OPERATING PERFORMANCE OF NORDIC REVERSE LEVERAGED BUYOUTS

- AN AGENCY PERSPECTIVE

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Abstract

We hypothesize that the operating performance of reverse leveraged buyouts is related to changes in leverage following an initial public offering (IPO). We test how changes in debt with different maturity affect operating performance for these firms. On average, the reverse leveraged buyouts exhibit superior operating performance during the year prior to the public offering and for the two years following the IPO. Our data further support that operating performance can be explained by changes in long-term debt. However, we do not find the same relation for short-term debt. Finally, these firms also exhibit substantially higher levels of long-term debt as a fraction of total debt compared to their industry peers, both prior and in the years following the IPO.

Keywords: Private Equity, Reverse Leveraged Buyouts, Agency Theory, Leverage, Operating Performance

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LIST OF SYNONYMS AND ABBREVIATIONS

Regarding the following synonyms and abbreviations; all are used interchangeably throughout the text.

SYNONYMS

Reverse leveraged buyouts – RLBO

Leveraged buyout – LBO – Buyout – Buyout company

Private equity firm – Private equity company – Buyout sponsor – PE firm

Sales – Revenues – Turnover

Industry peers – Peer group – Peers

ABBREVIATIONS

CAPEX	Capital expenditures
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amortization
EVCA	European Private Equity and Venture Capital Association
FCF	Free cash flows
GDP	Gross domestic product
IPO	Initial public offering
LBO	Leveraged buyout
M&A	Mergers and acquisitions
NACE	Nomenclature Generale des Activites Economiques dans I'Union Europeenne
NOPLAT	Net operating profit less adjusted tax
NWC	Net working capital
SVCA	Swedish Venture Capital Association
PE	Private equity
RLBO	Reverse leveraged buyout
ROA	Return on assets
ROIC	Return on invested capital

1 INTRODUCTION

Since leverage buyouts[1] (LBOs) first appeared in the 1980's, their organizational form has received attention for being superior in comparison to the ordinary public corporation (Jensen, 1989). A leveraged buyout is defined as an acquisition where a specialized buyout firm uses a relatively small portion of equity and a relatively large portion of outside debt financing to acquire another company (Kaplan and Strömberg, 2009). This particular capital structure, combined with large ownership stakes held by management and a private equity firm acting as an active investor are factors that resolves the central weakness of the large public corporation – the conflict between owners and managers over the control and use of corporate resources (Jensen, 1989).

1.1 PRIVATE EQUITY AND THE BUYOUT INDUSTRY

The typical leveraged buyout transaction is characterized by the acquiring firm, commonly known as a private equity firm, acquiring the majority control of an existing, mature firm. This separates the buyout transaction from venture capital transactions where the investors typically acquire minority stakes in young or emerging companies. The firms that are acquired are known as leveraged buyouts, or simply as buyouts. The buyout sponsor acquires the buyout with the intention of divesting it normally within three to five years later, indicating a LBO only to be a transitional organizational form. Due to the limited contractual lifetime of the private equity ownership, the timing and manner of exit is a central aspect in the buyout process. The routes through which a buyout can be divested are to a strategic buyer, to another private equity fund or to the public markets through an initial public offering (IPO). Buyouts that get listed on the public markets are referred to as reverse leveraged buyouts[2] (RLBOs) (Kaplan and Strömberg, 2009).

The operating performance of companies that have been acquired through a leveraged buyout is largely positively affected by the acquisition (Kaplan and Strömberg, 2009). Kaplan (1989b) finds that the operating income to sales ratio increases 10-20 % and that the ratio of cash flow to sales increases around 40%. More recent studies find similar results, but with much more modest increases in operating and cash flow margins (Weir, Jones, and Wright, 2007; Acharya and Kahoe, 2008).

The underlying arguments for the superior performance of LBOs relates to Jensen's (1989) theory of how these firms, through its organizational structure, successfully manages to reduce potential agency costs. These costs emerge from conflicts of interest and information asymmetry between the shareholders (principal) and the management (agent). In this context, agency costs

[1] We define leveraged buyouts as a homogeneous group, disregarding if they have gone from public to private ownership or private to private ownership.
[2] The same definition as for LBOs, regarding the prior ownership, applies for the reverse leveraged buyouts.

refers to e.g. wasteful activities and empire building carried out by management whose interest is not aligned with the interest of the owners. The management might maximize its utility by increasing firm size and various kinds of perquisite consumption, at the expense of the shareholders (Jensen and Meckling, 1976). The organizational structure of LBOs serves to align the interest of the management and owners; thus mitigate the agency costs. In contrast to LBOs, public firms generally operate with a more dispersed ownership concentration and lower levered balance sheet (Graham, 1996) and are thus not as effective in the alleviation of such discretionary costs.

Jensen (1989) further claims that since LBOs perform better than their industry peers due to this organizational structure, they should maintain the capital and ownership structure even after a potential exit to the public markets. Several studies (Kaplan, 1989; Lehn and Poulsen, 1989; Smith, 1990; Wruck, 1994; Denis, 1994) have found empirical evidence in support of Jensen's theories (1986, 1989) that there are positive effects on performance arising from the organizational structure of LBOs. However, findings (e.g. Holthausen and Larcker, 1996) of the characteristics and performance of RLBOs show that both leverage and ownership structure converges towards the industry levels of the ordinary public company during the years following the IPO. Holthausen and Larcker (1996), among others, further find that as the LBO characteristics fade, so do also the excess performance. While their study among others (e.g. Smith, 1990) detects a relationship between the performance and changes in ownership by management and other insiders, they do not find the same clear linkage between performance and changes in leverage. In the case of Holthausen and Larcker (1996), they explain these findings by their sample not exhibiting the characteristics that Jensen describe as essential for his theories to be applicable. In addition to these ambiguous findings, well-acknowledged financial theories such as that by Miller Modigliani (1958), state that leverage cannot directly change the value of a firm, other than through wealth transfers in the form of tax benefits.

Regarding the debt structure, Cotter and Peck (2000) finds that debt with shorter maturity and tighter debt terms significantly increase firm performance in the absence of a buyout specialist, i.e. private equity firm. According to their findings, a buyout specialist substitutes for debt as disciplining device. Thus, since the motivating effects of leverage are reduced, LBOs are likely to use debt with long maturities since the short-term and senior debt increase the likelihood of default and bankruptcy related costs. This holds even though the shorter debt is assumed to have a more motivating effect on the management.

Leveraged buyouts emerged in the United States during the 1980's, and have since then spread around the world and become an acknowledged, but controversial organizational form (Jensen, 1989). The Nordic private equity market, made up by Sweden, Denmark, Norway and Finland, is well developed and one of the most active in Europe. The existence of significant buyout activity

is pronounced by the fact that all of the four Nordic countries were among the six countries with the most private equity investments as a percentage of GDP in 2009 (EVCA Research Statistics 2009). During 2011, the Nordic countries represented 14% of the total European private equity investments (EVCA Yearbook, 2012).

1.2 OUR STUDY

In this thesis we study how the operating performance, capital structure and agency costs of 30 Nordic reverse leveraged buyouts develop after entering a public market. Through cross-sectional analysis we further examine how changes in leverage can serve to explain subsequent changes in operating performance and if this can be related to a mitigating effect on agency costs. In light of the previous empirical findings of Cotter and Peck (2000), we also test how debt of different maturity, roughly divided into long and short term debt, can have different effects in mitigating agency costs and ultimately on the operating performance.

There have been a number of researchers studying the performance of leverages buyouts and the agency theory, however with various focuses and over different time periods. We combine the literature on how LBOs´ capital structure and performance develop as they enter a public market through an IPO and research regarding the effects of debt with different maturity on performance and agency costs. We also distinguish our study by assessing a unique sample of Nordic RLBOs. Thus, our Nordic focus and an emphasis of the impact from different debt maturities on performance are two aspects that differentiate our thesis from the existing literature regarding reverse leveraged buyouts.

We find, in line with prior research (e.g. Holthausen and Larcker, 1996), that leveraged buyouts that go public exhibit higher operating performance in relation to their industry peers during the year prior to the IPO. We also find that the RLBOs continue to outperform their peers for two to three years following the IPO. In addition, we find that the leverage of RLBOs decline substantially as they enter a public market but that they maintain levels substantially above industry peers. We also find that these firms are financed with significantly higher levels of long-term debt, as a fraction of total debt, than their peers. Our results further support that operating performance is positively correlated to the decreases in leverage following the IPO. We find support for this relation for both total and long term book leverage. However, our findings do not support the same correlation for short-term book leverage and operating performance, thus short-term leverage does not appear to have the same positive impact on performance as total and long-term debt in the context of RLBOs.

In addition to the geographical focus of Nordic RLBOs, this thesis makes three contributions. First, the study sheds further light on how performance and capital structure of reverse leveraged buyouts develop after an IPO. Second, our findings provide evidence of substantial differences

in the types of debt used for financing in reverse leveraged buyouts in terms of maturity, adding to the findings of Cotter and Peck (2000). We see that RLBOs have significantly higher levels of long-term debt as ratio of total debt than industry peers. Third, our empirical results support a significant positive correlation between changes in leverage and operating performance. These results imply that LBOs that subsequently go public through an IPO should maintain their financial structure. Our results also raise the question addressed by Jensen (1989) and Graham (1996) among others, if public firms operate with too low levels of leverage.

This study is organized according to the following structure. In section two we present theories and prior research related to our study. Section three states our hypotheses. In section four we describe the data and methodology used. Section five reports our results of statistical test and cross-sectional regressions performed on operating performance, leverage and agency costs. Section six states our conclusions.

2 THEORY AND PRIOR RESEARCH

In this section we state what theories and previous research we have based our study on. First we describe how the agency theory applies in the LBO context and how this can be related to how private equity firms create value in practice. Then we describe what previous research says about what happens to LBOs that are floated on a public market through an IPO.

2.1 THE AGENCY THEORY AND HOW PE FIRMS CREATE VALUE

2.1.1 THE AGENCY THEORY AND LEVERAGED BUYOUTS

The agency theory and the ability to mitigate agency costs are, as mentioned in the introduction, described by many academics as contributing factors to the superior performance of LBOs in comparison to industry peers (Jensen, 1986 and Kaplan, 1989). An agency relationship can be defined as a contract between a principal and an agent, where the principal delegates decision making authority to the agent, who is committed to take action. Hence agency costs arise when there is a mismatch in the interest and incentives of the principal (owner) and the agent (management and employees) in a company (Jensen and Meckling, 1976). According to Jensen (1989), the alignment of interest and incentives is essential for maximizing the performance of a company. The agency theory further states that the agent (management) will act to maximize his own utility at the potential expense of the principal (shareholders). In practice, conflicts of interest between shareholders and managers may arise due to management's will to increase their assets under management (often referred to as empire building) over distributing cash to shareholders in the form of dividends. Agency costs commonly appear and are especially severe in mature firms with high free cash flows and few or no value creating investment opportunities (no positive NPV projects). Officer (2007), support Jensen´s theory through his findings that firms with high cash flows and few investment opportunities (measured by Tobin's Q), are more

likely to overinvest or waste their shareholders cash. Management's unprofitable investment decisions, shareholder's observation costs and perquisite consumption can in this context be referred to as agency costs (Ang, Cole and Lin, 2000).

If the managers were not to waste the discretionary free cash flows, but instead return them to the shareholders, they have the choices of either repurchase stock or increase dividends. A manager can for example announce a permanent future increase in dividend payments. However, this promise is very weak since the future dividends are not bound to be at a constantly high level and might be reduced at some point. Instead of announcing higher dividends, the firm may take on a higher level of leverage to bond the promise of paying out future cash flows, in this case in form of debt payments. Not maintaining the promises to make interest and principal payments gives the shareholder recipients of the debt the right to take the firm into bankruptcy court. Hence, debt reduces the cash flow available for spending at the discretion of managers (Jensen 1986). To clarify, it is not the debt outstanding per se that has a mitigating effect on the agency costs, but rather the debt service payments that motivates managers to work harder and in line with the interest of the shareholders. Thus the debt structure and the terms of the debt play important roles in how well the debt motivates managers. The theory of how debt has a motivating effect on managers is referred to as the control hypothesis. The theory is however only applicable in firms that generate large cash flows but have few growth opportunities (Jensen, 1986).

2.1.2 How Private Equity Firms Create Value

According to Kaplan and Strömberg (2009), private equity firms improve firm value by applying three sets of changes to firms in which they invest. These changes are categorized into governance, financial and operational engineering.

Governance engineering is in practice the utilization of management incentives through giving the managers a large equity upside commonly through stock and or options. Cotter and Peck (2000) supports this by their findings of find an average of 20.03% average management stake in their sample of LBOs. For the managers, this ownership is also associated with a large potential downside since the managers cannot sell the equity or exercise the options until an exit transaction, where the value of the company is realized. In this way managers have an incentive to make profitable long-term business decisions that maximizes firm value. This theory is supported by Smith (1990**)** and Jensen and Meckling (1976), who emphasize management´s increased personal costs of inefficiencies and personal benefits of value creations in the firm. In this way shareholders' and managements' interests are more aligned and managers are more likely to maximize firm value.

In contrast, Fama and Jensen (1983) and Morck, Schleifer and Vishny (1988) present studies that find increased managerial ownership to have a negative effect on the performance due to increased risk aversion following their own increased stake. Managers holding large stakes in their firms might under-diversify their personal wealth, which can restrict their willingness to make certain investment decision. An increased risk aversion can in turn potentially lead to managers not even considering the entire distribution of available projects, but instead concentrating only on investments that lower the total risk of their equity investment in the company.

Governance engineering also refers to private equity firms controlling the board of directors in the portfolio companies and being more involved in the governance than the typical board of a public company (Kaplan and Strömberg 2009).

The financial engineering refers to the large amount of debt involved in the LBO transaction. Kaplan (1989) finds a median debt to total capital ratio of 87,8% at buyouts completion for his sample of buyouts. A main purpose of the debt levels is, according to the control hypothesis, to create a pressure on the managers not to spend money on wasteful activities (Jensen, 1986). According to Opler and Titman (1993), the firms that are most likely to undergo a leveraged buyout are the ones that exhibit the same characteristics that are assumed to be prerequisites for the control hypothesis to have an effect.

There are other upsides associated with debt in the form of tax shields through increased tax-deductible interest payments, but also downsides through increased inflexibility and risks of financial distress. With the high levels of debt, one might assume that there is a relatively higher risk to get into financial distress than the average public firm. Kaplan and Strömberg (2009) however finds that the annual default rate is 1.2%, compared to 1,6% for all US corporate bond issuers 1980-2002 according to Moody´s (Hamilton et al., 2006). A reason for why the firms can maintain so high levels of leverage without increasing their risk of financial distress is that the PE firm will be able to back up the LBO in case of distress. PE firms also often have better access to credit markets and get cheaper loans and looser debt covenants since they are frequent borrowers (Kaplan). Cotter and Peck (2000) finds that when the equity investors can actively monitor managers at a relatively low cost, the benefits of using debt to monitor managers decline. Since there are negative and expensive aspects from imposing higher debt levels, promoting outsider monitoring of the managers might be a less risky and costly way of aligning interests.

Financial and governance engineering are emphasized by Jensen (1989) and Kaplan (1989) as ways to mitigate the potential costs that arise through agency conflicts. Cotter and Peck (2000) summarizes Jensen's (1986 & 1989) theories as a carrot and a stick mechanism to mitigate agency costs. Firstly, the managers are given an incentive to work harder (a carrot) through their

increased share ownership. Secondly, the debt burden forces the managers to efficiently run the company to avoid default (the stick).

The operational engineering is accomplished by using industry and operating expertise to add value to the investments. The industry and operating knowledge is used to identify attractive investments and to develop and implement value creating business plans for the investments. The business plan might include strategic changes and repositioning as well as cost cutting and productivity improvements (Kaplan and Strömberg, 2009).

These three described sets of engineering generally lead to lower levels of net working capital and capital expenditures in the LBOs. These improvements are central in the value creation of buyouts (Acharya et al, 2009; Guo et al, 2011). However, Kaplan and Strömberg (2009) describes that while the decline in capital expenditures after the LBO may have a positive effect on the current cash flows, it may also hurt future cash flows. Hence the firms tend to underinvest during the time of private equity ownership. An explanatory factor for this are the high debt levels and subsequent interest payments, which can have the potential effect that the LBOs eventually may need to access public equity in order to make future investments (Kaplan, 1989).

2.2 POST EXIT PERFORMANCE AND EXPLANATORY FACTORS

According to Kaplan (1991), the benefits of the LBO characteristics stay with a publicly floated firm for three to four years on average. This is consistent with the results of Holthausen and Larcker (1996) who finds that the accounting performance, in terms of operating income to assets, of reverse LBOs is better than peer firms in the industries for at least four fiscal years after the IPO. The authors also find that RLBOs exhibit lower levels of capital expenditures and working capital than the industry average, but that the measures converges towards the industry levels during the years post exit.

Jensen (1989) argues that the LBO structure is superior to the publicly traded firm since the private equity firms are able to create abnormally high levels of performance. He further claims that when an LBO is exited through an IPO it should retain high debt levels and that equity ownership of management should still be high and held by active investors. Holthausen and Larcker (1996) finds the RLBOs to be hybrid organizations, implying that they retain some of the ownership and board structure of the LBO. However the firms appear to be evolving towards the structures of a typical corporation, as opposed to holding on to the LBO characteristics.

Consistent with the findings addressed above, Kaplan (1991) also shows that LBOs floated on a public market hold debt levels below the initial LBO level, but higher than pre buyout levels and the median industry levels. The firms also appear to maintain relatively concentrated equity ownership, which combined which the debt levels implies that the firms still acknowledge the important roles of incentives and tax benefits.

Degeorge and Zeckhauser (1993) further finds evidence that exits of buyouts to the public market coincides with a peak in operating performance. Their findings supports that leveraged buyouts perform significantly better than their industry peers during the year prior to the IPO. The reverse leveraged buyouts also outperform continuing LBOs in the pre-offering year. However, during the years following the IPO the performance of reverse LBOs fall compared to industry peers. The authors find two plausible explanations for this performance pattern for RLBOs surrounding the IPO; timing and selection bias. The managers may use their private information to choose the time of the IPO that increases their wealth and/or manipulate the performance prior the IPO to maximize the firm value at the offering. The timing explanation can be divided into three possible explanations for the declining performance ex post IPO; previous performance has been tilted, the year following an exceptional one is likely to be less impressive and unimpressive prospects foreseen by management are likely to materialize. The selection bias is related to the fact that good performers are likely to go public, thus these firms perform better prior to the IPO (Degeorge and Zeckhauser, 1993).

3 HYPOTHESES

The first aim of this thesis is to assess how the operating performance and characteristics of reverse leveraged buyouts develops during the years surrounding an IPO. Based on the above described theories and previous empirical findings, we expect the performance of RLBOs to be higher than that of their industry peers during the year prior to the IPO. We also anticipate the performance to converge towards the industry levels during the years following the offering year. Regarding the leverage, we expect it to be higher during the pre-offering year and that it will decline gradually during the years after the introduction to the public market. Further, the agency costs of RLBOs are expected to be lower than the industry levels prior to the IPO and to increase afterwards.

The second focus is to examine whether the changes of leverage that occur from the organizational change from private to public company can explain the changes in agency costs and consequently the operating performance. We anticipate that the changes in leverage of RLBOs will have a negative correlation with agency costs and thus that the performance is positively affected by an increase in debt. We also expect that short-term debt has a more mitigating effect on the agency costs than the long-term debt has, and that it correspondingly will have a larger influence on the operating performance of the RLBOs.

Given the above described focuses of the thesis, we have formulated the following ten hypotheses:

Table 1. Hypotheses

Hypotheses
Levels and Changes in Operating Performance, Leverage and Agency Costs
H1: The Operating Performance of Reverse LBOs is higher than that of industry peers during the year prior to the IPO
H2: The Operating Performance of Reverse LBOs converges towards the levels of industry peers during the years following the IPO
H3: The Leverage of Reverse LBOs is higher than that of industry peers during the year prior to the IPO
H4: The Leverage of Reverse LBOs converges towards the levels of industry peers during the years following the IPO
H5: The Agency Costs of Reverse LBOs is lower than those of industry peers during the year prior to the IPO
H6: The Agency Costs of Reverse LBOs converges towards the levels of industry peers during the years following the IPO
Impact of Leverage on Operating Profitability and Agency Costs
H7: The Agency Costs of Reverse LBOs are negatively correlated to changes in leverage following the IPO
H8: The Operating Profitability of Reverse LBOs is positively correlated to changes in leverage following the IPO
H9: The Agency Costs of Reverse LBOs are more negatively correlated to changes in short-term debt than long-term debt
H10: The Operating Profitability of Reverse LBOs is more positively correlated to changes in short-term debt than long-term debt

4 METHODOLOGY & DATA

In the following section we describe the methodology used to test the above stated hypotheses. We explain what measures and metrics we make use of, how we gather and process the data and the statistical methods used.

4.1 ACCOUNTING MEASURES

4.1.1 PROFITABILITY

In order to measure operating profitability we look at return on invested capital (ROIC), return on assets (ROA), free cash flow (FCF) to sales and EBITDA margin. These metrics are in line with the arguments of Barber and Lyon (1996) who states that operating income reflects the performance of operating assets better than earnings do. In order to avoid the mechanical tax effects of leverage we, like Holthausen and Larcker (1996), use ROA and ROIC since they are measures that exclude the effect of interest expense on tax.

Bergström et al (2007) employs ROIC since it is a tax-adjusted return measure widely used by practitioners and should, in theory, give a neutral cross industry comparison of how well companies utilizes the capital base less net working capital. To complement this measure we, in line with Degeorge and Zeckhauser (1993), use the more robust measure ROA, which takes the whole asset base into consideration with no adjustments for tax. We also examine the EBITDA to sales margin, which tells us how well the company performs in relation to its revenues. EBITDA margin is a good complementing measure since it excludes depreciation and amortization, which might be affected by different accounting standards. In order to control for

the criteria addressed by Jensen (1986) for the control hypothesis to apply, we also look at free cash flows as a ratio to sales.

We have used Datastream[3] to extract values of ROIC[4] and FCF[5] in order to make sure we calculate debt and make tax adjustments in a consistent manner. These measures are defined in the following manner:

$$ROA = \frac{EBIT + Interest\ Expense}{Total\ Assets}$$

$$EBITDA\ margin = \frac{EBITDA}{Sales} \qquad FCF\ ratio = \frac{FCF}{Sales}$$

Two problems that we recognize with ROA and ROIC are that they are affected by accounting practices and that they can become volatile and give extreme values when the capital base is small. The latter problem should however be somewhat mitigated by limiting our firms to a certain size even though this will not help for industries with generally lower asset bases.

4.1.2 LEVERAGE

The financial structure is studied by three different measures; total, short-term and long-term book leverage, all scaled by total debt plus shareholders equity. In order to distinguish the relative composition of the two debt maturities in RLBOs compared to the industry peers, we also measure long- and short-term debt as a ratio of total debt. To get an understanding of the debt in relation to the cash generating ability, we also examine the interest coverage ratio. This ratio is defined as EBIT to interest expense. We also study the interest paid as a ratio of total debt to see the average cost of debt.

4.1.3 CONTROL HYPOTHESIS

To assess whether our firms exhibit the characteristics that Jensen (1986) describes as prerequisites for the control hypothesis, we measure cash and short-term investments scaled by total assets in order to determine the levels of cash available for the managers. We also study Tobin's Q, measured as market value of equity and book value of debt as a ratio of book values of debt and equity. Our definition of Tobin's Q is the same as the one used by Gompers, Ishii and Metrick (2003). However, we do not correct for deferred taxes.

4.1.4 AGENCY COSTS

To measure agency costs we apply two proxies, operating expense ratio and asset utilization ratio, as used by Ang, Cole and Lin (2000). The operating expense ratio is defined as operating expense

[3] A global database containing detailed company accounting data.
[4] Datastream definition of ROIC = Net Income before Preferred Dividends + ((Interest Expense on Debt - Interest Capitalized) * (1-Tax Rate))) / Average of Last Year's and Current Year's (Total Capital + Last Year's Short Term Debt & Current Portion of Long Term Debt) * 100.
[5] Net Cash Flow – Operating Activities represent the net cash receipts and disbursements resulting from the operations of the company. It is the sum of Funds from Operations, Funds From/Used for Other Operating Activities and Extraordinary Items.

to Sales and aims to measure how effective manager's control operating costs, which includes direct agency costs as perquisite consumption. The asset utilization ratio is an efficiency ratio defined as annual sales to total assets. This ratio measures how efficient managers use their assets to generate cash flows in order to create value for the shareholders.

4.1.5 WORKING CAPITAL MANAGEMENT AND CAPITAL EXPENDITURE

In line with Holthausen and Larcker (1996) we measure net working capital (NWC) scaled by total assets in order to determine the efficiency of working capital management. Capital expenditures (Capex) as a ratio of total sales is studied to see the level of investments carried out by management.

4.2 DATA COLLECTION

4.2.1 SELECTION OF BUYOUT SAMPLE

Our raw data sample of Nordic reverse leveraged buyouts was initially gathered through the databases Capital IQ and Zephyr, both covering global Merger & Acquisitions (M&A) activity. We limited our search criteria to Nordic IPOs backed by a financial sponsor. In order to have at least three years of accounting data after the IPO we narrowed down the criteria to only include IPOs that occurred at the latest during 2008. To make sure that our sample was as complete as possible we also contacted all PE-firms listed connected to SVCA to collect additional deals not recorded for in the databases. Our initial sample contained 60 Nordic IPOs backed by private equity-firms and other financial sponsors. Since we were unable to distinguish some of the private equity firms from other financial sponsors, e.g. venture capitalists, in our first screening, we had to manually check if each IPO had in fact been buyouts per definition or any other type of deal by contacting each buyout sponsor.

In order to refine our data we applied the following screening criteria[6]:

1. Nordic firms
2. Defined as buyout
3. A PE firm should have held a majority controlling stake
4. Minimum of three years of available accounting data post IPO and one year pre IPO
5. Minimum turnover of 100 MSEK during the year of the IPO

In order to gather additional data on acquired ownership stake, final exit-year and how the deal was financed we made additional searches in Mergermarket[7], and Factiva[8]. To confirm the validity of the data we also checked the companies' annual reports to control final exits of PE-firms and ownership stakes.

[6] Regarding two of our RLBOs, the ownership stake are lower than 50%. However the PE firm holds controlling stakes in both cases. See Appendix A.
[7] A database covering global M&A data
[8] A global news database

Applying these criteria rendered a final sample of 30 confirmed Nordic reversed leveraged buyouts. This screening process and our final sample is similar to Bruton et al. (2002) and Bergström et al. (2007). An overview of the sample with its' IPO years can be found in Appendix A.

4.2.2 ASSIGNING PEER GROUPS

A benchmark for industry standard levels of the above described measures was constructed by assigning a number of peer industry companies to each RLBO. The peers were found through the Orbis Neo database, a database containing detailed company information. To identify the industry inherency of each firm we employed official industry classifications in line with previous research as Kaplan (1989). We used the latest version of Nomenclature Generale des Activites Economiques dans I'Union Europeenne (referred to as NACE Rev. 2 codes), which are industry codes suited for the European Union.

When selecting the peers we apply the following criteria:

1. Nordic firms
2. Same 4 digit NACE Rev. 2 code as the RLBO
3. Turnover of 25% - 400% of the RLBO at the year of the IPO
4. Minimum of 100 MSEK turnover at the year of the IPO
5. Minimum of three years of available accounting data post exit and one year pre IPO
6. The peer should not have been previously owned by a PE or VC firm

Using the criteria above, we systematically selected 5-10 peer firms for each buyout (See peer groups in Appendix B). Regarding firms floated before 2002, the data in the *Orbis Neo* database were insufficient. Instead, we extracted a list of industry peers from Orbis Neo and conducted the matching on revenues manually through figures gathered from Datastream. In cases where we were unable to find the minimum amount of peers, we primarily stretched the industry definition criteria down to a two digit NACE-code level. If this was not sufficient to reach five peers, we stretched the geographic criteria also to include Western Europe in line with Bergström et al. (2007). In some cases we also extended the revenue span somewhat to 20% - 500% of the private equity firm.

Matching peers on size is in accordance with Kaplan (1989). Damodaran (2007) stress that there are scale effects in ROIC with lower returns on capital as firm size increase and thus also the ROA measure. This further imply that there is a tradeoff to keep the peer groups small in order to have similar size, but also big enough groups to get a sufficient industry benchmark and avoid too much firm-specific bias. Bergström et al. (2007) also emphasize that there is a risk that larger firms tend to be more diversified and thus not as good benchmarks to our buyout firm. There should also be a bias in growth between small and larger firms, where smaller firms often have much higher growth than larger often more mature firms.

Selecting industry peers based on NACE codes, geographic region and revenue on the actual IPO-year gives us a fair industry benchmark for each buyout, even though it is far from perfect. Sales split might be different with regard to both business and geography and some firms might have very different types of businesses even though they fit into the same industry code according to the NACE system. However, we regard this methodology as best feasible due to the scope of this thesis and also in line with previous research (Kaplan, 1989; Bergström et al., 2007).

4.2.3 GATHERING ACCOUNTING DATA

To gather accounting data for both our RLBOs and peers, we used Datastream in order to get consistent measures and classifications. The data extracted from the database is under the Worldscope classification, indicating that it is adjusted for national accounting standards, which enables comparisons of financial information from companies from different countries. To make sure that the data from Datastream is correct we have randomly checked ratios and different items from the financial statements with the firm's annual report.

4.3 MEASUREMENT TECHNIQUE

In the following section we use ROA as an example to explain how we measure and compare the different measurements.

We have gathered data on ROA for each year within the interval year-1 (T-1) and year +4 (T4), where year -1 denotes the fiscal year prior to the fiscal year of the IPO and year +4 the fourth fiscal year ex post the year of the IPO. In order to benchmark and compare the RLBOs' operating performance, we use an industry-adjusted measure, calculated by subtracting the mean of each set of peers form the value of each RLBO ROA level.

$$ROA_{Industry\ Adjusted,\ t} = ROA_{RLBO,\ t} - ROA_{Industry\ Mean,\ t}$$

This gives us an excess level of performance of RLBOs in respect to the benchmark. This technique is in line with Holthausen and Larcker (1996). One could argue for the usage of medians instead of means since the means might give undesired weight to extreme values. To avoid this problem, we correct for extreme values in our sample of peer firms. We also performed tests on the median. These tests, however not disclosed in the thesis, render results with significances similar to the ones of the means.

To measure the possibility of lagging effects from the changes in leverage due to the introduction to the public markets, we construct two time-windows for measurement. In our first interval we observe the changes between the years T-1 and T1. In the second, we instead study the change between the year T-1 and the average of the years T1 and T4, computed as shown below.

$$\Delta ROA_{\,i,\,T\text{-}1\ to\ T1} = ROA_{\,i,\,T1} - ROA_{\,i,\,T\text{-}1}$$

$$\Delta ROA_{\,i,\,T\text{-}1\ to\ the\ mean\ of\ T1\text{-}T4} = ROA_{\,i,\,T\text{-}1} - ROA_{\,i,\,Average\ of\ T1\,-\,T4}$$

4.4 STATISTICAL METHODS

In order to test our hypotheses we begin by examining the means of our measures of both an industry-adjusted and unadjusted basis. The significance of the findings through these tests will be given through a nonparametric Wilcoxon signed-rank test. This statistical method is used by both Holthausen and Larcker (1996) and Degeorge and Zeckhauser (1993) and supported by Barber and Lyon (1996) who claims that it is more powerful than the parametric t-test. Through the Wilcoxon signed rank test we test whether the industry-adjusted variables are significantly different from zero.

We perform two types of regressions in order to assess the effect that changes in leverage following the IPO has on the independent variables (ROA, EBITDA-margin, operating expense ratio and asset utilization ratio)[9]. The first regression aims to capture the immediate effect of changes in leverage due to the IPO. This is performed by using the time window T-1 to T1, both for the dependent and independent variables. The other regression examines the lagging effect of changes in leverage, by using the interval T-1 to the average of T1 to T4 for the dependent variables. However, we still use the time window T-1 to T1 for the leverage measures, our independent variable.

The companies in our sample are grouped according to their industry inherency (peer group). To control for industry specific trends and correlation we control for industry fixed effects. To correct for the existence of any within-group correlation and heteroskedasticity, we use firm-level cluster standard errors (Kézdi, 2004).

The regression is constructed by the following variables: Δ*Leverage* denoting the change in leverage, the dummy variable *RLBO* which is equal to 1 if the firm is a RLBO and the interaction term *RLBO*Δ*Leverage* which denotes the change in leverage for RLBO firms. The results from the regressions should be interpreted as follows; the dummy coefficient gives the excess intercept for RLBOs compared to non-RLBOs, the value of the Δ*Leverage* coefficient denotes the change in the dependent variable from a one-unit percentage point change in leverage. The interaction term coefficient indicates the extra effect from the leverage changes if the firm is a RLBO. In all our regressions we control for the size of the companies through the log of revenues.

$$\Delta ROA_{\,i,t1} = \beta_0 + \beta_1 \Delta Leverage * RLBO_{i,t1} + \beta_2 \Delta Leverage_{i,t1} + \beta_3 RLBO_{i,t1} + Controls + \beta_{j \to i} + u_i$$

[9] The ROIC and free cash flow ratio are excluded from the regressions due to lack of data year -1

The time notation t1 implies the time window between year -1 and year +1. In the second type of regression, this time window is instead between year -1 and the average of all years between +1 and +4, however only for the dependent variables.

It could be argued that the above described regression model is the most suitable for regressions using a control and treatment group, such as a diff-in-diff regression. We however use this model since it enables us to see the effects of changes in leverage for RLBOs while not forcing us to limit the sample to only 30 observations. We however argue that this specification is econometrically correct and well specified for its purpose.

4.5 POTENTIAL BIASES

There are a number of biases worth noting with regard to our data and methodology. Our sample of RLBOs consists of a rather small number (30) for which the years of entry to the public market are scattered between the early 1990s' and 2007[10]. The matching of our sample with industry peers is mainly based on revenues and industry inherency, but according to Barber and Lyon (1996), a matching based on performance instead of size is generally a better methodology. We have also been forced to expand our initial criteria for the matching, which has included non-Nordic firms. All of these issues might give rise to potential biases.

Like Holthausen and Larcker (1996), we define year T0 as the fiscal year that includes the IPO. However, we have no control over when during the year the IPO occurs. Hence the data of year T0 for some firms might be based largely on the performance of the firm as public, and for others as private. When referring to the e.g. the performance two years after the IPO, we mean the performance over the two fiscal years since the fiscal year during which the IPO occurred.

We further make no distinction between various types of buyouts, even though a number of different kinds exits (e.g. management buyouts).

There might also be an omitted variable bias from the fact that we have excluded the ownership structure from our study. In order to address what effect this bias might incur, we must consider if the omitted variable, in this case management ownership stake, is correlated to our independent variable, changes in leverage following the IPO. Due to the fact that both of these organizational changes are common in an LBO, we might argue that there is a correlation. Given then that there is an effect from changes in these factors on the subsequent operating performance, the omitted variable bias might have two possible effects. The first, where changes in management ownership have positive effects will cause our coefficient to be over-stated. In this case we have a problem and our results might be too good, meaning that our delta leverage coefficient captures some of the positive effect from change in management ownership. The second, where changes in management ownership stake have a negative effect, our delta leverage

[10] The distribution of LBO and IPO year for different firms is shown in Figure 1.

coefficient is understated and we have less of a problem. We however emphasize, that the effects of changes in managerial ownership stake is not clear (see section 2). We ideally would like to control for this variable, but this exceeds the scope of this thesis. There might also be other potential omitted variable bias that we are not aware of.

5 EMPIRICAL RESULTS

In this section we state our results. First, we provide some descriptive statistics over how leverage has changed from the year prior the IPO to the year post IPO. Second, we show how the mean levels of performance, leverage, investments, net working capital and agency costs develop pre and post IPO. We show these numbers on both an industry adjusted and unadjusted basis. Third, we use cross-sectional analysis to show how changes in leverage over the year prior the IPO to the year ex post IPO affect the performance and agency costs.

5.1 DESCRIPTIVE STATISTICS FOR CHANGES IN CAPITAL STRUCTURE

In this section we provide descriptive statistics of how leverage has changed from the year prior to the IPO to the end of the year post IPO. Table 3. displays descriptive statistics of how total, long-term and short-term book leverage changes over this time period. The mean total book leverage falls from 56% before the IPO to 35% post IPO with a mean change of 22%. The change in long-term book leverage over the same period is similar, with a mean of 45% prior to the IPO and 28% on the year post IPO. For short-term leverage however, the change is only 4% for this time period. Median levels and changes show similar values for these different leverage ratios.

5.2 MEAN LEVELS OF KEY MEASURES

In Table 4-9 we display the mean values of our accounting measures, both unadjusted and adjusted for industry average. The results are shown for each year in relation to the IPO, ranging from year -1 to +4, where year 0 is the fiscal year of the IPO.

5.2.1 OPERATING PERFORMANCE

Our results provide evidence of superior operating performance for our RLBOs compared to industry standards for the fiscal year before the IPO. The mean industry adjusted ROA is 5.02 % and the mean industry adjusted EBITDA margin is 2.19 %, both significantly different from zero on the 10% respective 5% level. Comparing this to unadjusted levels of 12.67% for ROA and 14.57% in EBITDA margin, our sample of reverse leveraged buyouts on average have 66% higher ROA and 18% higher EBITDA margin than industry peers. We find similar excess levels for free cash flow to total sales with an excess level of 4.21% prior to the IPO significant on the 5% level. These results support our hypothesis that LBOs that subsequently go public in an IPO have higher performance than their industry peers prior to the IPO. Our results are in line with Holthausen and Larcker (1996) who report a median of 65% higher ROA the year before the IPO. Degeorge and Zeckhauser (1993) and Bergström et al. (2007) also find similar results.

We find that our sample of reverse LBOs continue to outperform their industry peers in terms of operating performance in the years following the IPO at least until year 2. The industry adjusted mean of ROIC go from 6.45% on the year of the IPO, to 3.29% year 2, statistically different from zero on the 5% level. In year three and four however, industry adjusted ROIC is not significantly different from zero. We also find this converging trend in our ROA measure, with an industry adjusted mean of 4.66% year 0 and gradually decreasing to zero year 3. The same pattern can be observed for excess levels of free cash flow, with levels not significantly different from zero two years post exit. Even though we do not see the same lasting trend for EBITDA margin with significance, our results over all support a declining trend in operating performance post exit. This trend is also supported by similar findings by Holthausen and Larcker (1996) and in line with theories of LBO characteristics fading post exit over a three to four year period (Kaplan, 1991).

5.2.2 EXCESS LIQUIDITY AND TOBIN´S Q

We proceed examining excess liquidity in terms of cash and short-term investments in order to see how cash constrained our firms are. We also look at Tobin´s Q to assess whether our firms fit into the characteristics Jensen describe in his control hypothesis. Our results are displayed in Table 7.

We find that our firms have a mean of -2.57% cash and short-term investments when adjusting for industry average on the year prior to the IPO. This result is significant and indicates that our RLBOs are to some extent more cash constrained than industry peers, in line with what we would expect given Jensen's control hypothesis (1986). On the year of the IPO and subsequent years until year 3 post IPO, our data does not show results statistically significant from zero. This implies that our initially lower levels of cash converge to industry levels during the year of the IPO. One possible explanation for this development is that additional cash might be injected from investors during the IPO. This can also be due to the fact that the substantially lower levels of debt post exits leaves more excess cash left due to decreases in debt interest payments. In unadjusted numbers there is also a trend towards higher levels of cash and short-term investments among our RLBOs.

In Table 7, we show that the mean of Tobin's Q for our RLBOs is 0.63 when adjusting for industry average on the year of the IPO. The higher valuation might indicate that our firms on average have better anticipated investment and growth opportunities than the average in their industry on the year of the IPO. For the subsequent years following the IPO our firms keep a higher value of Tobin's Q, although with a declining trend. These results are significant on the year of the IPO and year 2 and 3, however with the first and fourth year after the IPO showing results not significantly different from zero in industry-adjusted numbers. These results indicate that our firms seem to have relatively high value of Q, contradicting Jensen's theory that these

firms typically are mature firms with relatively few investment opportunities. One should however bear in mind that our RLBOs are matched with industry peers not going through an IPO, which also might incur a bias.

5.2.3 LEVERAGE

Our sample of reverse LBOs show mean levels of leverage well above industry standards during the year prior to the IPO. The mean total book leverage is 26.81% when adjusting for industry levels and 56.36% in unadjusted numbers. During the IPO these levels come down substantially to 6.36% adjusted for industry average. Total book leverage stays above industry average post IPO, however not with significance until year 3 and 4, where we see a mean in industry adjusted numbers of 8.76% respective 8.08%. These results are significantly different from zero on the 10% respective 5% level. The drop in total book leverage is similar in magnitude to Kaplan (1989) and Holthausen and Larcker (1996), although our levels of leverage are lower. Thus we observe that the leverage, following the IPO exhibits a stabilizing trend on a level lower than prior to the IPO but higher than the industry average.

Mean long-term book leverage show a similar pattern as total book leverage, with an industry adjusted mean of 28.34% pre IPO coming down to 14.11% post IPO. These results are both significantly different from zero on the 1% level. We also find that these levels, as for total book leverage, seem to stay above industry average with a significant industry adjusted mean of 15.74% and 14.69% year 3 and 4.

In contrast to total and long-term book leverage, we see excess levels of short-term book leverage diverging further from the industry mean following the IPO. The mean industry adjusted short-term book leverage is -1.95% and not significantly different from zero on the year prior to the IPO. In unadjusted numbers we have a mean of 11.33%. Post IPO these levels come down to even lower levels below industry average, with an industry adjusted mean of -7.97%, significantly different from zero on the 1% level. These lower levels of short-term book leverage stay steady on this lower level compared to the industry disregarding a peak year 2, all numbers significantly different from zero on the 1% or 5% level.

When studying long- and short-term debt as a fraction of total debt, we find that RLBOs have lower short-term debt and higher long-term debt compared to industry averages. In the year prior to the IPO, industry adjusted long-term debt to total debt is 26.63%. Following the IPO, these levels come down to 20.83% year 1 and stay on these levels until a drop in the fourth year to 14.12%. All years significantly different from zero on the 1% and 5% level.

The high levels of long-term debt in our RLBOs can be related to the findings of Cotter and Peck (2000), who find that LBOs with buyout specialists as majority owners, i.e. PE firms, tend to be financed with high amounts of long-term debt. They argue that one possible explanation

for using more long-term debt is that the debt payments are less pressuring than short-term debt, decreasing the risk of financial distress. Another possible explanation for lower short-term debt is the significantly lower levels of net working capital prior to the IPO for our RLBOs. Since the RLBOs have less net working capital compared to industry average, they also need less short-term debt to finance the difference between current assets and current liabilities.

As expected, due to the high amount of debt, we see that our RLBOs have significantly lower levels of interest coverage ratio with an industry-adjusted mean of -4.33 prior to the IPO. However surprising, we see that these levels decrease substantially post exit to -11.18 four years after exit. One explanatory factor for this decline is found in the significantly lower industry-adjusted average interest paid on debt of -18.17% during the year prior to the IPO. This is to be compared to levels during the years post IPO of close to industry levels. Hence, the debt payments, given the continuing existence of high leverage, are substantially higher during the years following the IPO. This trend in industry-adjusted interest rate indicates that RLBOs get cheaper financing than their peers, potentially due to the fact that the PE firm are frequent borrowers. The decline in ROA also indicates that a declining EBIT might affect the downward trend in interest coverage.

5.2.4 AGENCY COSTS

The operating expense ratio during the year prior to the IPO is significantly 23.7% below the industry average levels, implying that while being privately held the company is run more efficient. During the year of the IPO we still detect a ratio below the industry mean, however only 2.8% lower. We further find that the unadjusted numbers have more of a decreasing trend, increasing gradually from 90.6% before the IPO to 94.6% the fourth year after the IPO. This indicates that the efficiency in expense management both in unadjusted and industry-adjusted numbers has decreased substantially between the year prior to the IPO to the years following the IPO. This pattern is in line with what we would expect according to Jensen's control hypothesis (1986).

Regarding the industry-adjusted asset utilization ratio, we do not find any significant figures for any of the years surrounding the IPO. Thus, all we can observe is that the measure is not with significance separated from zero. If this result is due to the lack of difference in agency costs or how well this proxy captures these costs is not clear. However, the inconsistency with the more significant proxy operating expense ratio points to the latter.

5.2.5 NET WORKING CAPITAL AND CAPITAL EXPENDITURE

We find that in the year prior to the IPO, the ratio of working capital to total assets is significantly 9,65% lower than the industry means. During the years following the IPO, we however cannot detect any industry-adjusted levels of working capital that are significantly different from zero. These numbers are likely affected by timing, where an exit most likely occurs

when valuation and efficiency in the firm is better than normal levels. This can be compared with the Holthausen and Larcker (1996) who finds that the levels of their firms are consistently around 10% – 14% lower than the industry mean.

Regarding the capital expenditure ratio, we can observe that during the year of the IPO and the following one (year 1), levels are 1% - 2% below the industry levels at the 10% significance level. For the other years that we study, we do not find that the level is significantly different from zero. Holthausen and Larcker (1996) find industry-adjusted levels very much similar to the ones that we see in our study.

5.3 CROSS-SECTIONAL ANALYSIS OF LEVERAGE, PERFORMANCE AND AGENCY COSTS

5.3.1 THE EFFECT OF LEVERAGE ON OPERATING PERFORMANCE

So far we have focused on how leverage, agency costs and operating performance develop around the IPO. In this section we initially study how the changes in leverage can explain cross-sectional variation in operating performance. To further understand the potential underlying components to changes in performance we then regress our agency cost proxies; operating expense ratio and asset utilization ratio. We look at the changes in these metrics over two time windows in order to capture a potential lagging effect. The first time window is simply measured as the change from one year prior to the IPO to one year post IPO. The second window is constructed to measure the change from 1 year prior to the IPO to the average of year 1 to 4 post IPO. The results from our regressions on these different metrics with changes in total, long-term and short-term book leverage as independent variables are displayed in Table 10 – 12.

From the results in Table 10. we see a positive coefficient of 0.357 for ROA from changes in total book leverage for our RLBOs for the time window -1 to 1, however only with significance level just above 10%. This result is supported by a positive coefficient on EBITDA margin of 0.1873 from changes in total book leverage under the same time window with significance below the 1% level. Under the constructed window of -1 to the average of year 1 to 4 we get slightly weaker but significant effects of changes in total book leverage for EBITDA margin and similar but less significant coefficients for ROA. To get some idea of the magnitude of this effect, we consider the regression of changes in ROA year -1 to 1 on the changes in leverage over the same period. From this regression we get a positive RLBOΔLeverage coefficient of 0.357 and a ΔLeverage coefficient of -0,208. Regarding our average change in book leverage for RLBOs during this period of 22.03% (see Table 3.), we see that these firms on average will experience a 3.40% drop in ROA compared to RLBOs who would continue with the same leverage, other things equal. Holthausen and Larcker (1996) also get similar positive effects in year -1 to 1, however with less statistical significance.

A possible explanation for the strong correlation between the operating performance and leverage might be due to an endogeneity problem, related to the theories described by Degeorge and Zeckhauser (1993). Since management can influence the timing of an IPO to maximize their own utility, a decrease in performance is likely to occur after the offering. This, and the likely usage of IPO proceeds for re-payment of debt might thus be coinciding events arising from the activities and choices of the management.

5.3.2 The Effect of Leverage on Agency Costs

To further assess how changes in leverage can be associated with performance we perform a regression with the change in our agency cost proxies as dependent variable and changes in leverage as independent variable. When performing a regression using operating expense ratio as dependent, we get a negative but insignificant effect of changes in leverage in both time windows. The signs are right, however the lack of significance provide no clear evidence to support our hypothesis. Somewhat surprising we see that changes in total book leverage have a stronger negative effect for non-RLBO firms in our regression, even though these coefficients also lack statistical significance.

Performing the same kind of regression on asset utilization ratio yields even less significant and inconsistent results. This is however not so surprising as the means, displayed in Table 8., in contrast to operating expense are very insignificant and not showing any trend or pattern.

5.3.3 The Effect of Long-term Leverage on Performance and Agency Costs

When performing the same regressions as performed above but substituting total book leverage for long-term book leverage we find very similar coefficients to those obtained when we used total book leverage as dependent variable. The coefficients for ROA are however both more positive and significant than for those obtained when regressing on total book leverage. For EBITDA margin we find similar positive and significant coefficients in both time windows. Long-term debt seems to have a significant strong effect on performance however stronger in the shorter time window.

As for total book leverage, we find negative coefficients on operating expense however with slightly better significance in both the longer and shorter time window. The negative effects are still stronger for non-RLBO firms in our sample, as for total book leverage. Asset utilization ratio continues to give inconsistent and insignificant results.

5.3.4 The Effect of Short-term Leverage on Performance and Agency Costs

Using short-term book leverage as dependent, we lose explanatory power on performance both in terms of positive coefficients and significance. We get inconsistent and insignificant coefficients implying little or no positive effect from short-term debt on performance. For non-

RLBO firms the effects however are negative and significant, implying short-term debt to have a negative effect on performance for non-RLBO firms in our sample.

Our results from regressing on operating expense as dependent show that short-term debt, as for long-term and total debt, show a negative effect in both time windows. The coefficients are however not significance but with the same signs as the regressions on long-term and total debt.

Even though Jensen's theory suggests more pressuring debt in terms of short maturity and frequency of payments would increase the mitigating effects on agency costs and thus improve performance, we find no support for such a relation. Regarding our results for short-term debt, they are in line with the arguments of Cotter and Peck (2000) who argues that buyout specialist controlled LBOs not only use lower amounts of short-term debt but also see less impact on performance from this kind of debt. One potential explanation for the lack of explanatory power of the short-term leverage coefficients might also arise due to the fact that it as independent variable do not exhibit the changes in the magnitude as the long-term debt due to IPO.

5.4 RESULTS SUMMARY AND HYPOTHESES

Below, we summarize to what extent the above stated findings are in line with our hypotheses. Through our above stated results of the tests and cross-sectional analysis, we find support for seven of our ten hypotheses. Initially, we find that the operating performance of RLBOs is significantly higher than for industry peers during the year prior to the IPO. We further find that this excess performance compared to industry levels deteriorate over a two to three year period post exit. Our results also show that RLBOs exhibit substantially higher levels of leverage prior to the exit, and that these levels converge towards industry levels during the years following the IPO. Our significant results of lower operating expenses further supports agency costs to be lower prior to the IPO, with following deteriorating levels after the event of the IPO.

In addition, we interpret our results as evidence that the operating performance of our RLBOs subsequent to the IPO is related to changes in total book leverage following the IPO. We see that this relation is almost solely due to changes in the long-term debt and unrelated to changes in short-term debt.

Our cross-sectional analyses give no evidence that changes in leverage have a mitigating effect on agency costs. Regardless of the maturity of debt we find negative coefficients of changes in debt on operating expense in line with our hypothesis, we however lack sufficient significance to prove this relation.

Table 2. Support of hypotheses

Hypotheses	Support
Levels and Changes in Operating Performance, Leverage and Agency Costs	
H1: The Operating Performance of Reverse LBOs is higher than that of industry peers during the year prior to the IPO	YES
H2: The Operating Performance of Reverse LBOs converges towards the levels of industry peers during the years following the IPO	YES
H3: The Leverage of Reverse LBOs is higher than that of industry peers during the year prior to the IPO	YES
H4: The Leverage of Reverse LBOs converges towards the levels of industry peers during the years following the IPO	YES
H5: The Agency Costs of Reverse LBOs is lower than those of industry peers during the year prior to the IPO	YES
H6: The Agency Costs of Reverse LBOs converges towards the levels of industry peers during the years following the IPO	YES
Impact of Leverage on Operating Profitability and Agency Costs	
H7: The Agency Costs of Reverse LBOs are negatively correlated to changes in leverage following the IPO	NO
H8: The Operating Profitability of Reverse LBOs is positively correlated to changes in leverage following the IPO	YES
H9: The Agency Costs of Reverse LBOs are more negatively correlated to changes in short-term debt than long-term debt	NO
H10: The Operating Profitability of Reverse LBOs is more positively correlated to changes in short-term debt than long-term debt	NO

5.5 ROBUSTNESS OF RESULTS

In order to test the robustness of our statistical methodology we perform another type of regression, based on industry-adjusted levels, to see if we get coefficients consistent with the ones found in our main regressions. The results from the robustness test, are shown in Table 13.

Our results for this robustness test renders coefficients that mainly are of the same magnitude and signs as those of the other regressions. However the industry-adjusted regression does not give the same significance for our coefficients. This might be due to the very small sample size used in the regression (30 industry-adjusted observations). However, we can conclude that the results from this regression are much in line with our other results, implying that our statistical methods provide reliable coefficients.

6 CONCLUSION

In this thesis, we examine how the operating performance and characteristics of Nordic reverse leveraged buyouts develop after they go public through an IPO. We further examine, in line with Jensen's control hypothesis (1986), how the development in operating performance can be related to changes in capital structure occurring due to the organizational change from private to public corporation. Consistent with previous research, we find evidence that leveraged buyouts that subsequently go public have higher operating performance than their industry peers prior to the IPO (see Cotter and Peck, 2000; Holthausen and Larcker, 1996). Further, we see that these firms continue to outperform their industry peers for two to three years following the IPO, even though the levels are declining towards those of the industry. These findings are very much in line with what Kaplan (1989) and Holthausen and Larcker (1996) find, who argue that the characteristics of an LBO fade over a three to four year period.

In addition, we find that leverage for RLBOs declines substantially following the IPO to levels that are lower than those during the LBO period but considerably higher than their industry peers. These findings are consistent with those of Kaplan (1991) and Holthausen and Larcker(1996). We further find that RLBOs are financed with significantly higher levels of long-term debt as a fraction of total debt than industry peers with following lower levels of short-term debt. These findings are coherent with what Cotter and Peck (2000) find when studying the maturity of debt in LBOs. Adding to their findings, we see that these high levels of long-term debt as a fraction of total debt largely remain post IPO in the case of RLBOs.

Our results support that changes in operating performance following the IPO is positively correlated to changes in leverage. Further, we see that these changes in operating performance are related to changes in long-term debt during the IPO and unrelated to changes in short-term debt. We however find no significant evidence that changes in leverage effect agency costs, even though we believe the reason for this might be the validity of our agency cost proxies and our small sample. Another important factor might be that our study suffers from potential omitted variable bias from not including ownership structure in the analysis. We realize that this bias could have a substantial impact and that the validity of our results might be dependent on further tests including this variable, this however exceeds the scope of this thesis.

Our findings support Jensen's theories that LBOs that subsequently go public should maintain high levels of leverage. We also recognize these findings as support of both Jensen's (1986) and Grahams (1996) arguments that public firms might be under levered.

Our results, implying that there is a positive effect from changes in leverage on the operating performance raises some interesting questions for potential future research. Firstly, it would be interesting to examine how an ordinary public firm can reduce potential agency costs, and thus improve performance, by applying an organizational structure resembling the LBO structure. This refers to high levels of leverage, active investor involvement and management ownership. Secondly, another interesting topic for future assessment could be the existence of higher levels of long-term debt in our sample of RLBOs and to examine whether this is common for all kinds of LBOs also in other geographic regions and what further implications this might have on performance and other key measures. A final future research topic raised by the findings of this thesis might also be to study how the maturity of debt might have different effects on operating performance for different types of organizational structures.

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8 APPENDICES

APPENDIX A – BUYOUT COMPANIES AND THEIR BUYOUT SPONSORS

Buyout Company	Country	LBO	IPO	Final Exit Year*	Sponsor	Ownership Stake**
A-Com AB	Sweden	1998	1999	N/A	Citibank Global Asset Management, CVC Capital Partners Ltd., Intermediate Capital Group plc.	50%
AB Lindex	Sweden	1993	1995	1995	Industri Kapital	51%
Ability Group Asa	Norway	2004	2006	N/A	Altor Equity Partners	65%
Affecto-Genimap Oyj	Finland	1999	2005	2007	CapMan Oyj, Eqvitec Partners, Fenno Management Oy	100%
Aldata Solution Oyj	Finland	1997	1999	2000	CapMan Oyj, Sitra Ventures	>67.4%
Alfa Laval AB	Sweden	2000	2002	2004	Industri Kapital	51%
Ballingslöv International AB	Sweden	1998	2002	2003	EQT Partners	>50%
BE Group AB	Sweden	1999	2006	2009	Nordic Capital	51%
Duni AB	Sweden	1997	2007	2008	EQT Partners	100%
Electromagnetic Geoservices ASA	Norway	2004	2007	2012	Warburg Pincus	90%
Exel Oyj	Finland	1997	1998	2000	Sponsor Capital Oy	100%
HMS Networks AB	Sweden	2004	2007	2008	Segulah	60%
Kappahl AB	Sweden	2004	2006	2006	Nordic Capital, Accent Capital Partners	100%
Konecranes OYJ	Finland	1994	1996	1996	Industri Kapital	>50%
Kongsberg Automotive ASA	Norway	2001	2005	2007	FSN Capital	77%
Lindab International AB	Sweden	2001	2006	2006	Ratos	67%
Meda AB	Sweden	1991	1995	1995	Nordic Capital	>50%
Nederman Holding AB	Sweden	1999	2007	2007	EQT Partners	100%
Nobia AB	Sweden	1996	2002	2004	Industri Kapital	100%
Nordic Aluminium Oyj	Finland	1990	1997	1997	CapMan	96%
Oriflame Cosmetics S.A.	Sweden	1999	2004	2006	Industri Kapital	>50%
Perlos Oyj	Finland	1996	1999	1999	EQT Partners	50%
PKC Group Oyj***	Finland	1994	1997	1997	CapMan	35%
Ramirent Oyj***	Finland	1995	1998	1998	CapMan	46%
Rapala VMC Corp.	Finland	1996	1998	1998	CVC Capital Partners Ltd.	80%
Roda Oyj	Finland	1994	1997	1997	CapMan, Merita Capital	67%
Salcomp Plc	Finland	1999	2006	2007	EQT Partners	92%
Semcon AB	Sweden	1996	1997	1997	CVC Capital Partners Ltd., Bridgepoint Capital Limited	77%
Studsvik AB	Sweden	1994	2001	2001	Atle Teknik	65%
Swedish Orphan Biovitrum AB	Sweden	2001	2006	2009	Nordic Capital	>50%
Avtg years owner post IPO****				1 year		

* When there is a conglomerate of financial sponsors; the final exit year denotes the year when sponsor with the largest initial stake made its exit

** The presented ownership stakes, is the percentage voting shares held by the financial sponsors ex post LBO

*** Capman has confirmed both PKC Group Oyj and Ramirent Oyj as buyouts even though the ownership stakes held by the sponsor are below 50%,

****For 28 firms in our sample we were able to find final exit year of the PE firm. The average is roughly calculated in full years to get an idea of if PE firms tend to hold investments post IPO.

APPENDIX B – PEER GROUPS

A-COM AB
ELTEK ASA
GN STORE NORD A/S
INTERCALL
ELISA CORP
MAKHEIA GROUP

AFFECTO OYJ
BASWARE OYJ
COLUMBUS IT PARTNER
TEKLA OYJ
COMPTEL OYJ
ORC GROUP

ALDATA SOLUTION OYJ
COLUMBUS IT PARTNER
IND & FIN SYSTEMS
VISMA ASA
ILKKA-YHTYMA OYJ
MODUL 1 DATA AB

ALFA LAVAL AB
SECO TOOLS AB
KVERNELAND ASA
WARTSILA OYJ AB
SKF AB
AKER SOLUTIONS ASA

BALLINGSLOV INTL AB
HJELLEGJERDE ASA
BOCONCEPT HOLDING
EXPEDIT A/S
LAMMHULTS
MARTELA OYJ

NEDERMAN HOLDING AB
SYSTEMAIR AB
GLUNZ & JENSEN A/S
ETTEPLAN OYJ
EITZEN MARITIME
VKG ENERGY SERV

BE GROUP AB
RAUTARUUKKI OYJ
PROFILGRUPPEN AB
SSAB SVENSKT STAL AB
COMPONENTA OYJ
OUTOKUMPU OYJ

AGR GROUP ASA
BONHEUR ASA
SCANA INDUSTRIER ASA
LUNDIN PETROLEUM AB
FRED. OLSEN ENERGY
NORSE ENERGY CORP

DUNI AB
AHLSTROM OYJ
BILLERUD AB
ROTTNEROS AB
HOLMEN AB
BRODRENE HARTMANN

ELECTROMAGNETIC GEOSERVICES ASA
BLOM ASA
AF AB
TGS-NOPEC GEOPHYSIC
DOF ASA
HIFAB GROUP AB
REJLERKONCERNEN AB

SALCOMP PLC
MICRONIC MYDATA AB
G & L BEIJER AB
KITRON ASA
LAGERCRANTZ GROUP AB
ASPOCOMP GROUP OYJ
OEM-INTERNATIONAL AB
NOTE AB
EFORE OYJ
INCAP OYJ
PARTNERTECH AB

KAPPAHL AB
STOCKMANN OYJ
NETONNET AB
KOMPLETT ASA
BJORN BORG AB
VENUE RETAIL GROUP

KONECRANES OYJ
INCENTIVE A/S
WARTSILA OYJ AB
KVERNELAND ASA
SECO TOOLS AB

KONGSBERG AUTOMOTIVE ASA
BEIJER ALMA AB
DANTHERM A/S
FISKARS OYJ
MUNTERS AB
NIBE INDUSTRIER AB

LINDAB INTERNATIONAL AB
DANTHERM A/S
FISKARS OYJ
GUNNEBO AB
HOGANAS AB
CARDO AB
MUNTERS AB
NIBE INDUSTRIER AB

AB LINDEX
STOCKMANN OYJ
DOUGLAS HOLDING AG
SINN LEFFERS AG
KENVELO AG
HENNES & MAURITZ AB

STUDSVIK AB
POYRY OYJ
AF AB
SWECO AB
GOODTECH ASA
TGS-NOPEC GEOPHYSIC
TELECA AB

NOBIA AB
MARTELA OYJ
K&M MOEBEL AG
ALNO
TECAN GROUP AG
BETER BED HOLDING

NORDIC ALUMINIUM OYJ
JOH. F. BEHRENS AG
PROFILGRUPPEN AB
INSTALLUX SA
RANDERS REBS A/S
GEVELOT SA

ORIFLAME COSMETICS S.A.
YARA INTERNATIO
AURIGA INDUSTRIES
BRINGWELL INTL
FLUGGER A/S

PERLOS OYJ
GEOSENTRIC OYJ
TELESTE OYJ
ALLGON AB
EIMO OYJ
DORO AB

ROCLA OYJ
SCANDINAVIAN BRAKE
VBG GROUP AB
H.C. SLINGSBY PLC
HALDEX AB
HYMER AG

MEDA AB
BIOTEST AG
GUERBET SA
BOIRON SA
GIFRER BARBEZAT SA
LABORATOIRES DOLISOS

PKC GROUP OYJ
GPV INDUSTRI A/S
CONSILIUM AB
G & L BEIJER AB
DORO AB
ELEKTA AB

RAMIRENT OYJ
ALGECO SA
NORTHGATE PLC
ADA SA
ANDREWS SYKES GROUP
VP PLC

RAPALA VMC
BIJOU BRIGITTE AG
AMER SPORTS
PUMA AKTIENGE
AMBU A/S
WILLIAM DEMANT HLDG
MATTH. HOHNER AG
COLOPLAST A/S
BRIO AB
TURBON AG

EXEL COMPOSITES OYJ
TURBON AG
BECHSTEIN PIANOFORTE
MATTH. HOHNER AG
TIIMARI PLC
AMBU A/S

SWEDISH ORPHAN BIOVITRUM AB
MIDSONA
ALK-ABELLO A/S
BIOPHAUSIA AB
Q-MED AB
PRONOVA

SEMCON AB
RM PLC
ENEA AB
SIMAC TECHNIEK NV
ANITE PLC
WILMINGTON GROUP PLC

HMS NETWORKS AB
ORC GROUP
SOLTEQ OYJ
ENTRACTION HOLDING
COMPTEL OYJ
STONESOFT OYJ
BASWARE OYJ
TEKLA OYJ

9 TABLES

Table 3. Descriptive Statistics of levels and changes in leverage

Descriptive Statistics(mean, median, st.dev, first and third quartiles) for total book leverage, long-term book leverage and short-term book leverage over the fiscal year prior to the IPO to the fiscal year post the IPO.

Descriptive Statistics of Leverage				**Quartiles**	
	Mean	**Median**	**Std. Dev.**	Q1	Q3
Total Book Leverage					
Pre IPO Total Book Leverage *	0.5636	0.5848	0.2561	0.4268	0.7441
Post IPO Total Book Leverage **	0.3533	0.3560	0.1993	0.2775	0.4570
Change in Total Book Leverage ***	-0.2203	-0.1908	0.2428	-0.3454	-0.1183
Long-term Book Leverage					
Pre IPO Long-term Book Leverage	0.4544	0.4452	0.2476	0.3004	0.5816
Post IPO Long-term Book Leverage	0.2799	0.2767	0.1782	0.1154	0.4196
Change in Long-term Book Leverage	-0.1836	-0.1521	0.2674	-0.3151	-0.0579
Short-term Book Leverage					
Pre IPO Short-term Book Leverage	0.1133	0.0835	0.1335	0.0388	0.1701
Post IPO Short-term Book Leverage	0.0760	0.0555	0.0895	0.0208	0.0984
Change in Short-term Book Leverage	-0.0398	-0.0221	0.1461	-0.0480	0.0117
Months Private ****	51.09	47	31.05	29	61

* Pre IPO Total Book Leverage is the total debt relative to total capital during the fiscal year *prior* to the year of the IPO completion.

** Post IPO Total Book Leverage is the total debt relative to total capital during the fiscal year *following* to the year of the IPO completion.

*** Change in total book leverage is the mean change between the fiscal year prior to the IPO and the fiscal year following the IPO

**** Months private is the number of months the LBO was a private organization.

Table 4. Yearly levels of accounting performance

The mean levels of firm and industry-adjusted performance measures; *Return on Asset* (EBIT relative to total assets), *EBITDA margin* (EBITDA relative to total sales), *Return on Invested Capital* (NOPLAT relative to total capital) and *Free Cash Flow Ratio* (Free cash flows relative to total assets). Year -1 is the fiscal year prior to the year of the IPO completion year (year 0). The significance levels are based on a Wilcoxon signed rank test.

Accounting Performance	**Year**					
	Year -1	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Mean ROA						
Firm	0.1267***	0.1276***	0.1210***	0.0867***	0.0400**	0.0789***
Industry-adjusted +	0.0502*	0.0466***	0.0459***	0.0329**	-0.0022	0.0126
obs.	28	29	29	30	30	28
Mean EBITDA-margin						
Firm	0.1457***	0.1306***	0.1204***	0.0861***	0.0814***	0.1118***
Industry-adjusted	0.0219**	0.0054	-0.0042	-0.0284	-0.0229	-0.0059
obs.	29	29	29	30	30	28
Mean ROIC						
Firm	N/A	0.1414***	0.1478***	0.0803***	0.0283***	0.0873***
Industry-adjusted	N/A	0.0645**	0.0431***	0.0329**	-0.0268	0.0238
obs.	15	26	27	29	30	28
Mean FCF Ratio						
Firm	0.0421**	0.0228*	0.0270**	0.0009	0.0010	0.0634**
Industry-adjusted	0.0450**	0.0277**	0.0410**	0.0085*	0.0163	0.0619
obs.	18	25	28	30	30	29

+ The industry-adjusted level in a given time period is computed by subtracting the appropriate industry mean from the appropriate value of each RLBO firm.

*** Significantly different from zero at the 0.01 level (two-tailed test)

** Significantly different from zero at the 0.05 level (two-tailed test)

* Significantly different from zero at the 0.10 level (two-tailed test)

Table 5. Yearly levels of leverage

The mean levels of firm and industry-adjusted *Total Book Leverage* (Total debt relative to total capital), *Long-term book leverage (Long-term debt relative* to total capital) and *Short-term Book Leverage* (Short-term debt relative to total capital)
Year -1 is the fiscal year prior to the year of the IPO completion year (year 0). The significance levels are based on a Wilcoxon signed rank test.

Financial Leverage	**Year**					
	Year -1	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Mean Total Book Leverage						
Firm	0.5636***	0.3883***	0.3533***	0.4011***	0.4508***	0.4341***
Industry-adjusted +	0.2680***	0.0636	0.0160	0.0485	0.0876*	0.0808**
obs.	28	30	29	30	30	30
Mean Long-term Book Leverage						
Firm	0.4544***	0.3257***	0.2799***	0.2788***	0.3622***	0.3505***
Industry-adjusted	0.2834***	0.1411***	0.0782**	0.0773**	0.1575***	0.1469***
obs.	28	30	29	30	30	30
Mean Short-term Book Leverage						
Firm	0.1133***	0.0647***	0.076***	0.1265***	0.0917***	0.0865***
Industry-adjusted	-0.0195	-0.0797***	-0.0626***	-0.0243**	-0.07***	-0.0627***
obs.	27	29	28	29	29	29

+ The industry-adjusted level in a given time period is computed by subtracting the appropriate industry mean from the appropriate value of each RLBO firm.

*** Significantly different from zero at the 0.01 level (two-tailed test)

** Significantly different from zero at the 0.05 level (two-tailed test)

* Significantly different from zero at the 0.10 level (two-tailed test)

Table 6. Yearly levels of debt maturity relations, interest coverage ratio and interest rates

The mean levels of firm and industry-adjusted *Long-term debt to total debt, Short-term debt to total debt, Interest Coverage Ratio (EBIT in relation to interest* expenses) and *Interest Rate* (Interest expense in relation to total debt)

Year -1 is the fiscal year prior to the year of the IPO completion year (year 0). The significance levels are based on a Wilcoxon signed rank test.

Financial Leverage	**Year**					
	Year -1	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Mean Long-term D to Total D						
Firm	0.8076***	0.8059***	0.7689***	0.7145***	0.8098***	0.7519***
Industry-adjusted	0.2663***	0.2083***	0.1603**	0.2208**	0.2253***	0.1421**
obs.	27	29	27	28	30	30
Mean Short-term D to Total D						
Firm	0.1998***	0.2010***	0.2400***	0.2962***	0.1968***	0.2566***
Industry-adjusted	-0.2620***	-0.2082***	-0.1492**	-0.2217**	-0.2267***	-0.1252**
obs.	26	28	26	27	29	29
Mean Int.Cov. Ratio						
Firm	16.3989***	15.2203***	14.0317***	11.2418***	9.2561***	13.9643***
Industry-adjusted	-4.3362**	-5.4599**	-7.5299**	-8.8745**	-10.8355***	-11.1819***
obs.	30	30	29	30	30	30
Mean Interest Rate						
Firm	0.0695***	0.1367***	0.1021***	0.0672***	0.0808***	0.0736***
Industry-adjusted	-0.1817**	0.0001	0.0223	-0.0913	-0.0855	-0.0120
obs.	27	28	27	28	30	28

The industry-adjusted level in a given time period is computed by subtracting the appropriate industry mean from the appropriate value of each RLBO firm.

*** Significantly different from zero at the 0.01 level (two-tailed test)

** Significantly different from zero at the 0.05 level (two-tailed test)

* Significantly different from zero at the 0.10 level (two-tailed test)

Table 7. Yearly levels of cash and Tobin's Q

The mean levels of firm and industry-adjusted *Cash Ratio* (Cash and short-term investments relative to total assets) and *Tobin's Q (market value of* equity and book value of debt as a ratio of book values of debt and equity)
Year -1 is the fiscal year prior to the year of the IPO completion year (year 0). The significance levels are based on a Wilcoxon signed rank test.

Cash & TQ		**Year**				
	Year -1	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Mean Cash Ratio						
Firm	0.1045***	0.1208***	0.1080***	0.0951***	0.0908***	0.0837***
Industry-adjusted +	-0.0389**	-0.0031	-0.0097	-0.0176	-0.0174*	-0.0377***
obs.	28	30	29	30	30	30
Mean TQ						
Firm	N/A	2.6165***	2.2108***	1.9867***	1.9359***	1.7170***
Industry-adjusted	N/A	0.6345**	0.5172	0.4184*	0.4203**	0.1180
obs.	N/A	28	29	30	30	30

+ The industry-adjusted level in a given time period is computed by subtracting the appropriate industry mean from the appropriate value of each RLBO firm.

*** Significantly different from zero at the 0.01 level (two-tailed test)

** Significantly different from zero at the 0.05 level (two-tailed test)

* Significantly different from zero at the 0.10 level (two-tailed test)

Table 8. Yearly levels of agency costs

The mean levels of firm and industry-adjusted *Operating Expense Ratio* (Operating expenses in relation to sales) and *Asset Utilization Ratio* (Total Assets in relation to total sales).
Year -1 is the fiscal year prior to the year of the IPO completion year (year 0). The significance levels are based on a Wilcoxon signed rank test.

Agency Costs		**Year**				
	Year -1	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Mean Operating Expense Ratio						
Firm	0.9056***	0.9143***	0.9588***	0.9575***	0.9611***	0.9465***
Industry-adjusted +	-0.2369***	-0.0280***	0.0115*	0.0025**	-0.0040	-0.0143
obs.	29	29	29	30	30	30
Mean Asset Utilization Ratio						
Firm	1.3520***	1.4224***	1.4363***	1.4264***	1.3887***	1.3581***
Industry-adjusted	-0.0304	0.0971	0.1546	0.1041	0.0933	0.0245
obs.	28	30	29	30	30	30

+ The industry-adjusted level in a given time period is computed by subtracting the appropriate industry mean from the appropriate value of each RLBO firm.

*** Significantly different from zero at the 0.01 level (two-tailed test)

** Significantly different from zero at the 0.05 level (two-tailed test)

* Significantly different from zero at the 0.10 level (two-tailed test)

Table 9. Yearly levels of net working capital and capital expenditures

The mean levels of firm and industry-adjusted *Net Working Capital Ratio* (Net working capital in relation to total assets) and *Capital Expenditure Ratio* (Capital expenditures in relation to total sales)

Year -1 is the fiscal year prior to the year of the IPO completion year (year 0). The significance levels are based on a Wilcoxon signed rank test.

Net Working Capital		**Year**				
& Capital Expenditure	**Year -1**	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Mean NWC						
Firm	0.1605***	0.2264***	0.2142***	0.1594***	0.1730***	0.1849***
Industry-adjusted +	-0.0966***	-0.0034	0.0105	-0.0390	-0.0026	-0.0051
obs.	26	28	27	30	30	30
Mean Capex						
Firm	0.0695***	0.0739***	0.0576***	0.0558***	.0479501***	.0685948***
Industry-adjusted	-0.0124	-0.0097*	-0.0147*	-0.0141	-0.0105	0.0189
obs.	26	27	28	30	30	27

+ The industry-adjusted level in a given time period is computed by subtracting the industry mean from the value of each RLBO firm.

*** Significantly different from zero at the 0.01 level (two-tailed test)

** Significantly different from zero at the 0.05 level (two-tailed test)

* Significantly different from zero at the 0.10 level (two-tailed test)

Table 10. Cross-sectional regression analysis of the impact of changes in total book leverage

Cross-sectional regression analysis of changes in firm performance and agency costs as a function of the changes in total book leverage from the year prior to the IPO to one year ex post IPO.
Performance is measured by Return on Assets, which is the operating income (EBIT) relative to the total assets, and EBITDA margin, which is the operating income before depreciation and amortization (EBITDA) relative to total revenues. The agency costs are measured by the proxies Operating Expense Ratio, which is the operating expenses relative to total revenues, and Asset Utilization Ratio, which is the total revenues relative to total assets. The independent variables consist of: Δ Leverage; denoting the changes in leverage between year -1 to year +1, RLBO; defined as a dummy variable =1 if the firm is an RLBO and =0 if not and RLBO Δ Leverage which is an interaction term consisting of the other two explanatory variables.
The logarithm of revenues is used as a control variable. All of the regressions have been controlled for industry fixed effect.
The significance levels and cluster-robust standard errors are reported below the estimates in parentheses respectively italics.

Total Book Leverage

		Independent variables			Control			
Dependent Variable	**Intercept**	**RLBO Δ Book Leverage***	**Δ Book Leverage***	**RLBO**	**log of Revenues**	**R^2**	**obs.**	**# groups**
Δ ***Return on Assets*** from year -1 to +1**	0.6116	**0.3570**	-0.2028	0.0166	-0.0512	0.105	183	30
	(0.122)	(0.112)	(0.598)	(0.086)	(0.093)			
	0.3615	*0.2299*	*0.1267*	*0.0314*	*0.0296*			
Δ ***Return on Assets*** from year -1 to the average of year +1 to +4***	0.6850	**0.2425**	-0.1050	-0.0072	-0.0590	0.134	184	30
	(0.092)	(0.115)	(0.119)	(0.811)	(0.079)			
	0.4043	*0.1695*	*0.0814*	*0.0302*	*0.0333*			
Δ ***EBITDA margin*** from year -1 to +1	0.0753	**0.1873**	-0.1421	-0.0156	-0.0059	0.083	185	30
	(0.007)	(0.001)	(0.302)	(0.140)	(0.125)			
	0.0488	*0.0406*	*0.0406*	*0.0151*	*0.0040*			
Δ ***EBITDA margin*** from year -1 to the average of year +1 to +4	0.1417	**0.1429**	-0.1065	-0.0332	-0.0121	0.104	185	30
	(0.002)	(0.038)	(0.004)	(0.047)	(0.001)			
	0.0449	*0.0685*	*0.0362*	*0.0166*	*0.0037*			
Δ ***Operating Expense Ratio*** from year -1 to +1	-10.8733	**0.8267**	-1.0346	0.3001	0.9029	0.232	184	30
	(0.139)	(0.478)	(0.252)	(0.277)	(0.139)			
	7.3073	*1.1624*	*0.8999*	*0.2752*	*0.6067*			
Δ ***Operating Expense Ratio*** from year -1 to the average of year +1 to +4	-11.0496	**0.8856**	-1.0314	0.3055	0.9183	0.24	184	30
	(0.130)	(0.436)	(0.250)	(0.264)	(0.130)			
	7.2653	*1.1351*	*0.8943*	*0.2725*	*0.6033*			
Δ ***Asset Utilization Ratio*** from year -1 to +1	-0.1715	**-0.0168**	-0.2960	0.0788	0.0079	0.043	184	30
	(0.811)	(0.969)	(0.131)	(0.366)	(0.893)			
	0.7152	*0.4291*	*0.1952*	*0.0870*	*0.0590*			
Δ ***Asset Utilization Ratio*** from year -1 to the average of year +1 to +4	-0.5125	**-0.3869**	-0.0711	0.0097	0.0378	0.039	184	30
	(0.500)	(0.316)	(0.636)	(0.880)	(0.547)			
	0.7587	*0.3843*	*0.1502*	*0.0640*	*0.0626*			

* Δ Book Leverage is the change in total book leverage from the year prior to the IPO (year -1) to the year after the IPO (year 1). Total book leverage is the total debt relative to total capital. The time period year -1 to year +1 is used regardless the time window examined in the dependent variables.
** The coefficient of the independent variables on ROA should be interpreted as follows: A one unit percentage point change in leverage for a RLBO firm has an impact on ROA of 0.00357+(-0.002028)=0.001542 unit percentage points. This is to be compared to the change experienced by non-RLBO firms which decreases by 0.002028 unit percentage points. The RLBO firm also has an intercept that differs from non-RLBOs by 0.0166.
*** The average of year +1 to +4 is the simple average of the ROA for each firm over the time period consisting of the first fiscal year after the IPO year to the fourth fiscal year after the IPO.

Table 11. Cross-sectional regression analysis of the impact of changes in short-term book leverage

Cross-sectional regression analysis of changes in firm performance and agency costs as a function of the changes in total book leverage from the year prior to the IPO to one year ex post IPO.
Performance is measured by Return on Assets, which is the operating income (EBIT) relative to the total assets, and EBITDA margin, which is the operating income before depreciation and amortization (EBITDA) relative to total revenues. The agency costs are measured by the proxies Operating Expense Ratio, which is the operating expenses relative to total revenues, and Asset Utilization Ratio, which is the total revenues relative to total assets. The independent variables consist of: Δ Leverage; denoting the changes in leverage between year -1 to year +1, RLBO; defined as a dummy variable =1 if the firm is an RLBO and =0 if not and RLBO Δ Leverage which is an interaction term consisting of the other two explanatory variables.
The logarithm of revenues is used as a control variable. All of the regressions have been controlled for industry fixed effect.
The significance levels and cluster-robust standard errors are reported below the estimates in parentheses respectively italics.

Short-Term Book Leverage

		Independent variables			Control			
Dependent Variable	**Intercept**	**RLBO Δ ST Book Leverage***	**Δ ST Book Leverage***	**RLBO**	**log of Revenues**	**R^2**	**obs.**	**# groups**
Δ ***Return on Assets*** from year -1 to +1**	0.5841	**-0.0797**	-0.2180	-0.0167	-0.0496	0.1021	179	30
	(0.111)	(0.782)	(0.063)	(0.609)	(0.099)			
	0.3646	*0.2871*	*0.1163*	*0.0325*	*0.0299*			
Δ ***Return on Assets*** from year -1 to the average of year +1 to +4***	0.6744	**-0.1589**	-0.1271	-0.0379	-0.0585	0.1376	180	30
	(0.104)	(0.614)	(0.204)	(0.277)	(0.087)			
	0.4123	*0.3149*	*0.0996*	*0.0347*	*0.0339*			
Δ ***EBITDA margin*** from year -1 to +1	0.0452	**0.1129**	-0.1128	-0.0130	-0.0041	0.0391	180	30
	(0.340)	(0.273)	(0.024)	(0.298)	(0.302)			
	0.0472	*0.1025*	*0.0494*	*0.0125*	*0.0039*			
Δ ***EBITDA margin*** from year -1 to the average of year +1 to +4	0.1162	**0.1201**	-0.0834	-0.0283	-0.0106	0.0704	180	30
	(0.011)	(0.182)	(0.041)	(0.032)	(0.006)			
	0.0453	*0.0895*	*0.0405*	*0.0130*	*0.0038*			
Δ ***Operating Expense Ratio*** from year -1 to +1	-11.2838	**-0.2282**	0.0953	0.4083	0.9323	0.2284	180	30
	(0.1400)	(0.877)	(0.844)	(0.245)	(0.140)			
	7.6137	*1.4694*	*0.4829*	*0.3498*	*0.6289*			
Δ ***Operating Expense Ratio*** from year -1 to the average of year +1 to +4	-11.4564	**-0.2946**	0.1096	0.3928	0.9474	0.2357	180	30
	(0.132)	(0.835)	(0.821)	(0.255)	(0.132)			
	7.5712	*1.4143*	*0.4840*	*0.3441*	*0.6254*			
Δ ***Asset Utilization Ratio*** from year -1 to +1	-0.2538	**-0.0716**	-0.3730	0.1299	0.0137	0.0430	180	30
	(0.728)	(0.917)	(0.136)	(0.125)	(0.819)			
	0.7293	*0.6842*	*0.2489*	*0.0841*	*0.0600*			
Δ ***Asset Utilization Ratio*** from year -1 to the average of year +1 to +4	-0.5605	**0.0556**	-0.2021	0.0929	0.0410	0.0323	180	30
	(0.473)	(0.944)	(0.306)	(0.274)	(0.522)			
	0.7789	*0.7848*	*0.1967*	*0.0847*	*0.0639*			

* Δ ST Book Leverage is the change in short-term book leverage from the year prior to the IPO (year -1) to the year after the IPO (year 1). Short-term book leverage is the short-term debt relative to total capital. The time period year -1 to year +1 is used regardless the time window examined in the dependent variables.
** The coefficient of the independent variables on ROA should be interpreted as follows: A one unit percentage point change in leverage for a RLBO firm has an impact on ROA of (-0.000797)+(-0.002128)=-0.002925 unit percentage points. This is to be compared to the change experienced by non-RLBO firms which decreases by 0.002128 unit percentage points. The RLBO firm also has an intercept that differs from non-RLBOs by -0.0167.
*** The average of year +1 to +4 is the simple average of the ROA for each firm over the time period consisting of the first fiscal year after the IPO year to the fourth fiscal year after the IPO.

Table 12. Cross-sectional regression analysis of the impact of changes in long-term book leverage

Cross-sectional regression analysis of changes in firm performance and agency costs as a function of the changes in total book leverage from the year prior to the IPO to one year ex post IPO.
Performance is measured by Return on Assets, which is the operating income (EBIT) relative to the total assets, and EBITDA margin, which is the operating income before depreciation and amortization (EBITDA) relative to total revenues. The agency costs are measured by the proxies Operating Expense Ratio, which is the operating expenses relative to total revenues, and Asset Utilization Ratio, which is the total revenues relative to total assets. The independent variables consist of: Δ Leverage; denoting the changes in leverage between year -1 to year +1, RLBO; defined as a dummy variable =1 if the firm is an RLBO and =0 if not and RLBO Δ Leverage which is an interaction term consisting of the other two explanatory variables.
The logarithm of revenues is used as a control variable. All of the regressions have been controlled for industry fixed effect.
The significance levels and cluster-robust standard errors are reported below the estimates in parentheses respectively italics.

Long-Term Book Leverage

		Independent variables			Control			
Dependent Variable	**Intercept**	**RLBO Δ LT Book Leverage***	**Δ LT Book Leverage***	**RLBO**	**log of Revenues**	**R^2**	**obs.**	**# groups**
Δ ***Return on Assets*** from year -1 to +1**	0.5682	**0.3874**	-0.1649	0.0263	-0.0478	0.0977	183	30
	(0.108)	(0.088)	(0.209)	(0.314)	(0.099)			
	0.3510	*0.2260*	*0.1308*	*0.0260*	*0.0288*			
Δ ***Return on Assets*** from year -1 to the average of year +1 to +4***	0.6620	**0.3104**	-0.1086	0.0000	-0.0571	0.1385	184	30
	(0.098)	(0.100)	(0.246)	(0.999)	(0.083)			
	0.3974	*0.1877*	*0.0933*	*0.0257*	*0.0328*			
Δ ***EBITDA margin*** from year -1 to +1	0.0465	**0.1363**	-0.0884	-0.0135	-0.0037	0.0308	185	30
	(0.340)	(0.012)	(0.026)	(0.317)	(0.360)			
	0.0486	*0.0533*	*0.0393*	*0.0135*	*0.0040*			
Δ ***EBITDA margin*** from year -1 to the average of year +1 to +4	0.1207	**0.0949**	-0.0665	-0.0334	-0.0105	0.0664	185	30
	(0.007)	(0.092)	(0.096)	(0.021)	(0.004)			
	0.0439	*0.0559*	*0.0397*	*0.0143*	*0.0036*			
Δ ***Operating Expense Ratio*** from year -1 to +1	-10.9451	**1.7825**	-2.0021	0.2872	0.9104	0.2411	184	30
	(0.135)	(0.291)	(0.167)	(0.259)	(0.135)			
	7.2833	*1.6814*	*1.4407*	*0.2535*	*0.6057*			
Δ ***Operating Expense Ratio*** from year -1 to the average of year +1 to +4	-11.1212	**1.8511**	-2.0073	0.2903	0.9258	0.2486	184	30
	(0.127)	(0.264)	(0.163)	(0.247)	(0.126)			
	7.2407	*1.6523*	*1.4329*	*0.2496*	*0.6021*			
Δ ***Asset Utilization Ratio*** from year -1 to +1	-0.2096	**0.2954**	-0.4431	0.1181	0.0113	0.0470	184	30
	(0.771)	(0.478)	(0.033)	(0.183)	(0.850)			
	0.7201	*0.4157*	*0.2061*	*0.0883*	*0.0594*			
Δ ***Asset Utilization Ratio*** from year -1 to the average of year +1 to +4	-0.5185	**-0.2422**	-0.1084	0.0451	0.0383	0.0357	184	30
	(0.497)	(0.542)	(0.522)	(0.581)	(0.542)			
	0.7611	*0.3963*	*0.1688*	*0.0817*	*0.0627*			

* Δ LT Book Leverage is the change in long-term book leverage from the year prior to the IPO (year -1) to the year after the IPO (year 1). Long-term book leverage is the long-term debt relative to total capital. The time period year -1 to year +1 is used regardless the time window examined in the dependent variables.
** The coefficient of the independent variables on ROA should be interpreted as follows: A one unit percentage point change in leverage for a RLBO firm has an impact on ROA of 0.005682+(-0.001649)=0.002225 unit percentage points. This is to be compared to the change experienced by non-RLBO firms which decreases by 0.002028 unit percentage points. The RLBO firm also has an intercept that differs from non-RLBOs by 0.0263.
*** The average of year +1 to +4 is the simple average of the ROA for each firm over the time period consisting of the first fiscal year after the IPO year to the fourth fiscal year after the IPO.

Table 13. Robustness-test: Cross-sectional regression analysis of the impact of changes in long-term book leverage on industry-adjusted measures

Cross-sectional regression analysis of changes in industry-adjusted firm performance and agency costs as a function of the changes in total book leverage from the year prior to the IPO to one year ex post IPO.
Performance is measured by Return on Assets, which is the operating income (EBIT) relative to the total assets, and EBITDA margin, which is the operating income before depreciation and amortization (EBITDA) relative to total revenues. The agency costs are measured by the proxies Operating Expense Ratio, which is the operating expenses relative to total revenues, and Asset Utilization Ratio, which is the total revenues relative to total assets. The logarithm of revenues is used as a control variable to correct for effects arising from size differences.
Year -1 is the fiscal year prior to the year of the IPO (year 0), hence year +1 is the fiscal year ending after the IPO completion year.
The significance levels and standard errors are reported below the estimates in parentheses respectively italics.

Industry-adjusted*		Independent Variable	Control		
Dependent Variable	**Intercept**	**Δ Book Leverage****	**log of Revenues**	**R^2**	**obs.**
Δ ***Return on Assets*** from year -1 to +1***	-0.0511	**0.1980**	0.0075	0.1519	27
	(0.853)	(0.238)	(0.733)		
	0.2739	*0.1638*	*0.0217*		
Δ ***Return on Assets*** from year -1 to the average of year +1 to +4***'	0.0326	**0.1841**	-0.0019	0.1140	27
	(0.917)	(0.296)	(0.938)		
	0.3079	*0.1723*	*0.0246*		
Δ ***EBITDA margin*** from year -1 to +1	-0.1924	**0.0579**	0.0158	0.1107	27
	(0.088)	(0.364)	(0.086)		
	0.1083	*0.0625*	*0.0088*		
Δ **EBITDA margin** from year -1 to the average of year +1 to +4	-0.2066	**0.0521**	0.0156	0.0854	27
	(0.084)	(0.445)	(0.109)		
	0.1148	*0.0671*	*0.0094*		
Δ ***Operating Expense Ratio*** from year -1 to +1	1.1017	**-0.5830**	-0.0818	0.0221	27
	(0.191)	(0.225)	(0.191)		
	0.8185	*0.4680*	*0.0608*		
Δ ***Operating Expense Ratio*** from year -1 to the average of year +1 to +4	0.7167	**-0.5345**	-0.0491	0.0153	27
	(0.345)	(0.230)	(0.374)		
	0.7434	*0.4339*	*0.0542*		
Δ ***Asset Utilization Ratio*** from year -1 to +1	-0.6935	**-0.3222**	0.0664	0.0871	27
	(0.220)	(0.374)	(0.156)		
	0.5510	*0.3555*	*0.0453*		
Δ ***Asset Utilization Ratio*** from year -1 to the average of year +1 to +4	-1.0699	**-0.4988**	0.0908	0.1712	27
	(0.073)	(0.173)	(0.075)		
	0.5707	*0.3548*	*0.0489*		

* All the dependent variables are industry-adjusted, implying that the regressions are performed on excess levels constructed as the value of the RLBO less the mean value of its peers.
** Δ Book Leverage is the change in total book leverage from the year prior to the IPO (year -1) to the year after the IPO (year 1). Total book leverage is the total debt relative to total capital. The time period year -1 to year +1 is used regardless the time-window examined in the dependent variables.
*** The coefficient of the independent variable of 0.1980 implies that an increase in the total book leverage of one unit percentage point, give a subsequent increase of 0.00198 unit percentage points in the return on assets.
**** The average of year +1 to +4 is the simple average of the ROA for each firm over the time period consisting of the first fiscal year after the IPO year (year 0) to the fourth fiscal year after the IPO.

10 FIGURES

Figure 1. Sample distribution of IPO and LBO years