets are less indebted and possess relatively more liquid (financial) assets than their industry counterparts.

However, some results are consistent neither with our expectations, nor with former results. Some differences appear when compared to results obtained by Desbrières and Schatt. (2002b) concerning the assets characteristics (age) for example. The agency costs of FCF hypothesis to explain French LBOs is not corroborated. More

important is the fact that, contrary to common sense and classical postulated characteristics of LBO targets, LBOs' volatility of economic performance (business risk) seems to be higher than for non-LBO firms prior to the deal. This result indicates an unexpected risky profile of LBO targets that could be important for further studies. Indeed, we show that the previously reported outperformance (ROE and ROIC) (Desbrières and Schatt, 2002a) of LBO targets prior to the deal seems to be the price for the risk associated. This question is worth studying more deeply. It could help to explain some unexpected results previously reported, in particular the underperformance puzzle after the deal already emphasized on the French market (Desbrières and Schatt, 2002a).

Subdividing our sample according to the vendor type and bidder type is beneficial for our analysis. We thus notice that the so-called outperformance of LBO targets prior to the deal hides in fact different cases. According to the LBO type, motives of transactions are different. On the one hand, for former independent firms, in which it is a matter of succession for relatively small firms with good growth opportunities, the tax savings hypothesis is corroborated. On the other hand, in former subsidiaries or divisions, it is a matter of divestiture of non-core or non-profitable entities in larger groups and the guarantees offered in terms of assets liquidity seem to be the most important variable for LBO likelihood.

In fact, according to the LBO type and motives, hypotheses appear to be more or less relevant and corroborated. In particular, regarding our results for the different sub-samples, we clearly distinguish between LBOs according to the vendor type (independent vs. groups) whereas it seems less clear that our distinction between MBOs and IBOs reveals different financial profiles for LBO targets.

NOTES

[1] These include a lack of clarity and the significance of the offer reaching a 95 per cent acceptance level, which is necessary for both tax integration and to initiate the squeeze-out provisions. In 2002, the LBO Commission of AFIC, the French Venture Capital Association, published a white paper that highlighted the need to improve French law in the area of PTPs.

[2] FCF is « cash flow in excess of that required to fund all projects that have positive net present values » (Jensen, 1986, p. 323).

[3] However we can't test this hypothesis since the LBO targets in our sample are private and we can not use Tobin's q to evaluate targets' expected growth.

[4] Sources of improvement in profitability can't be easily evaluated with our accounting data.

[5] The industrial distribution of French firms is proxied by the distribution of 63 712 firms for which accounts are available on the period studied (1996-2002) in the Diane database. A Student test and a Wilcoxon test show no significant difference at a 90% confidence level.

[6] For example, it emerges that the median value of the economic performance for the French economy (0.22) is very close to those of the over represented sectors (textile (0.17); clothes and furs (0.24); leather and shoes (0.21); chemistry (0.21)) and those of the underrepresented sectors (cars retail and reparation (0.20); road transports (0.16)).

[7] The vendor name and the bidder name are not available in *Capital Finance* and Zephyr for all the targets in our sample. Consequently, we are not able to classify all the deals in our sample.

[8] We acknowledge that this definition may be imperfect for small companies because dividend payments are decided upon by the management.

[9] However Lang et al. (1991) adjust for firm size by standardizing the FCF estimate by the firm's book value of total assets.

[10] We have to acknowledge that our measures of risk, namely, the coefficients of variation of turnover growth, ROIC, ROE and FCF/turnover will indicate a high level of risk for an enterprise experiencing a steady and high rate of growth.

[11] Our results seem to show that LBO targets have more fixed costs and a higher operating leverage than non-LBO firms.

[12] Desbrières and Schatt's study (2002b) seems to indicate that there is no significant increase in tangible and intangible assets after the deal. Desbrières and Schatt only observe an ex-post increase in the target's turnover. These results run against this explanation.

[13] Of course, it doesn't mean that negative NPV projects and low ROE are synonyms.

[14] We exclude MBIs (Management Buy-Ins) from our sub-sample. So the 72 MBOs are deals in which the incumbent management prior to the deal acquires a large part of the target's capital and leads the operation.

[15] The AIC and the Schwarz criteria are effective estimates of the out-of sample forecast error variance. Depending on the specific form of the penalty factor, each criterion embodies its own trade-off between the fit (average residual sum of squares divided by the number of regressors) and the penalty factor (degrees of freedom). In contrast to R^2, both criteria penalize the degrees of freedom more harshly. Although AIC and Schwarz should obtain their minimum at the same model, the Schwarz criterion has an extremely strong taste for simple models.

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Table 1
Sample sectorial structure

	Deal year										
NAF code name (2 digits)	1996	1997	1998	1999	2000	2001	2002	2000+ 2001*	Total number	% sample	% Diane
Agriculture, hunting, related services		2		2					4	1,14	0,91
Food industries	6		2	2	4		2		16	4,57	2,68
Textile industry	6			2	4	6			18	5,14	0,79
Clothing and furs industry	2	4		4		2			12	3,43	0,65
Leather and shoes industry	2		2						4	1,14	0,22
Wood work and manufacture of wooden articles		2				2			4	1,14	1,15
Paper and cardboard industry		2		2		2			6	1,71	0,47
Edition, printing works, reproduction	2	6	2	4			2		16	4,57	1,82
Coking, refining, nuclear industries						2			2	0,57	0,05
Chemical industry	4	4	8		2	6	2		26	7,43	0,99
Rubber and plastics industry	2	4	6	2	2	2			18	5,14	1,27
Manufacture of other nonmetal mineral products			2						2	0,57	0,87
Metallurgy		2				2			4	1,14	0,33
Metals work	6	2	2			2			12	3,43	4,60
Manufacture of machines and equipment	4	2	2		8	2		4	22	6,29	2,29
Manufacture of electrical machines and device					6	2			8	2,29	0,69
Manufacture of radio, television and communication equipment					2		2		4	1,14	0,44
Manufacture of medical, precision, optics and clock industry instruments			2		4	2			8	2,29	0,85
Manufacture of other transport equipment		2							2	0,57	0,27
Manufacture of furniture ; various industries	2	4			2	4			12	3,43	0,92
Construction business				6		4	2		12	3,43	11,90
Wholesale and trade intermediaries	8	6	14	6	14	8	2		58	16,57	17,92
Retail trade and domestic articles repair	2		2	2	6	4			16	4,57	9,77
Hotels and restaurants					2				2	0,57	2,47
Land transports			2						2	0,57	3,67
Transport auxiliary services					6	2			8	2,29	1,58
Financial intermediation		2							2	0,57	0,23
Real-estate activities			2	4	2	4			12	3,43	2,60
Hiring without operator		4		2	2	2			10	2,86	0,59
Computers activities					4				4	1,14	1,42
Research and development		2				2			4	1,14	0,11
Services provided mainly to companies		2	4	4		4			14	4,00	14,62
Education				2					2	0,57	0,28
Entertainment, culture and sport activities		2		2					4	1,14	0,96
Total	46	54	52	46	70	66	12	4*	350	100,00	90,41**

* The company « De Dietrich et cie » was a target in 2000 and in 2001.
** The total for Diane database is less than 1 because our LBOs' sample doesn't include all the industrial sectors of Diane database.

Table 2
Proxy Variables Definitions

Proxy variables	Definitions
FCF/TR	"Free cash flows" (1) divided by turnover
TRGR	Turnover growth
Tax/TR	Income tax divided by turnover
CVTRGR	Coefficient of variation of turnover growth computed on the 3 year-period preceding the deal
CVROIC	Coefficient of variation of ROIC computed on the 3 year-period preceding the deal
CVROE	Coefficient of variation of ROE computed on the 3 year-period preceding the deal
CVFCF/TR	Coefficient of variation of FCF/turnover computed on the 3 year-period preceding the deal
TanA/TA	Tangible assets (net) divided by total assets (net)
ROIC	Return On Invested Capital = (operating income before taxes + interest expenses) divided by "economic assets" (WCR + fixed Assets (net))
ROE	Return On Equity = Net income divided by (stockholders equity - net income)
LEV	Total debt divided by stockholders equity
RET/TA	Retained earnings/Total assets
NC/TA	Net cash/Total assets
WCR/TR	Working Capital Requirement divided by turnover
FA/TA	Financial assets (net)/Total Assets (net)
TA/TAg	Total Assets (net)/Total assets (gross)

(1) Free Cash Flows = operating income before taxes and depreciation less taxes paid less interest expense less preferred and common dividends.

Table 3
Summary of hypotheses

Theory	Hypothesis	Proxies	Abbreviation	Expected sign
Agency cost of free cash flow	H 1	Free cash flow to turnover	FCF/TR	+
	H 2	Turnover growth rate	TRGR	-
Taxation	H 3	Income tax to turnover	Tax/TR	+
Business risk	H 4	Coefficients of variation of turnover growth, ROIC, ROE and FCF/TR	CVTRGR, CVROIC, CVROE, CVFCF/TR	-
Capital intensity	H 5	Tangible assets to total assets	TanA/TA	-
Profitability	H 6	Return on Invested Capital and Return on Equity	ROIC, ROE	+
Financial structure	H 7	Total debt to equity	LEV	-
	H 8	Retained earnings to total assets	RET/TA	+
Assets composition	H 9	Net cash to total assets	NC/TA	+
	H 10	Working capital requirement to turnover	WCR/TR	-
	H 11	Financial assets to total assets	FA/TA	+
	H 12	Total assets (net) to total assets (gross)	TA/TAg	+

Table 4

Tests of differences between LBO companies and control sample, averages 3 years before the deal (175 LBO)

	Proxies	LBO companies			Non-LBO companies			
		mean	standard deviation	median	mean	standard deviation	median	Centered T+ Wilcoxon
Activity and performance	FCF/TR	-0,0664	0,9932	0,0601	0,0559	0,1244	0,0383	1,3022
	TRGR	4,2129	35,5444	0,1886	0,6039	2,6387	0,1721	0,6794
	Tax/TR	-0,0217	0,4807	0,0213	0,0156	0,0307	0,0069	3,9305***
	ROIC	-0,2558	7,7837	0,2959	-0,0984	3,2288	0,1843	2,1977*
	ROE	0,2840	1,4458	0,1734	0,4158	2,0625	0,1299	2,0070*
Business risk	CVTRGR	601,0220	7662,1496	0,0098	3,4258	33,1464	0,0124	0,4991
	CVROIC	-85,4735	902,6398	0,0292	-13,8260	131,3404	0,0103	1,6479†
	CVROE	1,6432	24,6663	0,0137	5,2919	52,4842	0,0055	1,9638*
	CVFCF/TR	-1,0936	12,8340	0,0007	-0,0002	0,0146	0,0005	1,2814
Composition and characteristics of assets and financial structure	TanA/TA	0,1470	0,1512	0,0961	0,1521	0,1518	0,1190	-0,7071
	LEV	4,1782	27,9611	1,3202	25,4359	267,0855	1,9524	-2,2350*
	RET/TA	0,1380	0,1541	0,0797	0,1324	0,1658	0,0616	0,7265
	NC/TA	0,0913	0,1415	0,0564	0,1044	0,2076	0,0443	-0,3680
	WCR/TR	0,6933	5,9263	0,1419	0,1117	0,5297	0,0996	3,7532***
	FA/TA	0,1192	0,1875	0,0375	0,0490	0,0904	0,0150	4,4714***
	TA/TAg	0,1415	0,1391	0,8174	0,2076	0,1317	0,8162	0,5870

Notes:

This table provides descriptive statistics for the sample of 175 French LBO targets and the control sample of 175 French companies that did not undergo an LBO during the period 1996 to 2002. For all proxies described in table 2, mean, standard deviation and median of averages on the n-3/n-1 period (n is the deal's year) are reported and an univariate test for the difference in medians between the two samples is conducted. Here, the median difference is defined as the value for the LBO companies minus the values for the non-LBO companies. Thus, a significantly positive (negative) T-statistic implies that the median of the LBO sample is larger (smaller) than the median of the non-LBO sample. ***, **, * and † indicate statistical significance at the 0,1%, 1% and 5% and 10% level, respectively. Differences for variables in **bold** characters are significant at the 10% level.

Table 5

Tests of differences between Independent targets and control sample, averages 3 years before the deal (58 LBOs)

Average (N-3)/(N-1)	Variables	Median LBO companies	Median non-LBO companies	Centered T+ Wilcoxon
Activity and performance	**FCF/TR**	0,0885	0,0333	2,5898**
	TRGR	0,1713	0,1038	2,1098*
	Tax/TR	0,0326	0,0041	4,3241***
	ROIC	0,4089	0,2077	2,5201*
	ROE	0,2470	0,1405	2,6363**
Business risk	**CVTRGR**	0,0124	0,0061	1,8233†
	CVROIC	0,0479	0,0110	2,2492*
	CVROE	0,0221	0,0046	2,5511*
	CVFCF/TR	0,0010	0,0004	2,1950*
Composition and characteristics of assets and financial structure	**TanA/TA**	0,0784	0,1315	-2,2027*
	LEV	1,2457	2,0403	-2,2569*
	RET/TA	0,1654	0,0529	1,6298
	NC/TA	0,0669	0,0394	0,3987
	WCR/TR	0,1415	0,1185	1,622
	FA/TA	0,0257	0,0162	2,1717*
	TA/TAg	0,8672	0,8107	2,4117*

Differences for variables in **bold** characters are significant at the 10 % level.

Table 6

Tests of differences between Groups targets and control sample, averages 3 years before the deal (61 LBOs)

Average (N-3)/(N-1)	Variables	Median LBO	Median non LBO	Centered T+ Wilcoxon
Activity and performance	FCF/TR	0,0354	0,0380	-1,0307
	TRGR	0,1074	0,2014	-1,0307
	Tax/TR	0,0078	0,0074	0,1903
	ROIC	0,1927	0,1250	0,3699
	ROE	0,1167	0,1299	-2,0938*
Business risk	CVTRGR	0,0034	0,0171	-0,7362
	CVROIC	0,0182	0,0058	0,3125
	CVROE	0,0038	0,0079	-1,7131†
	CVFCF/TR	0,0004	0,0004	-0,5926
Composition and characteristics of assets and financial structure	TanA/TA	0,1102	0,1045	0,8152
	LEV	1,4745	1,9524	-0,7434
	RET/TA	0,0237	0,0652	-1,487
	NC/TA	0,0289	0,0342	-0,7865
	WCR/TR	0,1602	0,1207	1,8998†
	FA/TA	0,0503	0,0130	2,8767**
	TA/TAg	0,7590	0,8077	-2,1369*

Differences for variables in **bold** characters are significant at the 10 % level.

Table 7

Tests of differences between MBO targets and control sample, averages 3 years before the deal (72 MBOs)

Average (N-3)/(N-1)	Variables	Median LBO	Median non LBO	Centered T+ Wilcoxon
Activity and performance	FCF/TR	0,0524	0,0377	0,8249
	TRGR	0,1166	0,1727	-0,7071
	Tax/TR	0,0199	0,0072	3,541***
	ROIC	0,2374	0,1599	1,2795
	ROE	0,1681	0,1135	1,6554†
Business risk	CVTRGR	0,0061	0,0103	-0,6061
	CVROIC	0,0199	0,0100	0,7464
	CVROE	0,0132	0,0053	1,5208
	CVFCF/TR	0,0007	0,0005	0,6902
Composition and characteristics of assets and financial structure	TanA/TA	0,0853	0,1026	0,2357
	LEV	1,3778	1,8925	-1,8575†
	RET/TA	0,0925	0,0889	-0,0229
	NC/TA	0,0507	0,0639	-1,6835†
	WCR/TR	0,1350	0,0747	2,0202*
	FA/TA	0,0227	0,0140	2,1268*
	TA/TAg	0,8180	0,8328	0,3816

Differences for variables in **bold** characters are significant at the 10 % level.

Table 8

Tests of differences between IBO targets and control sample, averages 3 years before the deal (84 IBOs)

Average (N-3)/(N-1)	Variables	Median LBO	Median non LBO	Centered T+ Wilcoxon
Activity and performance	FCF/TR	0,0533	0,0404	0,0669
	TRGR	0,2324	0,1729	0,941
	Tax/TR	0,0195	0,0059	1,4048
	ROIC	0,2707	0,1843	0,718
	ROE	0,1416	0,1479	0,6244
Business risk	CVTRGR	0,0104	0,0128	1,2175
	CVROIC	0,0291	0,0103	0,6422
	CVROE	0,0057	0,0053	0,5842
	CVFCF/TR	0,0006	0,0005	0,4014
Composition and characteristics of assets and financial structure	TanA/TA	0,1115	0,1277	-1,0715
	LEV	1,4368	1,8962	-0,7136
	RET/TA	0,0794	0,0396	1,0523
	NC/TA	0,0475	0,0245	0,2185
	WCR/TR	0,1560	0,1088	3,3538***
	FA/TA	0,0712	0,0173	3,7462***
	TA/TAg	0,8167	0,8025	0,3969

Differences for variables in **bold** characters are significant at the 10 % level.

Table 9

Multivariate Logit Regression Analysis of Factors Influencing the LBO Likelihood

Independent variables	Expected sign	Model I Tot. sample	Model II Independant	Model III Group	Model IV MBO	Model V IBO
Constant		-0,1803 (-0,2336)	-1,3002 (-0,9656)	2,9405† (1,8932)	-0,0263 (-0,0194)	-0,5399 (-0,4830)
TRGR	-	0,0001 (0,6026)	-0,0006 (-0,8563)	0,0007 (0,6445)	-0,0025 (-0,8495)	0,0001 (0,5925)
FCF/TR	+	-0,5191 (-0,5176)	-0,5711 (-0,1451)	-0,2035 (-0,0746)	-2,9077 (-1,0039)	-0,5792 (-0,4842)
CVROIC	-	-0,0004 (-1,1802)	-0,0078 (0,3567)	-0,0008 (-0,5738)	0,0093 (0,8833)	-0,0003 (-0,8882)
ROE	+	-0,0107 (-0,1662)	-0,0401 (-0,2194)	-0,1851 (-0,8024)	-0,2478 (-0,8905)	0,0305 (0,3513)
WCR/TR	-	0,2464 (1,0919)	1,4417 (0,7890)	-0,1016 (-0,2982)	0,2434 (0,4132)	0,2103 (0,8207)
TanA/TA	+	0,2198 (0,2615)	-0,5573 (-0,2737)	-1,5677 (-0,8374)	0,7100 (0,4463)	0,5266 (0,4587)
FA/TA	+	4,0383*** (3,6930)	4,7937 (1,6439)	3,6559† (1,7891)	2,4087 (1,0405)	4,4692** (3,0321)
LEVDT	-	-0,0030 (-0,5727)	-0,0151 (-0,6915)	-0,0144 (-0,4120)	-0,0100 (-0,7969)	-0,0014 (-0,4627)
RET/TA	+	0,3346 (0,4347)	-0,8404 (-0,5071)	-2,4059 (-1,4434)	-1,4663 (-1,0389)	0,6990 (0,5988)
TAX/TR	+	1,0147 (0,7007)	49,6397** (3,2677)	-0,5470 (-0,2172)	38,6656** (3,0903)	0,9018 (0,5301)
NC/TA	+	-0,0772 (-0,1065)	-3,0344 (-1,4674)	0,3628 (0,2845)	-2,1480† (-1,7088)	-0,0097 (-0,0088)
TA/TAg	+	-0,2985 (-0,3324)	0,3809 (0,2273)	-3,5211* (-1,9909)	-0,2901 (-0,1864)	-0,1677 (-0,1259)
Sample size		350	58	61	72	84
LR statistic		30,6490**	33,8710***	19,8408†	25,1386*	20,8618†
McFadden R^2		0,0632	0,2106	0,1173	0,1259	0,0896
AIC		1,3730	1,3184	1,4368	1,3923	1,4169
Schwarz		1,5163	1,6270	1,7356	1,6604	1,6586

Notes:

This table presents the results of five multivariate logit regressions, which include a set of 12 independent variables for our total sample and different sub-samples. The expected sign in the second column refers to the hypotheses summarized in table 3. In addition to the estimated coefficients, the z-statistic, computed to test the null hypothesis of a zero coefficient, is shown in parentheses. ***, **, * and † indicate statistical significance at the 0,1%, 1%, 5%, and 10% level, respectively. LR indicates the p-value of the likelihood ratio test statistic, which is computed to test the hypothesis that all parameters of the model are simultaneously equal to zero. The McFadden R^2 reflects the likelihood ratio index of the model. AIC presents the Akaike-Information criterion. Schwarz refers to the Schwarz criterion.