

THE PERFORMANCE OF REVERSE LEVERAGED BUYOUTS

Abstract:

The objective of this thesis was to investigate the performance of reverse LBOs in the first four years after going public. The analysis is conducted using data on 69 reverse LBOs. The accounting performance of the reverse LBOs is investigated by looking at: profitability, efficiency and cash flow. The stock price performance of these reverse LBOs is examined to see if investors anticipated the witnessed accounting performance pattern. Reverse LBOs show superior performance in the first two years after going public and disappoint in the third and fourth year after going public. The market-adjusted stock price performance is positive in the first three years after going public indicating that investors underestimated the superior performance in the first two years. The negative market-adjusted performance in the fourth year however also indicates that investors underestimated the decrease in performance.

Keywords:

Leveraged buyouts; Initial public offerings; Reverse LBOs; Accounting performance; Stock price performance

Author: Kees van der Leeden
Student number: 279786
Thesis supervisor: Dr. W. de Maeseneire
Date: April 2009

PREFACE AND ACKNOWLEDGEMENTS

Before I started working on my master thesis I decided I wanted to gain practical experience by doing an internship. Because of my interest in corporate finance and valuations, I decided to do an internship with a corporate finance boutique in Amsterdam. During these six months I worked on several transactions. Most transactions involved leveraged buyouts. During these six months I noticed a large difference between theory and practice: Academic literature mainly focuses on stock prices to determine the performance of a company, while in practice a much larger role is played by accounting measures.

I therefore decided that I wanted to write my thesis on something that included this difference. While examining the literature on accounting performance I came across two very interesting articles. The articles studied the accounting and stock price performance of reverse LBOs. Because the subject combines leveraged buyouts, on which I had worked on in practice, and accounting performance as well as stock price performance I decided that this would be the subject of my thesis.

Because this thesis marks the end of my time as a student at the Erasmus University, I would like to take the opportunity to thank the people who helped me get to this point. First, I would like to thank Dr. Mark Schauten. Mainly because his door was always open whenever I needed assistance, but also for raising my interests for corporate finance in my first year at the Erasmus University and last but not least for being my bachelor thesis supervisor. Second, I would like to thank Dr. Wouter de Maeseneire my master thesis supervisor. Without his help, comments and remarks this master thesis would not have had the high quality it does now.

NON-PLAGIARISM STATEMENT

By submitting this thesis the author declares to have written this thesis completely by himself/herself, and not to have used sources or resources other than the ones mentioned. All sources used, quotes and citations that were literally taken from publications, or that were in close accordance with the meaning of those publications, are indicated as such.

COPYRIGHT STATEMENT

The author has copyright of this thesis, but also acknowledges the intellectual copyright of contributions made by the thesis supervisor, which may include important research ideas and data. Author and thesis supervisor will have made clear agreements about issues such as confidentiality.

Electronic versions of the thesis are in principle available for inclusion in any EUR thesis database and repository, such as the Master Thesis Repository of the Erasmus University Rotterdam

TABLE OF CONTENTS

PREFACE AND ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES.....	v
LIST OF FIGURES	vi
1 Introduction	1
1.1 Subject and research question	1
1.2 Results	3
2 LBO	5
2.1 What is a LBO?.....	5
2.2 Sources of shareholder gains.....	8
2.2.1 Debt	8
2.2.2 Concentration of ownership.....	11
2.2.3 Management	12
2.3 Exit strategies	13
2.3.1 Empirical evidence	14
3 IPOs	15
3.1 Introducing IPOs.....	15
3.1.1 The cost of going public	15
3.1.2 Benefits of going public	16
3.2 IPO anomalies	17
3.2.1 First day outperformance.....	17
3.2.2 Long run underperformance	19
3.2.3 IPO activity.....	20
3.3 Reverse LBOs	21
3.3.1 Differences between reverse LBOs and other IPOs	21
4 Existing literature	23
4.1 Accounting and stock price performance of reverse LBOs	23
4.2 F. DeGeorge & R. Zeckhauser.....	25
4.2.1 Data and methodology.....	25
4.2.2 Empirical research	26
4.3 R. Holthausen & D. Larcker	28
4.3.1 Data and methodology.....	28
4.3.2 Empirical research	30
4.4 S. Kaplan.....	33
4.4.1 Data and Methodology	33
4.4.2 Empirical research	34

4.5	Summary	37
5	Empirical research	38
5.1	Data	38
5.2	Methodology	39
5.3	Accounting performance	42
5.4	Stock price performance	48
6	Conclusion	51
7	Recommendations	53
8	References	54

LIST OF TABLES

Table 1	IPOs vs. Reverse LBOs	[page 21]
Table 2	Overview existing literature	[page 37]
Table 3	Overview data set	[page 38]
Table 4	Overview data availability	[page 39]
Table 5	Industry-adjusted accounting profitability	[page 43]
Table 6	Industry-adjusted accounting efficiency	[page 44]
Table 7	Industry-adjusted accounting cash flow	[page 45]
Table 8	Unadjusted accounting performance	[page 47]
Table 9	Raw buy-and-hold returns	[page 48]
Table 10	Market-adjusted buy-and-hold returns	[page 49]

LIST OF GRAPHS

Graph 1	Capital involved in LBO transactions	[page 5]
Graph 2	IPO cyclicalilty	[page 20]
Graph 3	Median market-adjusted buy-and-hold-returns	[page 50]

1 Introduction

This chapter starts with explaining what the subject of this thesis is, why this subject is chosen and what the central question of this thesis is. The next part explains how the research question will be answered.

1.1 Subject and research question

This thesis investigates the accounting and stock price performance of reverse LBOs that went public between 1986 and 1994, in the first four years after going public. The accounting performance of the reverse LBOs is compared to the accounting performance of their industry counterparts and the stock price performance to the stock price performance of the market.

In the 1980's we have seen a large increase in the amount of leveraged buyout (LBO) transactions. Kaplan and Strömberg (2008) show that LBO activity increases over time both measured in the number of transactions as well as measured in US-dollars. This indicates the increasing importance of leveraged buyouts. LBO transactions are transactions in which a sponsor acquires a company using debt as the major source of financing rather than equity. After this transaction the company is taken private, in case it was public, and the company's managers are given incentives to boost the company's performance. The so-called private equity wave in the 1980's fuelled discussions on the sources of wealth gains. Some argued that wealth gains were only due to wealth transfers (e.g. Shleifer and Summers, 1988). Others argued that LBOs were actually superior organizational forms and would therefore replace the public company as the most common organizational form (Jensen, 1989b). Leveraged buyouts in general however do not have an infinite life (Rappaport, 1990). After a certain period the sponsor will 'exit' the company. There are several ways of exit. For example, the company can be sold to a strategic buyer, the company can be sold to a financial buyer or the company can be brought back public through an IPO.

If LBOs indeed perform better than other companies there are two options. The LBOs perform better during the private period and are sold because they are no longer performing better than comparable companies. The second option is that LBOs perform better during the private period and continue to perform better after they are being sold. One way to test if the second option holds true is to look at reverse LBOs, initial public offerings (IPOs) of companies that have previously been subject to a leveraged buyout. If the second option were true, these companies would perform better than their industry counterparts.

The research question therefore is:

Do reverse leveraged buyouts perform better than their industry counterparts in the first years after the IPO?

To answer the research question, several steps are taken. First the existing literature will be reviewed to examine what an LBO is, how they differ from public companies and what sources of wealth increases can be identified. Next IPOs will be discussed: what are they and what anomalies are known. Next the reverse LBO literature will be investigated more thoroughly.

After the literature is examined, empirical research will be conducted to answer the research question. This will be done using a data set of 69 reverse LBOs. The data set is gathered from the Thomson One Banker database. The 69 reverse LBOs will be analysed based on their accounting and their stock price performance. The accounting performance is analysed using three different accounting performance categories: profitability, efficiency and cash flow. To account for divestures and divestments all measures are calculated in two ways; divided by sales and divided by total assets. The accounting performance is presented unadjusted and industry-adjusted. Industry-adjusted measures are the unadjusted measures subtracted by the median value of that measure of the industry the company is active in. An industry is defined as all US-based companies that are active in the same 4-digit SIC class as the reverse LBO.

First, the industry adjusted performance of reverse LBOs from the year of the IPO until the fourth year after the year of the IPO is examined. Next, the performance pattern of the reverse LBOs is examined. This is done because first it can be seen if reverse LBOs actually outperform their industry counterparts, next we can see when the degree of outperformance changes if this is due to the performance of the reverse LBO or the performance of the industry. Statistical significance of the differences between the reverse LBO and the industry and the difference between the years will be based on median values. Therefore the Wilcoxon rank sign test will be used.

Once the performance has been examined based on accounting measures the stock price performance will be examined. This indicates if investors have anticipated the witnessed accounting performance. And if not if investors over- or underestimated the performance. Stock price performance will be examined at five points in time. After the first day, 250 days, 500 days, 750 days and 1,000 days. This is consistent with 1, 2, 3 and 4 years if one assumes one year consists of 250 trading days.

The research question is investigated because of three reasons:

1. LBO literature is devoted to investigating stock price performance rather than accounting performance. When accounting performance is studied it is during the buyout period rather than after the buyout period. If reverse LBOs indeed perform better than their industry counterparts after the IPO it would mean that LBOs are brought back public for other reasons

than underperformance. This indicates that LBO lifetime is not constrained by the LBO's performance but by other factors. Looking at accounting performance rather than stock price performance makes sense because during the buyout period the sponsor assesses the LBO's performance using accounting performance, not stock price performance.

2. Another very interesting insight that might be gained if reverse LBOs perform better than public companies is that the difference in performance is due to differences between the two organizational forms. This would shed insights into how to influence company's performance in a positive way. Public companies might mimic these performance-improving factors.
3. The pattern of performance will also be very interesting. If for example reverse LBOs are more efficient than their industry counterparts but the outperformance declines, it would indicate that at least some of the outperformance is due to a factor that is related to the company being private. This would restrict the mimicking abilities of public companies.

This thesis adds to the existing literature because of the following reasons:

- The two most important articles that also investigate the performance of reverse LBOs in terms of accounting performance as well as stock price performance (DeGeorge and Zeckhauser (1993) & Holthausen and Larcker (1996)) use data of reverse LBOs that went public between 1983-1988. This thesis used data about reverse LBOs that went public between 1986-1994. The use of more recent data might fuel new insights into the performance of reverse LBOs.
- DeGeorge and Zeckhauser (1993) study the accounting performance of reverse LBOs from the year before the IPO until the year after the IPO. This study investigates the accounting performance over a longer time span: from the year of the IPO until four years after the IPO.
- Holthausen and Larcker (1996) study reverse LBOs from the year before the IPO until four years after the IPO but industry adjust the measures by subtracting the median value for the 2-digit SIC class. This study corrects for industry by subtracting the median value for the 4-digit SIC class. Since this is narrower, it is more likely that results that will be found are real differences in profitability and efficiency rather than differences because of different activities.

1.2 Results

The outcomes of the research indicate that reverse LBOs are more efficient than their industry counterparts in the first years after going public which is consistent with Holthausen & Larcker

(1996). The industry-adjusted performance of reverse LBOs however, declines over time. This is due to the disappointing performance of the reverse LBOs, not to the industry performing better.

The first-day stock price performance of reverse LBOs is not significantly different from zero indicating that investors in reverse LBOs, on average, are better informed than investors in IPOs. Holthausen & Larcker also find low first day returns for a sample of reverse LBOs. The median long-run market-adjusted return is negative (-15.3%) four years after the IPO. This is inconsistent with DeGeorge & Zeckhauser (1993).

The structure of the thesis is as follows: Chapter two explains what a LBO is and what the sources of efficiency gains are. The third chapter explains IPOs and IPO anomalies. The fourth chapter goes deeper into the existing literature. The fifth chapter explains the methodology, data and the empirical research that is conducted. The sixth chapter gives a conclusion and the seventh chapter gives recommendation for further research.

2 LBO

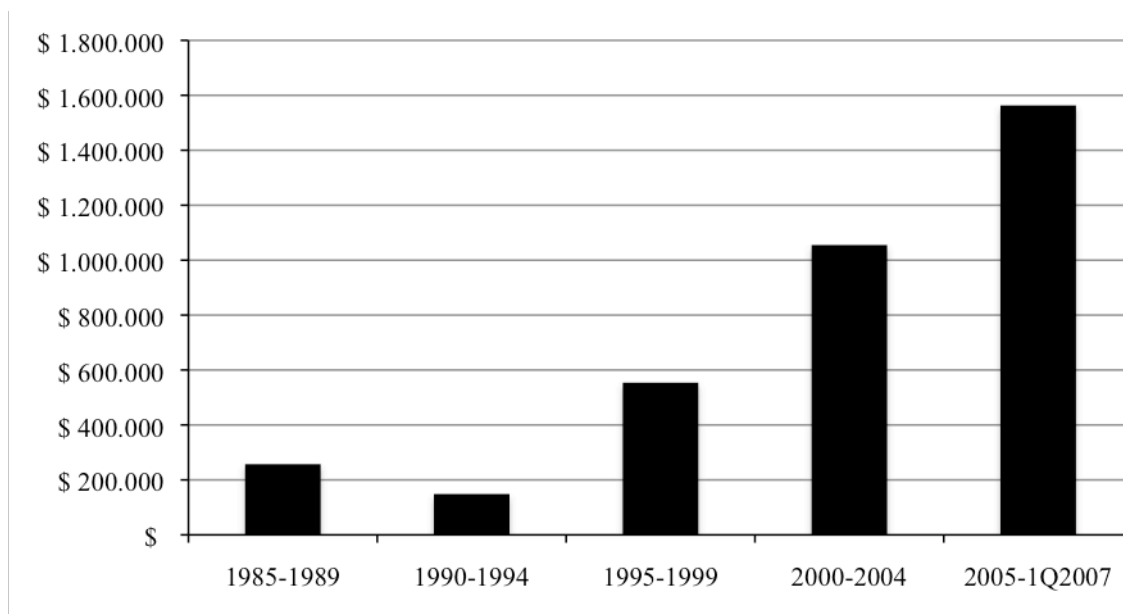
The first part of this chapter will start by explaining what a LBO is and how it differs from the public corporation. Also, the different opinions on LBOs as an organization form will be discussed. The next part elaborates on the different sources of LBO efficiency gains. The third part discusses the possible exit strategies.

2.1 What is a LBO?

The number and the amount of capital involved in LBOs has increased over time. Graph 1 gives an overview of the capital involved in LBO transactions over time. It is clear that the amount of capital involved in these transactions has been increasing rapidly. The number of LBO transactions (not shown) has also been increasing rapidly from 642 in the period 1985-1989 to 5.188 in the period 2005-1Q2007.

Graph 1:

The amount of capital involved (*1.000.000) in LBO transactions segmented per period.



Source: Kaplan & Strömberg (2008)

The increasing number of LBO transactions and the increased amount of capital that is involved in LBO transactions indicates the importance of LBOs.

A LBO is a company that differs from public traded companies in several ways. The first difference is that a LBO does not rely on publicly traded equity as its major source of capital. Instead, a LBO is financed using a mix of privately placed debt and equity. Furthermore, a typical LBO relies on debt rather than on equity as its major source of capital. In other words, leverage is higher for a LBO than for a typical public company. Debt-to-equity ratios of 10 to 1 are not uncommon in LBOs (Jensen,

1986). Secondly, managers of LBO companies are given incentives to act in the shareholders' interest. This can be established in two ways. First, managers of buyout companies are given relatively large stakes in the company. Second, managers can be compensated through a compensation plan that rewards them if they create shareholder value (Jensen, 1989a). Another difference is that the owners of publicly traded companies are often widely dispersed while the owners of LBO are far more concentrated. The party that arranges the buyout's financing, debt as well as equity, is called the sponsor. The sponsor holds the large majority of the shares. The shares in the public pre-buyout company were most likely held by a large number of investors. The shares of the buyout company are held by a limited amount of parties: the managers, the sponsor and possibly other insiders. The three differences make LBOs more efficient. They are sources of efficiency gains. (Jensen, 1989a)

The three differences "resolve the central weakness of the large public corporation – the conflict between owners and managers over the control and use of corporate resources". Such conflicts are referred to as agency problems (Jensen & Meckling, 1976). (Jensen, 1989a)

The largest conflict between owners and managers concerns the discussion over the purpose of the company's free cash flows. Free cash flow (FCF) is the cash flow that remains after deducting all investments in projects with positive net present values. It is most efficient to distribute the FCF to the shareholders, who are the company's owners. But managers often do not distribute the FCFs to the shareholders, because if managers do not distribute the FCFs, the company's liquidity increases. The increased liquidity enables them to operate more freely from the shareholders. (Jensen, 1986 and 1989a)

If the company is illiquid and the manager wants to invest in a project, he will need to obtain external financing. This exposes management to external control mechanisms because if the project is not value creating he will most likely not receive the capital he needs. If the company is liquid the manager can invest in the project independent of its value creation. Constraining the company's liquidity reduces investments in projects with negative net present values. (Jensen, 1989a).

It has already been discussed that large amounts of debt, concentration of ownership and giving management incentives to act in the shareholders' interest are sources of efficiency gains in LBOs. However, there are more sources of wealth creation for LBO shareholders. These are: wealth transfers, information asymmetry and tax advantages (Kaplan, 1988). Shleifer and Summers (1988) argue that wealth transfers arise when employees are fired or when their wages are reduced to create shareholder wealth. Lowenstein (1985) argues that managers have private information about the company that is not known to the market. With this information the managers can buy the company at a price that is lower than equally informed shareholders would be willing to accept. Kaplan (1988, 1989) examines the tax advantages of management buyouts and investigates the hypotheses. Support is only found for

the hypothesis that tax benefits create value. The evidence does not support the remaining hypotheses. The first three discussed sources of efficiency gains however are widely accepted (e.g. Kaplan, 1991) and will be discussed in more detail in the next part of the chapter.

Jensen (1989b) argues that the LBO will replace the public company as an organizational form because of the before mentioned advantages. Rappaport (1990) however reacts on this article by explaining what the drawbacks of LBOs are and why a LBO is only a transitional organizational form, despite what Jensen (1989b) claims. The drawbacks concern the high leverage, the absence of stock price information and the limited market and life of LBOs.

High leverage makes the company inflexible. A LBO will in case of rapid changing market conditions, because of the cash constraints imposed by the high leverage, be less able to adapt than a public company that is not cash constrained. High leverage also increases the chances of financial distress.

The drawback of the lack of stock price information of LBOs is twofold. First, because of the lack of stock price information an important indication of future performance of a company is lost. Second, because of the lack of stock price information it is difficult to assess a portfolio's value when it contains LBO companies.

Because of its structure a LBO has a limited timeframe, so even if a LBO is more efficient the company will not remain private for eternity. The company's equity is largely supplied to the sponsor by institutional investors who have an investment horizon of five to ten years. After this period the LBO needs to be sold in order to be able to pay back the investors. (Kaplan & Schoar, 2005)

Rappaport (1990) acknowledges that LBOs are sometimes more efficient and resolve the central weakness of the public corporation. But all its drawbacks contribute to the fact the LBO is a transitional organizational form that will not replace the public company. Public corporations however can reproduce some of the value creating features that LBOs have. Managers and employees should be given incentives to act in the shareholders' interest. In that case managers will distribute excess cash to the shareholders instead of retaining it. Investments will be made in projects that create value and other employees will also try to create shareholder value.

Jensen (1989b) believes that the fact that LBOs resolve the central weakness of the public corporation makes that the LBO is a long-lived organizational form. Rappaport's opinion however, is consistent with the 'shock-therapy' hypothesis (Kaplan, 1991). According to this hypothesis, are most value increasing incentives in LBOs one-time events. Once they have been applied the cost of inflexibility and illiquidity will at some point outweigh the benefits of continuing to be private and the LBO will

return public. Kaplan (1991) tests both hypotheses. The evidence suggests that neither one of the hypotheses is entirely true. A large proportion of the LBOs find their way back public, as Rappaport suggested. A significant fraction however, remains highly levered and private. And companies that return public appear to be hybrid organizations with relatively large equity holdings by managers and higher leverage than before the company was taken private. This supports Jensen's hypothesis.

2.2 Sources of shareholder gains

The major sources of efficiency gains, and therefore sources of performance improvement, in LBOs are debt, concentration of ownership and incentives for managers to act in the shareholders' interest. The first part of this section will further elaborate on debt as a source of shareholder gain. The second part will discuss how concentration of ownership creates shareholders' wealth. The last part discusses how management incentives can increase shareholder wealth.

2.2.1 Debt

A typical LBO is financed with about 85% of debt (Jensen, 1989a). There are two main reasons of using large amounts of debt. First, large amounts of debt allow the sponsor to acquire control over the company with a relatively small amount of capital. Second, large amounts of debt discipline management.

2.2.1.1 Agency problems

Agency problems arise when the managers of a company are not the owners. Jensen & Meckling (1976) show that when the manager (agent) is not the owner (principal) of the company, and they both maximize utility, they will have different interests. Because the managers' interests are different from the owners', he will not always act in the owners' interest. In other words the managers do not always act in the shareholders' interest; therefore managers need incentives to act in the shareholders' interest.

The agency problem can be solved in two ways. First, by setting up rules and regulations to ensure managers will not do anything that is not in the shareholders' interest. Second, the incentives of managers can be aligned with those of the shareholders. This can be done, for example, by giving management a stake in the company. The second way is being used in LBOs frequently and will be discussed later.

2.2.1.2 Advantages

Using large amounts of debt in financing a LBO has three main advantages. The first is that because large amounts of debt are used, the sponsor can acquire control over the company using a relatively small amount of equity. The second advantage is that debt disciplines management. Namely, the large amounts of debt influence the way free cash flows are treated by management. The third is tax-deductibility (Kaplan, 1988 & 1989). Debt payments are in contrast to payments on equity tax deductible, which is an advantage especially when a company is funded using debt rather than equity.

The next example illustrates how debt allows the sponsor to gain control over the company while using a relatively small amount of capital. Consider a company that is 100% equity financed. The market value of the company is 100. If the transaction is 100% equity financed the sponsor will have to pay 100 to acquire all the shares in the company. If the transaction is however 50% debt and 50% equity financed, the sponsor will only have to give up 50 to acquire all the shares in the company. Since a typical LBO is financed with around 85% debt (Jensen, 1989a), the sponsor only has to give up 15% of the capital he would have to give up if the transaction would have been 100% equity financed. (Jensen, 1989a)

Sources of disciplining management are identified by Kaplan (1989) as: increased incentives to act in the shareholders' interest, increased monitoring and lower cost in case of insolvency. All these advantages discipline management in some way and are most clear when the LBO is performed on a company with large free cash flows, in a low-growth industry. The advantages will be discussed in the next three paragraphs.

As shown earlier, it is not in the managers' interest to distribute the free cash flows to the shareholders. It is however the shareholders' interest that the managers do so. Large amounts of debt help solve this agency problem (Jensen, 1986). If a public company announces a share buyback program, thus to distribute free cash flows to the shareholders, it can do so this year, but it might not complete the announced plan. The same holds for dividends. If a company announces to increase dividends it can cut back on the dividends whenever the company feels like it. Debt payments, interest as well as debt redemption, are obligatory however. If the company fails to meet the required payments, the provider of the debt will eventually seize ownership of the company. With every part of the debt that is paid off, the value of the sponsor's equity increases. Debt, in this case, acts as a substitute for dividends because free cash flows are distributed to the shareholders. The advantage for the shareholders is of course the fact that the payments on the debt are obligatory. (Jensen 1989a)

Next to the improved distribution of free cash flows, there is another agency related problem that is tackled by the large amounts of debt. If a company has large amounts of debt, its debt payments will be high. Because of the high debt payments the company's managers will have to work hard to be able to meet the payments. This creates according to Jensen (1989a) the required setting for managers to get rid of parts of the company that are not value enhancing. (Jensen 1989a)

Shareholders and providers of debt have certain ways of checking if the managers actually do what is in their interest. This is called monitoring. Schleiffer & Vishny (1986) show that monitoring is regarded as a collective good. If one party is monitoring the managers, they will likely start acting more in that party's interests. Monitoring however, is not free, but other groups might benefit from it. This is called a free-rider problem. The party monitoring the managers will have to invest at least time

and probably capital to be able to monitor the managers. Therefore, the party will only monitor the managers if the benefits of monitoring exceed the costs. In case of a LBO where debt accounts for a large percentage of the value of the company and banks supply the main part of the debt (Kaplan & Strömberg, 2008), banks have a large incentive to make sure that the company will be able to meet the debt payment obligations. So large amounts of debt result in increased monitoring. (Schleiffer & Vishny (1986).

The last advantage concerns the lower cost in case of insolvency. This is what Jensen (1989b) calls “the privatization of bankruptcy”. The next example explains this. Consider two identical companies, company A and company B both worth 100. Company A has a traditional capital structure with 20% debt. Company B is financed using 85% of debt. We assume that the liquidation value of both companies is 10.

If company A defaults on its debt payments the value of the company will be close to the 10 liquidation value. If company B however defaults on its loan, its going concern value might be higher than 80. If company B defaults, the most likely option is to reorganize the company. Because if the company is liquidated the debt providers receive 10, if they reorganize the company they will receive the going concern value minus the cost of reorganizing, which is likely higher than the liquidation value. In case of company A it is more likely that it is the best option for the debt providers to liquidate. In case a bad decision is taken by the company’s managers, and a significant part of the company’s value is destroyed, it is likely that the company will be unable to meet its debt payment obligations. The company will be restructured relatively soon. In case of a company with a much more conservative financial structure, for example 20% debt financing, it will take much longer before the company will be unable to meet its debt payment obligations. And when that happens, it might be too late and the company will have to be liquidated. (Jensen, 1989b)

2.2.1.3 Disadvantages

Using large amounts of debt also has disadvantages. The three major disadvantages of using large amounts of debt concern inflexibility, risk aversity and the differences of interest between stakeholders.

Rappaport (1990) argues that large amounts of debt result in inflexibility, which is undesirable for companies in changing industries. The higher the amounts of debt a company has, the larger the debt payments are. These high debt payments restrain management because high debt obligations result in low free cash flows at management’s disposal.

When the market a company is in changes, it will have to adapt. A cash-rich company will have plenty resources to adapt to the changing environment. A cash-poor LBO will have to acquire outside capital.

This process takes time, possibly more time than the company has. If it takes too long to acquire the needed capital to adapt to the changing environment, the LBO might be far behind on its competitors. (Rappaport, 1990)

Another disadvantage of using large amounts of debt is that in some cases it results in managers not investing in the projects with the highest NPV. This is caused by the high debt payments. If the company fails to meet its debt payments obligations the debt suppliers can seize control over the company. This often results in managers being laid off. Therefore managers will try to prevent this from happening. The next example will demonstrate this. Consider two projects. Project A is a project with a high chance of a low cash flow. Project B has a low chance of a high cash flow. If the manager invests in project B and the project succeeds, which is less likely than in the case of project A, the project generates a large cash flow. But if project B does not succeed, which is more likely, the project does not generate any cash flows. The company will in this case be unable to meet its debt payment obligations. The manager might lose his job. Because of this it will be likely that the manager will invest in project A, because this will give him a greater degree of certainty that he will be able to meet the debt obligations. The manager will even invest in project A if the NPV of project B is higher, which means value is being destroyed. (Holthausen & Larcker, 1992)

2.2.2 Concentration of ownership

Two parties in general, the management and the sponsor hold the shares of a typical LBO. The first party, the management, will be discussed later. The main focus of this part lies on the second party, the sponsor. The sponsor owns the large majority of the LBO's shares (Jensen, 1986).

2.2.2.1 Advantages

The free-rider problem is resolved in case of a LBO. The sponsor will have a large incentive to monitor the managers. Because it holds the large majority of the shares it will be the only one bearing the costs of monitoring, but it also is the one who reaps the large majority of the benefits. Jensen & Meckling (1976) say that if the benefits of lower agency costs, by reducing the dispersion of ownership, exceed the costs of reducing the dispersion, by buying more shares, one will buy more shares. This is witnessed in LBOs.

Adding to the reduced agency costs is that managers also have shares in the company. It is also in their interest to act in the shareholders' interest. This link will be further elaborated upon in the next part.

Owning the large majority of the shares holds another advantage to the LBO sponsor. If it is assumed that every share in the company represents one vote, which means that if one holds the majority of the shares one holds the majority of the votes during shareholder meetings. Then, because the sponsor holds the large majority of the shares in the LBO, the sponsor holds the large majority of the votes. With these votes he can exercise control over the company. With the votes the sponsor can among

other things appoint and replace members of the board of directors and approve or disapprove investments and strategic decisions (Fama & Jensen, 1983).

2.2.2.2 Disadvantages

The sponsor holds the large majority of the shares in the LBO. This creates an exposure of the sponsor to the risks of the LBO. In case of a public company the risks are exposed to many different investors. The shocks in performance of a public company with widely dispersed ownership have a smaller impact on the investors than in case of the investors in a LBO. (Jensen, 1989a).

Also, if a small investor is exposed to a certain risk it can relatively easily be diversified by acquiring shares that have a negative exposure to the same risk. For the sponsor to offset an exposure to a risk a large negative exposure to the risk must be acquired. So it is more difficult for a sponsor to have a diversified portfolio. (Jones & Rhodes-Kropf, 2003).

The sponsor often tries to minimize the risk of its portfolio by investing in companies with steady cash flows in mature industries (Kohlberg, Kravis and Roberts & Co., 1989).

Shares held in public companies can easily be sold on the stock exchanges. If a very small portion of the shares of a company is traded it has no to little effect on the price of the stocks. A sponsor holds a large portion of the shares in a company that is not listed on a stock exchange. Because the shares are not publicly traded it is more difficult to sell the shares. The shares are illiquid. In addition, if the sponsor wants to sell its shares, it will sell a large part of the company, which makes it more difficult. The illiquidity decreases the value of the shares. (Lerner & Schoar, 2004)

2.2.3 Management

Management plays an important role in a LBO because they have a great impact on the company's performance. We have seen earlier that if they do not have the right incentives, they will not act in the shareholders' interest. However if they do they can create value for the shareholders.

2.2.3.1 Advantages

The most important agency problems concern the distribution of the free cash flows (Jensen 1989a). There are two ways of aligning shareholders' interest with managements' interest. The first is through pay schemes that are tied to the LBO's performance, cash flow and debt redemption (Jensen, 1989a). The second is through giving management a stake in the company (Jensen & Meckling, 1976). Both methods align managements' interests with those of the shareholders.

The interests can be aligned through pay schemes. These are contracts that tie management's salary to LBO performance, cash flow and debt redemption. Because the salary is tied to those measures, the managers will closely monitor these measures and they will try to improve upon these measures. If management focuses on these specific measures and improves them, value will be created for the

shareholders and management's salary will be higher. The interests of managers and shareholders are aligned.

The advantage of setting up contracts such as pay schemes that align shareholders' interest with those of the managers is that shareholders do not have to give up any stake in the company. The interests can be aligned without having to give the managers a part of the company. The sponsor will remain the only shareholder and thus controls 100% of the company and owns 100% of the company.

How the interests of shareholders and managers are aligned is obvious when managers own a significant part of the shares of the company. Jensen (1986) shows that top management own 15-20% of the LBO's shares. Kaplan's (1989) results show the same percentages. However, his results show that especially ownership of lower ranked managers increases after the LBO relatively to before. This suggests that aligning lower ranked management interests with those of the shareholder is also very important.

2.2.3.2 Disadvantages

There are also disadvantages to giving managers shares in the company. The first disadvantage arises when management is given a too large stake in the company. If the stake given to the management is large enough, they may have control over the company (Demsetz, 1983). If this is the case, then equity ownership by management will have a negative effect on the performance of the LBO because management will have too much power and control over the company to be disciplined by the other shareholders.

If managers own a large part of the shares of the company, they are exposed to the risks of the company. If they invest in a project, the success of the project affects the manager's wealth. Because projects affect his wealth directly, he might change his investment decisions. Instead of investing in projects with a small chance of a high payoff he might invest in projects that have a large chance of a low payoff, even if the first type of projects would have a higher NPV. It is in the shareholders' interest to invest in the projects with the highest NPV, but because of the effects on the manager's personal wealth he invests in projects that have a lower NPV. The interests of the manager and the shareholders are no longer aligned.

2.3 Exit strategies

At the end of the LBO period the sponsor has several possible exit routes (Kaplan & Strömberg, 2008). First, the company can be sold to a strategic buyer. Second, the company can be sold to a financial buyer and the third exit strategy is to bring the company back public through an IPO.

2.3.1 Empirical evidence

The most common route at the end of the LBO period is to sell the company to a strategic buyer. Kaplan & Strömberg (2008) investigate the exit strategies of 17,171 LBOs that took place between 01/01/1970 and 06/30/2007 worldwide. The results show that from the investigated LBOs that have exited, 38% were sold to a strategic buyer. This is the most popular strategy. The fact that 5% of the LBOs is sold to a LBO-backed firm, which is also likely a strategic buyer, adds to this. A sale to a financial buyer is the next most popular exit strategy (24%). The third most popular strategy is to bring the company back to the public (14%). Other possible exit strategies such as: bankruptcy and sold to management are not as popular (1% and 6% respectively).

The results also suggest that the popularity of exit strategies varies. Especially the IPO as exit strategy has had mixed popularity. In the period 1970-1984 it was the second most popular exit strategy, next to sale to a strategic buyer. Since that period it has been declining steadily. The next chapter will further elaborate on this. Sale to a financial buyer has been gaining popularity since the first period until it reached 31% in the for-last period and declined to 17% in the last period. Sale to a strategic buyer has been the most popular exit strategy in every period. (Kaplan & Strömberg, 2008).

3 IPOs

The first part of this chapter starts with explaining what an IPO is and why IPOs take place. The second part of the chapter discusses IPO anomalies, such as: first day outperformance and long run underperformance. The third part discusses how reverse LBOs differ from regular IPOs.

3.1 *Introducing IPOs*

An IPO occurs, according to Ritter (1998), when “a security is sold to the general public for the first time, with the expectation that a liquid market will develop”. The definition states that we only speak of an IPO when it is the first time a security is sold to the public. This excludes cases in which a company, after having gone public, wants to raise capital by issuing new shares. Only in the first case, when it is the first public issue, it is called an IPO. A reverse LBO, an IPO of a company that has previously been subject to a LBO, is a special case however. This is because LBOs were often public companies before turning into LBOs. In this paper we use Ritter’s (1998) definition but also consider reverse LBO as IPOs.

Some companies decide to go public while others decide to stay private. Reverse LBOs start off public, then go private and choose to go public again as their exit strategy. So there must be costs and advantages associated to being private. Pagano, Panetta and Zingales (1998) discriminate between: the cost of going public and the benefits of being public. If the benefits of being public outweigh the costs, the company goes public and remains private if the costs outweigh the benefits.

3.1.1 **The cost of going public**

There are several costs associated with going public. Next is an overview of these costs.

- *Adverse selection:* In case a company goes public the main problem concerns the true value of the company. Since the managers of the company are better informed than investors buying the companies’ shares in the IPO, there is an information asymmetry. The information asymmetry influences the degree of underpricing. Underpricing will be discussed later. (Rock, 1986)

Chemmanur and Fulghieri (1995) show that adverse selection costs are larger for smaller firms because they are less visible and have a smaller track record than larger firms. This implies that larger companies are more likely to go public than smaller companies and when they do they have a smaller degree of underpricing.

- *Administrative expenses and fees:* The expenses consist of two different costs: costs that are related to the actual going public process (initial expenses) and costs related to being public (recurring expenses). Initial expenses include expenses paid to investment bankers and lawyers who arrange the IPO, but also expenses paid to the stock exchange because of the IPO. The recurring costs are costs paid every year that result from being public. These costs

include: expenses because of auditing and certification of accounting information and exchange fees.

Ritter (1987) finds that the fixed costs of going public are approximately \$250,000 and the variable costs are about 7% of the gross proceeds of the IPO. This again indicates that larger companies are more likely to go public than smaller companies.

- *Loss of confidentiality:* Rules that apply to companies that are listed on a stock exchange forces them to unveil information that they might not want to unveil. For example some companies might not want to disclose how much they spent on R&D because this information might help competitors. Stock exchange regulations however, force listed companies to make this information public. (Campbell, 1978)

Muscarella and Vetsuypens (1990) also argue that private companies are not required to disclose as much of their business as public companies. Being private is therefore “perfect for turnarounds”.

- *Monitoring:* Subrahmanyam and Titman (1999) argue that because public companies have more dispersed owners than a private company. The managers of a private company are therefore likely be better monitored by the shareholders.

3.1.2 Benefits of going public

The benefits of going public are discussed next.

- *Borrowing constraints:* Private companies can use banks and venture capital when they need capital. The reason most companies go public is because going public provides access to another source of capital: the public market. (Pagano, Panetta and Zingales, 1998)
- *Bargaining power with banks:* Banks, when a company is private, face an information asymmetry. The managers of the company they borrow money to know more about their credit worthiness than the bank. It is difficult to extract information about the companies’ credit worthiness. The larger the information asymmetry the larger the costs of borrowing. So if at some point in time the information asymmetry between a certain bank and a company has become smaller, for example because of its payment track record, borrowing with this bank will become cheaper. It will therefore be more difficult to change to another bank.

Competition for the bank that has a smaller information asymmetry has become smaller. If the company however is public, it has to disclose accounting information to the public. This will result in banks in general having more information about a company’s credit worthiness; the competition among banks will increase and the cost of borrowing will decrease. (Rajan, 1992)

- *Liquidity and portfolio diversification:* Ritter (1998) states that in an IPO 20-40% of the company is sold. Because 20-40% of the shares are sold to the public, a liquid market for the shares arises. The liquidity makes it easier to trade shares. The liquidity increases the value of the shares, which benefits the shareholders who held shares before the IPO. The liquidity

premium is an increasing function of the trading volume. Indicating that this benefit may only be present if the company going public is large enough.

The shareholders who hold shares before the IPO, also benefit from the diversification that arises from selling shares in an IPO. (Pagano, Panetta and Zingales, 1998)

- *Monitoring*: Because public companies are listed, they are subject to the market of corporate control (e.g. hostile takeovers). Also, a manager's compensation can be closely tied to the company's stock price performance. This gives managers an incentive they would not have in case they were managing a private company.

This is however in contrast with the argument that private companies can be better monitored because of the less dispersed ownership.

- *Investor recognition*: Merton (1987) shows that the more investors are aware of a certain company's existence, the higher the stock price. If a company goes public onto a large exchange, this problem can be overcome.
- *Change of control*: Zingales (1995) argues that the decision to go public is effected by the initial owner who wants to maximize the proceeds from eventually selling the company. By going public he can sell shares, but remain in control of the company. He creates a liquid market for the shares, which will help him when he eventually sells the company completely. But at the same time, he is still the one controlling the company which gives him the same benefits he would have had if the company would still be private. The situation maximizes the total proceeds from selling his company.
- *Window of opportunity*: There are periods in which IPOs are mispriced. Ritter (1991) argues that a company that notices that other companies in his industry are overpriced, will want to exploit this imperfection and go public

3.2 IPO anomalies

There are three major types of anomalies that are witnessed in IPOs. First, IPOs show superior performance in the first day after going public. Second, the long run performance of IPOs is disappointing. Third, IPO activity differs over time.

3.2.1 First day outperformance

It is widely recognized in the existing IPO literature that IPOs show superior performance on the first trading day. Loughran, Ritter and Rydqvist (1994) give in their article, which they updated in 2006, an overview average first day return per country. The article covers 39 countries. The lowest average initial return is found in Denmark. A sample of 117 IPOs between 1984-1998 had an average first day return of 5.4%. The most extreme average first day return is found in China. A sample of 432 IPOs shows an average first day return of 256.9%. There are many theories that try to explain first day outperformance:

- Winner's curse: There are only two types of investors who invest in the limited number of shares sold in an IPO: institutional and private investors. Institutional investors have an informational advantage over private investors. Institutional investors can, because of this information asymmetry, better assess whether the shares of a company are priced correctly or not. Because institutional investors know when the shares are underpriced, they will try to acquire as much of the limited amount of shares as possible. Private investors will end up with a relative small amount of the underpriced shares, because they did not know the shares were underpriced. In case of overpricing it is the other way around: Private investors do not know the shares are overpriced and will therefore end up with a relatively large portion of the overpriced shares. Private investors will therefore only be willing to invest in an IPO if they are on average underpriced. Studies investigating the winners curse found evidence consistent with its existence. (Keloharju, 1993 & Ritter, 1998)
- Market feedback: Investment banks might want to know how regular investors (institutional investors) value their potential IPO. To get the institutional investors to reveal their true valuations, investment banks reward them by underpricing the IPO. Bary, Gilson and Ritter (1998) show that this is true. Moreover, they find that IPOs that are priced upward because of the information provided by institutional investors are subject to larger underpricings than IPO that have been priced downward because of information provided by institutional investors.
- Bandwagon: In case an investor notices that investors are not interested in an IPO, he might decide not to invest in the IPO even though he believes it is a good investment. In order to prevent this from happening, the investment bankers can underprice the IPO. Investors will be more prone to invest in the IPO and if other investors see this, they are also more likely to invest in the IPO. The bandwagon now works in favour of the company going public.
If one combines the market feedback and the bandwagon hypothesis it might not be wise to lower the IPO price since it might signal weak demand to investors. This will in turn lower the demand even further because of the bandwagon effect.
- Monopsony: Investment banks are likely better informed about the market conditions than the company going public. Because of this information asymmetry they might be tempted to underprice the IPO. This will make the IPO more likely successful and the owners of the company going public will not know that the proceeds are lower than they could have been. The literature that investigates underpricing of investment banks going public indicates that they underprice themselves by as much as they do other companies. This is inconsistent with the monopsony hypothesis. (Ritter, 1998)
- Lawsuit avoidance: All parties who sign for the prospectus of the company going public are legally liable since the introduction of the Securities Act of 1933. Underpricing of the IPO reduces the frequency and severity of lawsuits. IPOs in countries where this legal liability is

not present, also suffer from underpricing (e.g. Keloharju, 1993). This is inconsistent with this hypothesis. (Beatty and Welch, 1996)

- Signalling: Investors remember when the shares in an IPO have been underpriced. The result of this is that the company can in the future offer shares at a higher value than it would otherwise be able to. Underpricing is in this case an investment that allows the company to overprice its shares in the future. (Jegadeesh, Weinstein and Welch, 1993)
- Dispersion of ownership: Companies going public might also underprice the shares in the IPO because it will create excess demand. The excess demand makes that the investors buying shares in an IPO are widely dispersed. This increases the liquidity of the shares and decreases the likelihood of new shareholders interfering with management. (Booth and Chua, 1995)

3.2.2 Long run underperformance

IPOs show disappointing performance in the first years after going public measured as the return starting after the first day return. This pattern has been widely discussed in the existing literature. Loughran, Ritter and Rydqvist (1994) summarize the literature concerning the long run performance of IPOs. This shows that the majority of the studied long term IPO performances are negative. The returns in the first three years after going public are studied. The returns are adjusted for either a matching firm or a market index. In the most extreme case, which is Brazil, the average three year adjusted performance was -47.0%. This is calculated using 62 IPOs in the period 1989-1990. Three out of the nine studies report positive performance. The most extreme performance is witnessed in Japan where 182 show an average three-year adjusted performance of 9.0% in the period 1975-1989. Ritter (1998) shows that IPOs underperform a control group on average 5.2% per year in the first five years after going public.

Ritter (1998) discusses three hypotheses that try to explain underperformance:

1. Divergence of opinion: This hypothesis claims that the long-run underperformance is due to the different opinions of different investors. Investors who are positive about a certain company, have higher valuations for that company and will invest in its IPO. Investors who are less positive, have lower valuations and will not invest. As time passes and more information becomes available, the differences in opinions of different investors become smaller. The more positive investors are not willing to pay a high price anymore; the stock price will decrease over time. This hypothesis suggests that companies that have larger information asymmetry between investors underperform more than companies that have smaller information asymmetry between investors.
2. Impresario: This hypothesis argues that investment banks arranging a company's IPO, will underprice its shares to make it look as if there is excess demand for the shares. The long-run underperformance in this hypothesis is merely a correction on the high first day returns. Also

referred to as overreaction. This implicates that companies with higher first day performance have larger underperformances than companies with smaller first day performance. Ritter (1991) finds some evidence for this relationship. He finds that the relationship is stronger for smaller firms.

3. Window of opportunity: If one assumes that there are times where investors in general are more positive about IPOs and therefore value them at higher prices, it might be the case that companies going public time their IPO such that they take advantage of this phenomenon. This implies that in companies going public in high volume years, in general, will display larger underperformance than companies that did not go public during high volume years. Ritter (1991) and Loughran & Ritter (1995) indeed find evidence to support the window of opportunity hypothesis.

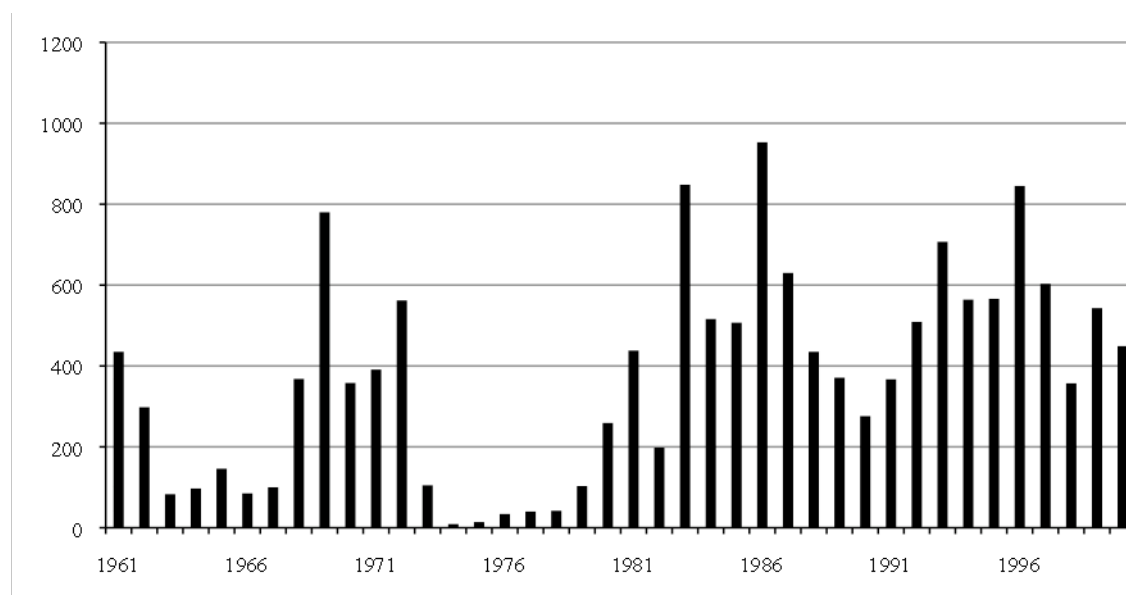
The hypotheses indicate that especially small growth firms going public in high volume years perform disappointing. Mature companies that went public in a low IPO volume period, indeed, do not underperform. (Loughran & Ritter, 1995)

3.2.3 IPO activity

There seems to exist a pattern in the returns and the activity in the IPO market. First, the IPO activity seems to be cyclical. High volume markets, also referred to as hot issue markets, are followed by markets in which relatively little companies go public. The next graph shows the cyclicity of the IPO market in the period 1960-1996.

Graph 2:

The cyclicity in the IPO market between 1960 and 2000.



Source: Ibbotson, Sindelar and Ritter (1994), updated by in (2002).

Ritter (1996) and Ibbotson, Sindelar and Ritter (1994) show this pattern in their articles. The pattern is investigated by looking at the number of offerings, average first day returns and gross proceeds in the period 1960-2000. High volume years are shown to follow years in which large first-day returns are witnessed. The high first-day returns attract companies to go public. This is consistent with the *window of opportunity* hypothesis that explains the long run underperformance of IPOs.

3.3 Reverse LBOs

A special type of IPOs, are IPOs that have previously been subject to a LBO. These IPOs are called reverse LBOs. Drathen & Faleiro (2007) investigate 128 reverse LBOs and 1,121 non-LBO-backed IPOs in the period 1990-2005. They find that the share of reverse LBOs in total IPOs differs per year. The amount of reverse LBOs that went public, as a percentage of the total IPOs, was higher in the beginning of the sample period and declines over time.

Tabel 1:

The number of IPOs, Reverse LBOs (RLBOs) and the amount of reverse LBOs as percentage of total IPOs per year. Figures account only for IPOs and RLBOs in the UK.

Year	IPOs	RLBOs	RLBOs/IPOs	Year	IPOs	RLBOs	RLBOs/IPOs
1990	6	1	17%	1999	27	5	19%
1991	3	1	33%	2000	166	4	2%
1992	11	4	36%	2001	71	2	3%
1993	26	12	46%	2002	66	6	9%
1994	85	22	26%	2003	55	3	5%
1995	48	9	19%	2004	179	17	9%
1996	124	10	8%	2005	133	13	10%
1997	96	6	6%	2006	113	9	8%
1998	40	4	10%	<i>Total/average</i>	<i>1249</i>	<i>128</i>	<i>10%</i>

Source: Drathen & Faleiro (2007)

3.3.1 Differences between reverse LBOs and other IPOs

Reverse LBOs are different from normal IPOs in several ways. The most important is that reverse LBOs are large companies compared to other IPOs. As has previously been described being larger is often an advantage when going public. First, larger companies have shown to be subject to a smaller degree of underpricing than smaller companies, so less money is left on the table. Second, the cost of being public is relatively smaller for larger companies. Third, the going public process is also relatively less expensive for larger companies. Fourth, being a large and mature company has also shown to result in smaller long-run underperformance. Hogan, Olsen and Kish (2001) indeed find that the first-day performance of reverse LBOs is smaller than for other IPOs. Ritter (1998) reports that reverse LBOs do not show performance comparable to other IPOs. Reverse LBOs do not show

disappointing performance in the first years after going public. This corresponds with the observation that mature companies that go public are not subject to long run underperformance.

Cao and Lerner (2006) identify four differences between reverse LBOs and other IPOs, which make reverse LBOs perform better: bigger size, more profitable, more leverage and the underwriter, the company bringing them public, has a better reputation. These differences are not the only differences between reverse LBOs and other IPOs. First, reverse LBOs have been public companies before they went private. So it is not the first time the company will be public, therefore the information asymmetry is smaller. This results in a smaller first day outperformance (Hogan, Olson & Kish, 2001). Second, reverse LBOs are often mature companies compared to other IPOs. There is also a difference between the reasons to IPO for a reverse LBO and other IPOs. The purpose of a regular IPO is to gain capital to invest in projects (Ritter, 1998), while the purpose of reverse LBOs is often to make the shareholder's share in the company liquid (Kaplan & Strömberg, 2008).

4 Existing literature

This chapter investigates the existing reverse LBO literature. First, an overview of the existing literature is given. Next, three articles will be discussed more thoroughly: DeGeorge and Zeckhauser (1993), Holthausen and Larcker (1996) and Kaplan (1991).

4.1 *Accounting and stock price performance of reverse LBOs*

Muscarella & Vetsuypens (1990) investigate 72 reverse LBOs that went public between 1983 and 1987. The sample consists of 54 divisional buyouts and 18 full buyouts. Divisional buyouts are buyouts of a division of a company instead of a buyout of the entire company. The purpose of their paper was to test the hypothesis that the accounting performance of reverse LBOs improves during the buyout. The evidence supports this hypothesis; they argue that the increase in accounting performance during the buyout is due to cost reductions rather than increases in revenue. In other words the companies are more efficient. The buyouts are more efficient because of the new governance structure that is superior to the governance structures the buyouts had previously been subject to. The evidence however is stronger for divisional buyouts rather than full buyouts. They also find that the value of the companies at the time of the IPO price after the buyout is significantly higher than the value of the company before the buyout. This is attributable to the increased efficiency. Smith (1990) also investigates the operating performance of buyouts during the private period and conclude that the witnessed increase in operating performance is due to changes in the use of working capital rather than cuts in advertising, maintenance and R&D expenses.

Mian and Rosenfeld (1993) investigate the stock price performance of 85 reverse LBOs in the first three years after the IPO, starting at the day after the day of the IPO. The 85 reverse LBOs went public between 1983 and 1988. IPOs in general underperform the market partly because of information asymmetry. Reverse LBOs have a smaller information asymmetry, which would lead to smaller first day returns and less underperformance. It is argued that if the group of reverse LBOs performs as well as a portfolio of firms matched by industry and size, it would mean that the value increases found by Muscarella and Vetsuypens (1990) are at least partly due to overpricing at the time of the IPO and not to increased efficiency. The results show that the reverse LBOs do not underperform the portfolio of firms. The reverse LBOs actually outperform the portfolio. This indicates that the efficiency gains of Muscarella and Vetsuypens (1990) are at the least not overstated. The outperformance however is largely driven by takeovers. 39% of the sample's reverse LBOs have been taken over. This biased the results upward since takeover bids often exceed share prices.

The paper of Jain and Kini (1995) investigates the operating performance of IPOs of companies in which venture capitalists (VC) have invested. The operating performance of 136 VC-backed IPOs that took place between 1976-1988 is compared to a matched sample of 136 non-VC-backed IPOs. The

results show that VC-backed IPO perform superior compared to non-VC-backed IPOs in terms of operating performance. The valuations, as calculated by book-to-market and P/E ratios, of the VC-backed IPOs are also higher at the time of the IPO. It is argued that this is due to the fact that venture capitalists tend to be active investors and their active monitoring translates into more efficient companies, which is similar to LBOs. The difference in operating performance however decreases over time, which indicates that increased monitoring by investors is especially right after going public beneficiary. Brav and Gompers (1997) also investigate VC-backed IPOs. 934 VC-backed and 3407 non-VC-backed IPOs that took place between 1972-1992 make up the data set. Again, VC-backed IPOs perform better than non-VC-backed IPOs. VC-backed IPOs do not significantly underperform several different benchmarks. Non-VC-backed IPOs smaller than \$50 million however do.

Schröber (2008) investigates the cyclical, underpricing and long-run stock price performance of buyout-backed IPOs. He finds that buyout-backed IPOs are very cyclical. The number of buyout-backed companies that go public in one month are positively related to stock returns in the previous month, which indicates that the going public process is timed. He also finds that IPOs are significantly less underpriced than matched other IPOs. The market-adjusted long-run performance in the first five years after going public holds ambiguous results.

Hogan, Olsen and Kish (2001) assess factors that drive the differences in first-day returns between reverse LBOs and other IPOs. This is done by investigating 232 reverse LBOs and 232 IPOs that took place between 1987-1998. The results show a first-day excess return of reverse LBOs of 7,64%, which is significantly lower than the first-day excess returns of other IPOs. The most important factor influencing the excess first-day return of reverse LBOs is the size of the reverse LBO. This is inconsistent with Ritter (1991) who finds that the larger the IPO the smaller the first-day performance. It is argued that the conflicting results are due to the fact that larger reverse LBOs have more name recognition and are therefore subject to investment fads.

Cao and Lerner (2006) investigate the long run performance of 496 reverse LBOs between 1980-2002. The results show that reverse LBOs significantly outperform other IPOs. The returns do not seem to deteriorate over time. However, in the 1990s the results are the least strong. Reverse LBOs also outperform the market in the first, fourth and fifth year after going public. The results are less strong in the second and third year. The outperformance of the reverse LBOs is influenced by the size. Larger reverse LBOs have larger outperformance. Leverage does not influence the degree of outperformance. Drathern and Faleiro (2007) also examine the long-run performance of reverse LBOs. In order to do this they investigate a sample of 128 reverse LBOs that went public between 1990 and 2006 in the UK. The reverse LBOs are compared to a sample of 1121 other IPOs. They also find significant outperformance of the reverse LBOs compared to the market and the other IPOs.

4.2 F. DeGeorge & R. Zeckhauser

In their 1993 article, The reverse LBO decision and firm performance: theory and evidence, François DeGeorge and Richard Zeckhauser study companies that have previously been subject to a leveraged buyout and made the transition from private to public through an IPO.

This article added to the existing literature because previous studies gave little attention to the transition from public to private, but focussed on the private period. The extensive IPO literature at the time was devoted to stock price performance while this article also focuses on accounting performance.

They show that the superior performance before the IPO and the disappointing performance subsequent to the IPO can be attributed to information asymmetry and pure selection. The stock market anticipated this pattern considering the positive excess return (although not significant) of the reverse LBOs.

4.2.1 Data and methodology

The data set that is being used consists of 62 reversed LBOs that went public between 1983 and 1987. Two different sources were used to construct the data set.

- The January 1988 issue of *Going Public: The IPO Reporter* published a list of reverse LBOs that had taken place in 1987.
- The November-December issue of *Mergers and Acquisitions* published a list of reverse LBOs.

For all 62 companies performance measures before and after the IPO were gathered, pre-IPO data from the prospectus and post-IPO data from COMPUSTAT.

Operating income after depreciation (EBIT) normalized by total assets (EBIT / Total Assets) is used to measure accounting performance. Improvement in this measure ($(\text{EBIT}_{\text{year after the IPO}} / \text{TOTAL ASSETS}_{\text{year after the IPO}}) - (\text{EBIT}_{\text{IPO year}} / \text{TOTAL ASSETS}_{\text{IPO year}})$ or $(\Delta \text{EBIT} / \text{TOTAL ASSETS})$) is assessed because it is assumed that investors look at the improvement rather than level of performance. A company with earnings per share growing from \$1,50 to \$2,00 will be sold at a higher price than a company with stable earnings at \$2,00 per share.

To get to the industry adjusted accounting performance the mean accounting performance for a certain industry is subtracted from the performance measure. For example $(\text{EBIT} / \text{Total Assets})_{\text{company}} - (\text{EBIT} / \text{Total Assets})_{\text{industry}}$. The industry is defined as the four digit SIC-code in which the company is active.

Companies can also be compared to randomly selected control firms. A randomly selected control firm is the next company in alphabetical order with the same four digit SIC-code, available data for the relevant years and total asset value between 50 and 200% of the company it is linked to.

The stock price performance of reverse LBOs is examined using excess returns. Excess returns are computed by subtracting a benchmark return from the return of the equally weighted portfolio. The

equally weighted portfolio consists of the 62 reverse LBOs that went public. The benchmark portfolio is an equally weighted portfolio with the same companies that were selected as control companies.

4.2.2 Empirical research

The empirical part of the article is divided into three sections. The first section examines the possible difference between reverse and continuing LBOs. The second section investigates the difference in performance before and after the IPO of reverse LBOs. The last section investigates the stock price performance of reverse LBOs.

4.2.2.1 Reverse vs. continuing LBOs

There are two possible lines of reason why companies go public after a LBO period.

The first is that companies making the transition from private to public are firms making the transition because they are either forced to, or the benefits from being subject to a LBO are exhausted. This implies that reverse LBOs do not perform particularly well.

The second line of reason is that reverse LBOs do this voluntarily and perform better than continuing LBOs. The next section examines the last line of reason.

The difference between continuing and reverse LBOs is examined by looking at the industry adjusted accounting performance of 21 LBOs with publicly traded debt. The results show that industry adjusted accounting performance of reverse LBOs is eight percent higher (significant at the one percent level) than industry adjusted accounting performance of continuing LBOs, the year before the IPO. This shows that reverse LBOs, in general, perform better than continuing LBOs.

To make sure the difference in accounting performance between reverse and continuing LBOs is not due to poor accounting performance of continuing LBOs, the accounting performance of continuing LBOs is compared to the accounting performance of a randomly selected control firm. Evidence shows that continuing LBOs perform slightly better than similar public firms. This indicates that the difference in accounting performance of reverse and continuing LBOs is due to the superior accounting performance of reverse LBOs and not to the poor accounting performance of continuing LBOs.

4.2.2.2 Reverse LBO performance before and after the IPO

We have seen that reverse LBOs perform better than continuing LBOs. There are two possible explanations for this phenomenon. It is possible that reverse LBOs are exceptionally good firms. The second explanation is that performance measures are manipulated such that at the time of the IPO the company seems to perform better than its peers. This section examines the two possible explanations.

For each reverse LBO and control company $(\Delta \text{EBIT} / \text{TOTAL ASSETS})_{\text{IPO year}}$ and $(\Delta \text{EBIT} / \text{TOTAL ASSETS})_{\text{year after the IPO-IPO year}}$ is calculated. For reverse LBOs the measures are also calculated

controlling for industry. Two patterns can be observed from the evidence. First, reverse LBOs show a sharper increase in accounting performance than control firms in the year of the LBO. Second, this improvement in accounting performance is not continued into the next period, the year after the IPO. Reverse LBOs tend to perform worse than control firms in the year subsequent to the IPO. The decline in accounting performance, however, in the year subsequent to the IPO is smaller than the increase in accounting performance in the year of the IPO.

LBOs in general show sharp increases in accounting performance during the buyout period. To examine if the increase in accounting performance is exceptional, the accounting performance increase in the year of the IPO is compared to the increase in accounting performance in the year before the IPO. The result suggests that the increase in the year of the IPO is indeed exceptional compared to the year before the IPO.

The superior performance of reverse LBOs can be due to information asymmetry and pure selection. If there would be no information asymmetry the superior performance of reverse LBOs would be due to pure selection. In other words LBOs that perform well will be selected to go public. If this is true, then the accounting performance of reverse LBOs would be similar to those of other companies that perform well. This is the case because reverse LBOs would not be different from public companies that perform well. To test this, the improvement in accounting performance of reverse LBOs in the year after the IPO is compared to the improvement in accounting performance of companies that have shown a similar increase in accounting performance in the previous year. The results show that reverse LBOs perform worse than similar companies, this suggests that information asymmetry is present.

Testing if debt overhang has a selection effect is difficult because of the lack of available data. It is possible however to examine the link between LBO performance and riskiness of debt by comparing the bond ratings with the improvement in accounting performance. The results suggest that it is unlikely that debt overhang has a selection effect.

Two additional explanations for why reverse LBOs disappoint in the year after the IPO are given. First, Jensen (1989) argues that LBOs resolve “the central weakness of the public corporation, the conflict between managers and shareholders”. But after the LBO, managers still own a large stake in the company and the company’s leverage remains relatively high after the IPO. So this might not be a good explanation.

Second, companies can balance present and future cash flows by increasing or decreasing for example the capital expenditures. But there seems to be no correlation between the leverage and the capital expenditures, which would be expected if the cash flow balancing hypothesis holds true.

4.2.2.3 Stock price performance

Reverse LBOs show superior accounting performance in the year of the IPO and disappointing performance in the year subsequent to the IPO. Did the stock market anticipate this or is the stock market surprised by this pattern?

If the stock market has not anticipated the disappointing accounting performance, the stock price performance of the reverse LBOs, after adjusting for comparable firms, will be negative. The result of the stock price performance analysis suggests the stock market anticipated disappointing accounting performance in the year subsequent to the IPO. The stock market actually overestimated the decrease in accounting performance according to the positive stock price performance in the two years subsequent to the IPO.

4.3 R. Holthausen & D. Larcker

In their 1996 article, The financial performance of reverse leveraged buyouts, Robert Holthausen and David Larcker examined the operating and stock price performance of reverse leveraged buyouts. This article contributed to the existing literature because it focussed on, next to stock price performance, accounting performance. Furthermore it examines the relationship between the extent of changes in organizational incentives and the changes in accounting performance.

The results show that reverse LBOs perform better than their industries in the year of the IPO and the four years subsequent to the IPO. The performance however declines in the four years subsequent to the IPO. The accounting performance is related to changes in ownership and unrelated to changes in leverage. Finally, there is no evidence of abnormal stock price performance after the IPO.

4.3.1 Data and methodology

The dataset used in the article was gathered using the 1988 October report by Kidder, Peabody & Co. “Analysis of Initial Public Offerings of Leveraged Buyouts”. The data set was constructed using following criteria:

- The reverse LBO is identified by the IDD Information Services.
- The Dow Jones News Center contains a story about the reverse LBO, mentioning the LBO and the IPO.
- The IPO took place between 1 January 1983 and 30 June 1988.
- The IPO raised at least \$10 million.

These criteria resulted in a sample of 90 reverse LBOs.

Data about the leverage and ownership structure in the year of the IPO is obtained from the prospectus for the public offering. Data about ownership and board structure is obtained through proxy statements.

Stock price data is obtained using the Center for Research in Security Prices (CRSP).

Accounting data were obtained from the prospectus and the Compustat annual industrial, research and full coverage files.

The accounting performance is examined using two different measures. The first is EBITDA / TOTAL ASSETS, the second is Operating Cash Flows / TOTAL ASSETS. Operating Cash Flow is defined as $EBITDA_{\text{year } 1} - (\text{Working Capital}_{\text{year } 1} - \text{Working Capital}_{\text{year } 0})$ and Working Capital is defined as inventory + accounts receivable + other current assets – accounts payable – other current liabilities.

The two measures of accounting performance are reported in three ways: unadjusted, industry-adjusted and mean-reversion-adjusted. The unadjusted measure is simply the calculated accounting performance measure. The accounting performance measure is adjusted for industry by subtracting the median accounting performance measure of companies with the same two-digit SIC-code from the unadjusted measure. To adjust for mean-reversion, the median accounting performance of the mean-reversion benchmark is subtracted from the unadjusted measure. A Company is added to the mean reversion benchmark if two criteria apply. First, the company is active in the same 2-digit SIC class as the reverse LBO and second, the company's operating benchmarks are within 10% of the comparable firm. The mean-reversion benchmark is used because if changes in leverage and ownership concentration do not have an effect on operating income, reverse LBOs would show performance similar to other comparable companies in the same industry that showed the same performance in the last period.

Next to the level of accounting performance the change in accounting performance is measured. The change in accounting performance is measured because the accounting performance could be, although superior compared to the industry, declining. The changes are calculated by comparing the value in a specific year to the value in the year prior to the IPO.

In addition to the operation performance measures the article examines spending on advertisements, research & development, working capital, personnel and capital expenditures. Muscarella & Vetsuypens (1990) and Smith (1990) report that LBOs decrease expenditures on these items during the buyout period. It is therefore of interest to compare the expenditures on these items of reverse LBOs to other firms. All expenditures are divided by the company's total assets and presented unadjusted and industry adjusted.

Every measure is calculated for year -1 until year 4, where year -1 is the fiscal year before the IPO and year +4 is the fourth fiscal year subsequent to the IPO.

To test if the calculated measures are significantly different from zero, a Wilcoxon test is used. This test is used because the number of observations varies across the years. The drawback of this measure

is that it assumes that each year's accounting performance measures are independent. Since this is not likely, the test statistics will slightly overstate the results.

The relationship between accounting performance and leverage and concentration of ownership is examined using a cross-sectional regression analysis. The performance measures are the same as used earlier, change in EBITDA / Total Assets, and change Operating Cash Flow / Total Assets. Change in working capital / Total Assets and change in Capital Expenditures / Total Assets are also used as performance measures. The four performance measures are calculated as the change between year-1 and year +1 and the change between year -1 and the average of the years +1 to +4.

The changes in organizational structure are calculated by Debt / Capital, percentage of equity held by operating management and percentage of equity held by non-management insiders. These measures are calculated at the time of the IPO, independent of the used measure of accounting performance and the time period used to calculate it.

All regressions are calculated three times. The first time without controlling for industry or mean-reversion, the second time while controlling for industry by adding an industry variable and the third time while controlling for mean-reversion by adding a mean-reversion variable.

Stock price performance is examined using three measures: raw returns, market-adjusted returns and Jensen's Alpha. The raw returns are the returns that an investor would have made if he would have invested in the share. Market adjusted returns are calculated by subtracting the raw returns of the value-weighted New York and American Stock Exchange index (NYSE/AMEX) from the raw returns. Jensen's Alpha is the intercept when regressing the reverse LBO's excess returns on the NYSE/AMEX's excess returns. Excess returns are calculated by subtracting the return on a one month U.S. Treasury bill from the raw returns.

The three measures are calculated in five different time windows. The first is the opening day. The return on the first day is an indication of mispricing. The other time windows start the day after the opening and end 12, 24, 36 and 48 months after that day.

The monthly returns are calculated using daily CRSP data assuming a month has 21 days. This is consistent with Ritter (1991). If a reverse LBO is delisted after the IPO, the raw and market-adjusted returns and Jensen's Alpha are zero in the period subsequent to the delisting. One sample t-tests are used to examine the statistical significance of the results.

4.3.2 Empirical research

The empirical part of this article is divided into three parts. The first examines the accounting performance and expenditures of reverse LBOs. The second examines the link between the cross-sectional variation in accounting performance and leverage and the concentration of ownership. The third part examines the stock price performance of the reverse LBOs.

4.3.2.1 Accounting performance and expenditures

The accounting performance is first examined using absolute values. The results show that the accounting performance of reverse LBOs is superior to the industry's accounting performance in the year prior to the IPO. The industry adjusted EBITDA / TOTAL ASSETS as well as the industry adjusted Operating Cash Flow / TOTAL ASSETS are significantly different from zero.

Results for the years subsequent to the IPO suggest that the reverse LBOs continue to show superior performance. When using the industry adjusted accounting performance measure all years show significant superior performance, the performance however is declining. When using the mean-reversion measure the evidence shows that the performance of reverse LBOs is similar to the performance of the mean-reversion benchmark.

The changes in accounting performance are examined next. The change in accounting performance is examined because the absolute accounting performance could be, although superior compared to the industry, declining. The evidence on the change in accounting performance is rather ambiguous. When using the unadjusted change in EBITDA / Total Assets measure the changes are not significant for the year of the IPO until the second year after the IPO. The changes are however significantly negative for the third and fourth year after the IPO. When using the unadjusted change in Operating Cash Flow / Total Assets measure the results show a significant decline in accounting performance in every year from the year of the IPO until the third year subsequent to the IPO. The industry adjusted changes hold similar results, the years that showed significant changes in accounting performance using the unadjusted measure also show significant changes using the industry adjusted changes. The mean-reversion adjusted changes show no evidence of significant decline in the accounting performance.

In addition to the accounting performance, the expenditures of reverse LBOs are examined. The results are different for the different kind of expenditures.

Reverse LBO spent less on capital expenditures than the industry in the year prior to the IPO, but in the year subsequent to the IPO the capital expenditures are in line with the industry. Reverse LBOs spent more on advertising in every year while expenditures on R&D and personnel are in line with the industry. The industry adjusted Working Capital / Total Assets ratio is significantly lower than zero in every year indicating that reverse LBOs use significantly lower amounts of working capital than their industries. Evidence suggests that reverse LBOs use approximately 50% of the working capital the industry counterparts use.

As with the accounting performance measures, next to the level the changes in expenditures are examined. The unadjusted changes in capital expenditures are significantly positive in the year of the IPO while industry adjusted changes in capital expenditures are positive in the year of the IPO and the year subsequent to the IPO. The increases in the other years subsequent to the IPO are not significant. Changes in advertising expenditures are not significant either unadjusted or industry adjusted. Industry adjusted changes in R&D spending are negative in every year, although not significant in the year of

the IPO and the fourth year subsequent to the IPO. Unadjusted measures on R&D spending suggest similar results. While there is no evidence of an increase in working capital for reverse LBOs when adjusting for industry the changes in working capital are positive in each year. There is a decline in unadjusted employee expenditures but when adjusting for industry this decline is not significant.

4.3.2.2 Cross sectional analyses of accounting performance, leverage and ownership concentration.

This section of the article examines if changes in performance are influenced by leverage and concentration of ownership. This is done using regression analyses. The first set of regressions is calculated without controlling for either industry or mean-reversion. The second is calculated while controlling for industry and the third is calculated while controlling for mean-reversion.

The results of the first set of regressions provide no evidence that performance measures are influenced by leverage. Ownership by management and ownership by non-management insiders does influence the performance measures. The influence is however dependent on the performance measure used to calculate the regression. When using EBITDA / Total assets and Operating Cash Flow / Total Assets as operating measures, decline in ownership has a negative influence on accounting performance. When using Working Capital / Total Assets and Capital Expenditures / Total Assets as operating measures decline in ownership, both management and non-management insiders, increases capital expenditures and the amount of working capital used. When controlling for industry the results do not change. Coefficients that were significant earlier are still significant and visa versa.

The mean reversion benchmark coefficient is significant in the Operating Cash Flow regressions but not in the EBITDA / Total Assets regressions. The leverage coefficients are still not significant. Both ownership measures are positively significant when Operating Cash Flow / Total Assets is used. This means that if ownership decreases Operating Cash Flow / Total Assets also decreases. When using the EBITDA / Total Assets measure all coefficients decline by about 50% which means they are not significant anymore.

Accounting performance has been shown to be related to ownership by management and to ownership by non-management insiders.

4.3.2.3 Stock price performance of reverse LBOs

The stock price performance is investigated in five different time windows: the first day and 12 months-, 24 months-, 36 months- and 48 months after the first day.

The results of the first day show that both the raw and market adjusted returns are positive. The returns are however smaller than the returns documented by Ibotson, Sindelar and Ritter (1988) who examined returns of IPOs from 1983 to 1987. This indicates that reverse LBOs are less mispriced than other IPOs.

The raw return, market adjusted return and Jensen's Alpha are not significantly different from zero during the 12 month holding period. The raw return is positive and significantly different from zero in

the 12-, 24-, 36- and 48 months holding period. The market-adjusted returns are also positive in the last four holding periods but only significant during the 24 months holding period. The results are not dependent on whether mean or median returns are used. When calculating Jensen's Alpha the results are dependent on whether mean or median returns are used. Jensen's Alpha, using mean returns, is positive but not significant in any of the periods, except for the 24 months holding period. Jensen's Alpha, using median returns, is negative in all four holding periods, but never significant.

The returns are either positive or not significant which is inconsistent with the hypothesis that managers take advantage of information asymmetry.

4.4 S. Kaplan

In the 1988 article, The effects of management buyouts on accounting performance and value, Steven Kaplan studies the change in accounting performance of companies that are subject to a management buyout during the buyout period.

The article studies 76 companies that have been subject to a management buyout between 1980 and 1986 and shows that these companies experience increases in accounting performance during the buyout period. The companies also experience decreases in capital expenditures and increases in net cash flows.

This article is discussed in more detail even though it examines the performance of MBOs during the buyout period instead off subsequent to the buyout period. The reason is that accounting performance is examined in the same fashion before and after the buyout period and the article is more thoroughly in examining how accounting performance is measured.

4.4.1 Data and Methodology

The data set consists of MBOs that either delisted from the New York and American Stock Exchange during the period 1980-1985 or companies that were listed as acquisitions in *Mergerstat Review* (by W.T. Grimm) in the period 1980-1985 and met the following criteria:

- The company is mentioned in the *The Wall Street Journal* as a company that is going private.
- The company is not a subsidiary of another company during the buyout period and is therefore an independent company during the buyout.
- At least one of the pre-MBO management obtains a stake in the post-MBO company according to the proxy statement.
- The transaction value is over \$50 million.

These criteria resulted in a sample of 76 MBOs. The last criterium is set because if the sample is not limited to larger buyouts, changes in accounting performance could be due to the lack of regulatory costs during the buyout. A company that is listed has to submit for example 10-K forms, submitting these forms will require accountant costs. If a company is relatively small these costs will have a greater effect on the accounting performance then when a company is relatively large.

Pre-buyout data is gathered using proxy statements, SEC forms, COMPUSTAT tapes and *The Wall Street Journal*. The pre-buyout stock prices data is collected from Standard & Poor's *Daily Stock Price Records*. Post-buyout data is collected from *The Wall Street Journal* and *Going public: The IPO Reporter* and is available for 48 of the 76 companies.

The accounting performance is measured in three different ways. The first, operating income before depreciation (EBITDA) measures the cash generated by the company before depreciation, amortization, interest and taxes. The second measures the amount of investments in the company. The last measures the amount of cash generated by the company after deducting investment expenses. Net Cash Flow is an important part of the NPV calculation of a company. An increase in net cash flow results in an increase in value of the company.

The three accounting performance measures are calculated in three different ways: in levels, as a percentage of total assets and as a percentage of total sales. Dividing by total assets and total sales controls for divestitures in the sample. Because if a company subject to a management buyout divests a division, the total assets and total sales will decrease just like the accounting performance. Only when a part of the company is divested that is less or more efficient than the average company this will have an effect on the accounting performance measures.

All measures of accounting performance are calculated as change in accounting performance in the years +1, +2 and +3 relatively to the year before the buyout, year -1. The year of the buyout, year 0, will not be examined because often these measures are biased because of buyout related expenses and inventory write-ups. The measures are calculated with and without adjustment for industry. A measure is adjusted for industry by subtracting the industry median of that measure from the unadjusted measure. A company is added to the MBO's industry if it has the same 4-digit SIC code and the total capital at the end of year -1 is at least \$40 million.

The results of the tests are presented using median values, and therefore the Wilcoxon signed rank test is used, because this controls for outliers.

4.4.2 Empirical research

The empirical part of the article examines whether there is an increase in accounting performance for companies that are subject to a management buyout. These results will be combined with the returns made in the buyouts to show if there is wealth created during the buyout. The last part of this section examines which of the before mentioned hypotheses does best in explaining where the wealth comes from.

4.4.2.1 Accounting performance

This section examines accounting performance of the MBOs by investigating: Operating Income, Capital Expenditures and Net Cash Flow.

Operating income increases shows large increases. The unadjusted change in operating income between year -1 and year +1 is 15.6% and 42.0% between year-1 and year +3. If operating income is adjusted for industry the change in the first two years is equal to zero and the change in the last year is 24.1%. The increase in change in operating income / total assets is lower than when levels are examined, from 13.7% in year +1 to 14.6% in year +3. Adjusting for industry does not significantly change the outcome. Dividing by total sales instead of by total assets does not change the results either. The results do not change when the industry adjustment is used. The results indicate that companies that are subject to a management buyout, perform significantly better in terms of operating income after the buyout period.

The results on the changes in capital expenditures are also quite clear. The industry adjusted changes for example are -35.9% in year +1 -32.6% in year +2 and -64.4% in year +3. However, the changes in year +3 are not significant. This pattern repeats itself when dividing operating income by total sales. The industry adjusted changes are significant in the first two years (-16,7% and -16,8%) but not in year +3 (-25.6%). Industry adjusted Capital Expenditures / Total Assets are negative in the first three buyout years but never significant. The large results can be due to the fact that these figures are overstated because of inventory write-ups. Capital expenditures are defined as $\text{total fixed assets}_{\text{current year}} - \text{total fixed assets}_{\text{last year}} + \text{depreciation}_{\text{this year}}$. This implies that if total fixed assets in this year are written up, the capital expenditures are overstated.

Both unadjusted and industry adjusted changes in net cash flow are significantly positive, independent of the time period or measure used. For example the industry adjusted levels of net cash flow increase from +22.0% in year +1 to 80.5% in year +3. Industry adjusted increased from 50.0% in year +1 via +85.4% in year +2 to +64.3% in year +3.

Because only companies that have publicly available information about their financial results can be analysed, there might be a bias in the sample. To test this bias, companies that voluntarily make their financial results public are separated from companies that do this because they are required to. If there is a difference between these two groups there might be a selection bias. The results show that the bias, if present, is rather small.

4.4.2.2 Wealth transfer, superior information or increased incentives?

The article shows that there are indeed wealth increases to investors in MBOs. The returns that investors make are, when adjusted for market returns, large and significant. The accounting performance improvements combined with the positive returns indicate that valuable operating improvements are made during the buyout period. This section examines the three before mentioned hypotheses that give an explanation for the positive buyout returns.

Investigating the change in employment tests the first hypothesis, the wealth transfer hypothesis. The change in employment of the MBO is compared to the change in employment of companies that are active in the same industry. The results show that the employment in the MBOs has grown 12% less

than companies in the same industry. The result might be overstated because of divestures by the MBOs. This is likely the case because industry adjusted change in employment is in line with the industry-adjusted change in sales. If the sample is reduced to MBOs that do not divest more than 10% of the pre-buyout company, the results suggest a different result. The industry adjusted change in employment of the new sample is -6.2% but not significant. Even though only the amount of employees has been investigated, the results do not indicate that buyout gains come from wealth transfers from employees to investors.

The next hypothesis is that positive buyout gains are due to the fact that managers have superior information, compared to the market, and are therefore able to buy the company at a discount. If this were to be true, the manager would give forecasts of the future performance at the beginning of the buyout that would be lower than the actual performance during the buyout period. Also they would be irrational to sell their shares in the company and not invest in the buyout.

Results show that in year +1 only 37.5% of the MBOs meets the forecast and the actual EBITDA is 20.7% lower than the projected EBITDA. In year +2, only 28.0% meets the forecasts and the actual EBITDA is 25.8% lower than the projected EBITDA. Again these results can be due to divestments but controlling for divestures does not change the results. The results are not consistent with managers misleading the market by giving forecasts that are understated. Moreover, when examining management turnover during the buyout period, the unusually high turnover in buyout companies amplifies the inconsistency with the hypothesis.

Examining if managers sell their shares implies investigating two hypotheses. The under pricing hypothesis implies that managers will not sell their shares in the company because they know the company is undervalued. The reduced-agency-cost hypothesis however, does not imply that managers will not sell their shares in the company. The evidence shows that a large percentage of the pre-buyout company, 10%, is owned by insiders who do not participate in the post-buyout company. They decide to sell their shares. This contradicts the under pricing hypothesis.

The two hypotheses are further investigated by looking at post-buyout ownership. If the manager's share in the company increases the incentives for the manager to work harder increase, the agency costs therefore will be reduced. The under pricing hypothesis also suggests that the manager's share in the company will increase. The results show that especially managers who are not the top two managers experience an increase in shareholdings. The top two managers also experience increases in shareholdings, but not to the same degree as other, lower ranked, managers. These results favour the reduced-agency-hypothesis over the under pricing hypothesis.

Overall, the results have shown that the reduced-agency-hypothesis is most consistent with what is observed.

4.5 Summary

Next is a summary of the existing literature divided by different subjects: accounting performance, first-day performance and long-run performance.

Table 2:
An overview of the existing LBO literature per subject.

<i>Accounting performance</i>	
Autor:	Outcome
Kaplan (1989)	Increased operating performance during the buyout, due to improved management incentives.
Muscarella & Vetsuypens (1990)	Increased operating performance during the buyout, due to cost reductions.
Smith (1990)	Increased operating efficiency during the buyout, due to increased working capital efficiency.
DeGeorge & Zeckhauser (1993)	Operating performance peaks at the year of the IPO and is disappointing afterwards.
Jain & Kimi (1995)	Superior operating performance after the buyout of VC-backed IPOS compared to other IPOs
Holthausen & Larcker (1996)	Superior accounting performance of reverse LBOs compared to comparable companies.
<i>First-day performance</i>	
Autor:	Outcome
Holthausen & Larcker (1995)	Positive first day performance, however smaller than normal IPOs
Hogan, Olsen & Kish (2001)	First-day performance is smaller than first-day returns of other IPOs.
<i>Long-run performance</i>	
Autor:	Outcome
Mian & Rosenfeld (1993)	LBOs outperform a portfolio of other companies.
Brav & Gompers (1997)	VC-backed IPOs outperform non-VC backed IPOs and do not underperform several benchmarks.
Cao & Lerner (2006)	LBOs outperform other IPOs. The market is outperformed dependent on the measurement period.
Drathen & Faleiro (2007)	LBOs outperform the market and other IPOs.

5 Empirical research

This part of the thesis investigates the performance of reverse LBOs empirically after previously having investigated the performance of reverse LBOs theoretically. This part starts with explaining the data that is being used. The second part covers the methodology. The third part discusses the performance of reverse LBOs based on accounting measures. The fourth part examines the performance of reverse LBOs based on stock price performance.

5.1 Data

The data that is being used to examine the performance of reverse LBOs comes from two databases. The accounting performance of reverse LBOs is examined using data from the Thomson One Banker database. The stock price performance data comes from the DataStream database.

The list of reverse LBOs that are being examined was constructed using the following criteria:

1. Deals that were flagged as reverse LBOs in the Thomson One Banker database (376 companies).
2. The SEDOL identifier code is available (139 companies).
3. The reverse IPO date is known (87 companies).
4. Accounting data is available; this results in a data set of 69 companies.

All these reverse LBOs returned public between 1986 and 1994. The time period is constrained by the limitations of the database. The next table gives an overview of the amount of reverse LBOs per year.

Table 3:
An overview of the data set: the amount of reverse IPOs per year.

Year	Amount of Reverse LBOS
1986	2
1987	4
1988	2
1989	2
1990	5
1991	21
1992	12
1993	17
1994	4
Total	69

It is clear that the large majority of the IPOs (72%) took place in the years 1991, 1992 and 1993. The concentration of reverse LBOs in that period might bias the results because certain factors in those three years might influence the reverse LBO's performance. Another factor that might create a selection bias is that all except one company is located in the United States. The only company not located in the United States is located in Canada. The fact that all companies, except from one, are

from the United States is not an explicit choice but rather a limitation of the Thomson One Banker database.

For every company in the final data set, data is gathered for five different years; the year of the IPO (y0) until the fourth year after the IPO year (y4). For every year five accounting measures are gathered: sales, EBITDA, total assets, capital expenditures and working capital. Sales is defined as total turnover of a company. EBITDA is defined as Total turnover – costs of goods sold – operating expenses. Capital expenditures is all cash in- and outflows resulting from investments in tangible and intangible fixed assets. And working capital is defined as: inventory + receivables + other current assets – payables – other current liabilities.

The data availability differs per year. The next table gives an overview of the data availability over the years.

Table 4:
Overview of data availability for reverse LBOs over time.

	<i>Y0</i>	<i>Y1</i>	<i>Y2</i>	<i>Y3</i>	<i>Y4</i>
<i>Sales</i>	37	58	62	67	69
<i>Total Assets</i>	37	57	61	67	69
<i>EBITDA</i>	34	53	56	62	60
<i>Capital expenditures</i>	37	57	60	65	67
<i>Working capital</i>	33	53	56	61	64

An industry is defined as all US-based companies that are active in the same 4-digit SIC class, according to Thomson One Banker, as the reverse LBO. The industry will be used to adjust reverse LBO measures, which will be discussed next. Industry data is collected similar to how reverse LBO data is collected. First, for all companies that comprise an industry, data is collected. The same accounting measures as used for the reverse LBOs are obtained for all companies in an industry. Following, the median value for every measure and period is determined. Industry data is available for at least 67 companies independent of the measure and time period.

Stock price data is available for all reverse LBOs except for 3. For these 66 reverse LBOs stock price data is available from the day of the IPO until 4 years after the IPO. Market stock price information is available in every period required.

5.2 Methodology

The accounting performance of the reverse LBOs is examined using three main accounting performance categories; profitability, efficiency and cash flow. The measures are derived from Kaplan (1989), DeGeorge & Zeckhauser (1993) and Holthausen & Larcker, (1996).

1. Profitability is examined using the company's EBITDA. When assessing a company's performance it is best to look at measures that are influenced by the company and are comparable among companies. Because the way assets are depreciated differs from company to company, for example, we would like to exclude depreciation from the analysis. Amortization, interest expenses and taxes are also measures, which are not comparable among firms and are therefore excluded from the analysis. What remains are the sales deducted by both direct and indirect costs.
2. The efficiency of the company is examined using two different measures: capital expenditures and working capital. Capital expenditures are investments made in tangible and intangible assets excluding cash in- and outflows resulting from acquisitions and divestures. According to the free cash flow hypothesis (Jensen, 1986 & 1988), companies that have large free cash flows are more prone to invest in projects with negative net present values. Lowering the capital expenditures would therefore make the company more efficient. Companies that are cash constrained will have a tighter inventory, debit and credit policy than companies that are not cash constrained. Therefore, reverse LBOs, which are often more cash constrained than other public companies (Jensen, 1986), will have relatively low levels of working capital. Companies that make the same revenue with lower working capital levels, are more efficient.
3. Cash flow is calculated by subtracting capital expenditures from EBITDA. Cash flow is an indicator for cash flow that is available to capital suppliers (free cash flow) of both debt and equity. Cash flow subtracted by investments in working capital equals free cash flow. Free cash flow is a very important determinant of the value of a company. If the free cash flow increases, the value of a company increases. The decision to calculate cash flow instead of free cash flow is based on the lack of working capital data availability.

All measures are calculated unadjusted as well as industry adjusted (Kaplan, 1991; DeGeorge & Zeckhauzer, 1993; Holthausen & Larcker, 1996). A measure is industry adjusted by subtracting the industry median for that measure from the company's measure. Dividing by sales and by total assets controls for, as shows earlier, divestures in the sample. Measures are therefore calculated by dividing them by total sales and calculated by dividing them by total assets. First, the performance of the reverse LBOs is compared to the performance of the industry. Second, the pattern of the measures is analysed by looking at changes in performance over the different years. This allows to first see if reverse LBOs perform better than companies in the same industry and next investigate whether this is due to performance of the reverse LBOs or to the performance of the industry. (Kaplan, 1991; DeGeorge & Zeckhauzer, 1993; Holthausen & Larcker, 1996)

Analysing the performance of the reverse LBOs will be done, following Kaplan (1991), using medians and therefore a Wilcoxon rank sign test. The reason is that using medians instead of means controls for outliers that may have a large impact on the mean because of the small sample size. The Wilcoxon signed rank test is a nonparametric test, which means it does not assume a certain distribution. It is not likely, because of the relatively small sample size, that a normal distribution can be assumed. All tests are two-tailed, assuming a null-hypothesis that reverse LBOs perform as well as other companies in the same industry. Significance levels of 5% will be used. (Aczel, 2002)

First-day stock price performance is analyzed in two ways: the raw returns and the market adjusted returns, all calculated using closing prices. Raw returns are the returns of the analyzed reverse LBOs. The market-adjusted return is the raw return subtracted by the market return, where the market return is the return on the S&P500 in the same period as the reverse LBO. The S&P500 is used as a proxy for the market return because all companies, except for one, are located in the United States like the S&P500. More importantly, it has been widely used in the existing literature (e.g. Loughran & Ritter, 1995).

Barber and Lyon (1996) investigate different ways to analyze the long-run stock price performance. They argue that to calculate abnormal returns, simple buy-and-hold of a firm should be subtracted by the buy-and-hold return of a reference portfolio or control firm. Buy-and-hold returns (BAHRs) are preferred over cumulative abnormal returns (CARs) because CARs do not include the effect of monthly compounding and are therefore subject to a measurement bias. CARs are a biased predictor of BAHRs: a sample is documented in which all firms have annual stock returns of 0%, the CAR of this sample is 5%. If BAHRs are equal, or smaller than zero, CARs will be higher than BAHRs. Using BAHRs however has three drawbacks when a reference portfolio as a benchmark is used rather than control firms.

1. *New listing bias*: Ritter (1991) has shown that newly listed companies underperform the market in the first couple of years after going public. This effect results in an upward biased abnormal buy-and-hold return. (CARs suffer from new listing bias to a larger degree).
2. *Skewness bias*: It is not uncommon to witness an annual stock price increase of 100% of a single stock. It is however uncommon to see an annual stock price increase of 100% of an entire index. Abnormal returns are calculated as the return on a stock subtracted by the return on an index, therefore the abnormal returns are positively skewed. (CARs also suffer from this problem but to a lesser degree)
3. *Rebalancing bias*: An equally weighted market portfolio is reweighted every period. Stocks of companies that have performed better than the index will have an increased market

capitalization and therefore an increased weight in the index. The weight of these stocks will be decreased by decreasing the amount of shares of that company in the index. Visa versa, the amount of shares of companies that performed worse than the index will be increased. Barber and Lyon (1996) find that companies that performance well in month t-1 have a low performance in month t. The index implicitly favors companies that will perform better than average in that month. This creates a downward bias on the abnormal returns. (CARs do not suffer from this bias).

The last two biased have the largest effect on BAHRs and are therefore generally negatively biased. (Barber and Lyon, 1996).

In accordance with Barber & Lyon (1996), DeGeorge & Zeckhauzer (1993) and Holthausen & Larcker (1996), long-run performance will be analyzed using buy-and-hold returns. The S&P 500 index will be used as benchmark because of two reasons. First, it is not an equally weighted benchmark, which limits the rebalancing bias. Second, the S&P500 consists of US companies like all but one of the companies in the data set that is being used. Since the rebalancing bias is limited, only the two upward biases are present. The results will thus be upwardly biased. Returns are analysed 250, 500, 750 and 1,000 days after the IPO. All tests are calculated by using average and median returns. Averages are tested using student t-tests and medians are tested using Wilcoxon signed rank tests. Significance levels of 5% will be used.

5.3 Accounting performance

The first accounting measure that is being analysed is the profitability. The next table shows the industry-adjusted performance of the reverse LBOs. The first section shows the profitability deflated by sales. The second section shows the outcomes when profitability is deflated by total assets. It is clear that when profitability is deflated by sales, the variance of the differences between the median reverse LBO and median industry profitability is larger than when profitability is deflated by total assets. This is to be expected since the variance of sales it likely higher than that of total assets because sales are effected by among other things: supply and demand for a product. The value of the total assets is largely unaffected by supply and demand. The value of total assets is based on accounting rules, not on market prices, which makes the values more rigid.

The figures seem to indicate that reverse leveraged buyouts are more efficient than their industry counterparts in the first two years after going public. This is however only significant in the first year after going public when EBITDA is deflated by sales. More importantly, is the pattern of continuously decreasing industry-adjusted EBITDA. Reverse LBOs seem to lose their ability to outperform their industries after going public.

Table 5:

The industry-adjusted accounting profitability, as measured by EBITDA, for a group of reverse LBOs.

Industry adjusted measure	Year				
	0	1	2	3	4
EBITDA ^a / Sales	N=31	N=49	N=52	N=58	N=58
Percentage difference	31,9%	27,4%	10,1%	-4,1%	-13,2%
P-value (2-tailed)	0,254	0,050 ^b	0,769	0,419	0,344
EBITDA ^a / Total Assets	N=32	N=51	N=54	N=60	N=58
Percentage difference	16,0%	27,6%	17,7%	-0,1%	-2,5%
P-value (2-tailed)	0,597	0,129	0,353	0,347	0,070

a) Earnings Before Interest Taxed Depreciation and Amortization (EBITDA) is calculated by subtracting costs of goods sold and operating expenses from sales.

b) Significant at 5% level.

The next table shows the efficiency of the reverse LBOs using two different measures: capital expenditures and working capital. The median capital expenditures of the reverse LBOs, although not significant, are 40,5 and 44.9%, depending on the measure used, lower than the median capital expenditures of its industries in the year of the IPO. The lack of significant results is likely due to the small sample. The capital expenditures are predominately negative in the rest of the years, although less pronounced and not significant. Capital expenditures are calculated by determining the difference between the values of fixed assets in two years, next the depreciation and amortization of fixed assets are added. In the case of write downs, it looks as if there has been a large cash outflow because the value of the assets in the second year is lower, while this is in fact only due to accounting write-downs. This is however different from Kaplan (1989) who expects write-ups and therefore does not analyze the year of the IPO. The outcome is not dependent on the whether the measure is deflated by sales or total assets. This implies that write-ups cannot be the only factor influencing the outcomes. If this were the case, the effect would have been smaller when deflating by total assets because capex and write-downs directly effects total assets and not sales. Most industry adjusted capital expenditure measures are, as expected, negative. Although not significant, this might be an indication that reverse LBOs invest less in fixed assets than their industry counterparts in the first four years after going public.

The table indicates that working capital levels are, even though not always significant, smaller for reverse LBOs than for its industry counterparts. The fact, however, that the differences are increasing in the second, third and fourth year after going public is unexpected. The differences between the reverse LBOs and the industry are significant in the third and fourth year after going public when sales are used to deflate working capital this adds to the before mentioned pattern. One would expect that if

reverse LBOs use working capital more efficient they would continue to do so, or the efficiency would decrease not increase.

Reverse LBOs seem to invest less in tangible fixed assets than their industry counterparts. This might indicate that the possible outperformance of the LBO during the buyout companies is not due to capital expenditures that are postponed until after the buyout period. Adding to this is that reverse LBOs working capital levels seem to be lower, indicating that reverse LBOs are indeed more efficient than their industry counterparts.

Table 6:

The industry-adjusted accounting efficiency, as measured by capital expenditures and working capital, of a group of reverse LBOs.

Industry adjusted measure	Year				
	0	1	2	3	4
CAPEX ^a / Sales	N=34	N=53	N=56	N=61	N=65
Percentage difference	-40,5%	8,9%	-7,6%	-8,7%	-17,0%
P-value (2-tailed)	0,367	0,494	0,462	0,353	0,831
CAPEX ^a / Total Assets	N=35	N=55	N=58	N=63	N=65
Percentage difference	-44,9%	-12,1%	-3,8%	-8,2%	3,7%
P-value (2-tailed)	0,153	0,668	0,860	0,309	0,880
Working Capital ^b / Sales	N=25	N=45	N=51	N=45	N=52
Percentage difference	-11,0%	-9,0%	-1,2%	-13,8%	-37,0%
P-value (2-tailed)	0,219	0,370	0,786	0,020 ^c	0,014 ^c
Working Capital ^b / Total Assets	N=25	N=45	N=53	N=47	N=52
Percentage difference	1,1%	6,7%	-3,5%	-9,6%	-18,5%
P-value (2-tailed)	0,667	0,623	0,648	0,220	0,061

a) Capital expenditures (CAPEX) are investments made in tangible and intangible assets excluding cash in- and outflows resulting from acquisitions and divestures.

b) Working capital is calculated as follows: inventory + debtors + other current assets – creditors – other current liabilities.

c) Significant at 5% level.

The next table shows the industry-adjusted cash flow of the reverse LBOs. Reverse LBOs seem to perform better in the first 2 years after going public, the performance is however only significant in the first year after going public. The performance does decrease from the first year after going public until the fourth year after going public.

Table 7:

The industry-adjusted cash flow, as measured by EBITDA - capital expenditures, of a group of reverse LBOs.

Industry adjusted measure	Year				
	0	1	2	3	4
Cash Flow ^a / Sales	N=31	N=49	N=52	N=58	N=58
Percentage difference	5,9%	37,8%	19,5%	-17,1%	-24,7%
P-value (2-tailed)	0,465	0,016 ^b	0,502	0,707	0,147
Cash Flow ^a / Total Assets	N=32	N=51	N=54	N=60	N=58
Percentage difference	33,0%	59,2%	41,3%	18,7%	-20,6%
P-value (2-tailed)	0,557	0,038 ^b	0,164	0,789	0,206

a) Cash flow is calculated by subtracting CAPEX from EBITDA. Capital expenditures (CAPEX) are all cash in- and outflows resulting from investments in tangible and intangible fixed assets. EBITDA is calculated by subtracting costs of goods sold and operating expenses from sales.

b) Significant at 5% level.

The next table gives an overview of the pattern of the different measures over time. The measures are presented unadjusted. This pattern shows how the measures differ over time. This will explain if the changes in outcomes over time of the industry adjusted measures are due to changes of the industry or changes of the reverse LBOs.

When looking at the change in profitability measure it becomes clear that the profitability of the reverse LBOs is continuously decreasing, but only the change in the third to fourth year is significant. The change between the year of the IPO and the first year after the IPO, measured by deflating EBITDA by total assets, is the only exception. In accordance with the industry-adjusted profitability, the decline in profitability increases over time.

The large increase in capital expenditures from the year of the IPO to the first year after going public indicate that the low industry- adjusted capital expenditures in the year of the IPO are due to the reverse LBOs. This is in accordance with asset write-downs. The decreasing working capital levels from the second to the third and the third to the fourth year indicate that the increase of industry-adjusted working capital efficiency is due to efficiency of the reverse LBOs. Only one of the efficiency measures, however, is significant. The changes in cash flow, although not significant, also support the conclusion that the decrease in cash flow is due to changes of the reverse LBOs instead of changes in the industries.

Investigating the changes in performance of the industry (not presented) supports the conclusion that the changes in profitability, efficiency and cash flow are due to changes in performance of the reverse

LBOs rather than because of changes in performance of the industry counterparts. This indicates that reverse LBOs, in the first years after being public, perform better than their industry counterparts. The outperformance is due to the performance of the reverse LBOs and not to the performance of the industry. The decreasing industry performance shows that reverse LBOs lose their ability to outperform their industry after returning public.

Table 8:

The unadjusted profitability, efficiency and cash flow, as measured by EBITDA, capital expenditures, working capital and EBITDA - capital expenditures, of a group of reverse LBOs.

Measure	From year i to year j			
	0 to +1	+1 to +2	+2 to +3	+3 to +4
EBITDA ^a / Sales	N=32	N=51	N=55	N=57
Percentage change	-13,9%	-4,1%	-9,3%	-16,8%
P-value (2-tailed)	0,432	0,918	0,054	0,048 ^e
EBITDA ^a / Total Assets	N=32	N=51	N=55	N=57
Percentage change	4,7%	-3,4%	-7,3%	-7,9%
P-value (2-tailed)	0,350	0,316	0,230	0,050 ^e
CAPEX ^b / Sales	N=36	N=55	N=58	N=64
Percentage change	56,0%	-1,8%	12,3%	-7,4%
P-value (2-tailed)	0,040 ^e	0,695	0,862	0,247
CAPEX ^b / Total Assets	N=36	N=55	N=58	N=64
Percentage change	49,4%	10,2%	6,7%	-1,6%
P-value (2-tailed)	0,061	0,887	0,777	0,288
Working Capital ^c / Sales	N=26	N=47	N=44	N=46
Percentage change	2,4%	16,2%	-21,5%	-24,2%
P-value (2-tailed)	0,869	0,561	0,587	0,619
Working Capital ^c / Total Assets	N=26	N=47	N=44	N=46
Percentage change	24,5%	-9,9%	-14,2%	-11,2%
P-value (2-tailed)	0,991	0,727	0,856	0,814
Cash Flow ^d / Sales	N=32	N=51	N=55	N=57
Percentage change	12,3%	-13,7%	-16,9%	-10,0%
P-value (2-tailed)	0,614	0,888	0,348	0,030 ^e
Cash Flow ^d / Total Assets	N=32	N=51	N=55	N=57
Percentage change	6,3%	-6,3%	-15,0%	-25,7%
P-value (2-tailed)	0,852	0,298	0,307	0,032 ^e

a) Earnings Before Interest Taxed Depreciation and Amortization (EBITDA) is calculated by subtracting costs of goods sold and operating expenses from sales.

b) Capital expenditures (CAPEX) are investments made in tangible and intangible assets excluding cash in- and outflows resulting from acquisitions and divestures.

c) Working capital is calculated as follows: inventory + debtors + other current assets – creditors – other current liabilities.

d) Cash flow is calculated by subtracting CAPEX from EBITDA. Capital expenditures (CAPEX) are all cash in- and outflows resulting from investments in tangible and intangible fixed assets. EBITDA is calculated by subtracting costs of goods sold and operating expenses from sales.

e) Significant at 5% level.

5.4 Stock price performance

The last section has shown that the accounting performance, in terms of EBITDA and cash flow, is high in the first years and decreases over time. The median reverse LBO performs worse than the industry in the fourth year after the IPO. This section analyses the stock price performance of the reverse LBOs. Ritter (1991) finds that IPOs tend to underperform comparable firms in the long run. Large IPOs, however, experience normal performance. Since reverse LBOs are often large IPOs this anomaly is not expected. Therefore is the stock price performance an indicator for if investors anticipated the witnessed accounting performance. If investors anticipated the witnessed accounting performance, the stock price will not outperform the market. The stock price will underperform the market if the accounting performance of the reverse LBOs is worse than expected. In case the accounting performance is better than anticipated, outperformance of the stock price is expected.

The next table gives an overview of the raw buy and hold returns of the 66 reverse LBOs for which data was available. First, it can be seen that the performance of reverse LBOs in the first day is not significantly different from zero, which often happens in the case of IPOs because of mispricing (Loughran, Ritter and Rydqvist, 1994). Since mispricing is not present it can be assumed that the long-run performance is not a correction on the first-day performance. Movements in the stock price are not due to the impresario effect. It also becomes clear that the buy and hold returns, especially average returns, are increasing over time. But also median raw buy and hold returns are significantly different from zero.

Table 9:

Average and median raw buy and hold returns of 66 reverse LBOs. Significance of average (median) returns are tested using one sample student t-test (Wilcoxon test).

Raw returns	First day	Year 1	Year 2	Year 3	Year 4
Average	0,35%	28,85%	66,55%	76,92%	106,36%
P-value (2-tailed)	0,512	0,000 ^a	0,000 ^a	0,000 ^a	0,000 ^a
Median	0,00%	36,93%	45,96%	33,45%	50,72%
P-value (2-tailed)	0,960	0,000 ^a	0,000 ^a	0,001 ^a	0,000 ^a

a) Significant at 5% level.

Raw returns increase over time. This might however be due to a well performing economy as a whole. To control for this, market-adjusted returns are calculated and analyzed. The next table shows these market-adjusted returns. Again, the first days' performance is not significantly different from zero. This indicating that reverse LBOs are not significantly mispriced at the IPO.

The pattern for averages is also quite similar to the raw returns, indicating that the decline in accounting performance is less sharp than anticipated. When looking at median market-adjusted returns a different pattern is present however. Especially in the last two years the pattern is different from the patterns of the raw returns. The median market-adjusted return is negative indicating that the decrease in accounting performance is sharper than anticipated in the last year. The conclusions based on the averages and medians therefore contradict. The different conclusions are due to the high variance in returns in year four. Outliers result in a high mean while these outliers do not influence the median. A Q-Q plot (not presented) shows that the returns in the last year are not normally distributed. Therefore the results based on average values are likely not correct. Conclusions will be based on median values: reverse LBOs outperform the market in terms of stock prices. The outperformance however declines and is even negative in the fourth year after going public.

Table 10:

Average and median market adjusted buy and hold returns of 66 reverse LBOs. Buy and hold returns are market-adjusted by subtracting the S&P500s' buy and hold returns from the buy and hold returns of the reverse LBOs. Significance of average (median) returns are tested using one sample student t-test (Wilcoxon test).

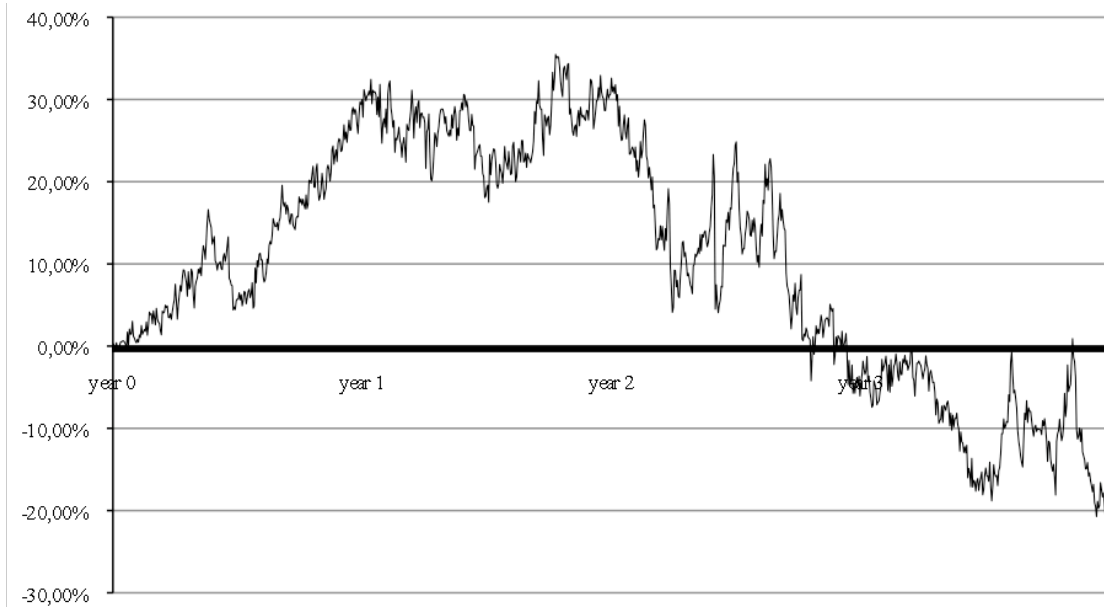
Market adjusted returns	First day	Year 1	Year 2	Year 3	Year 4
Average	0,50%	23,47%	49,26%	44,43%	44,20%
P-value (2-tailed)	0,335	0,001 ^a	0,003 ^a	0,018 ^a	0,080
Median	0,28%	29,01%	31,07%	2,40%	-5,65%
P-value (2-tailed)	0,742	0,001 ^a	0,008 ^a	0,129	0,742

a) Significant at 5% level.

The next graph gives shows the market-adjusted buy-and-hold returns of the 66 investigated reverse LBOs. The graph show that the market-adjusted buy-and-hold returns increase until the second year after going public and are positive until the third year after going public.

Graph 3:

Median market-adjusted buy and hold returns of 66 reverse LBOs. Buy and hold returns are market-adjusted by subtracting the S&P500s' buy and hold returns from the buy and hold returns of the reverse LBOs.



6 Conclusion

The objective of this thesis was to investigate the performance of reverse LBOs in the first four years after going public. The analysis is conducted using data on 69 reverse LBOs. The accounting performance of the reverse LBOs is investigated by looking at: profitability, efficiency and cash flow. The stock price performance of these reverse LBOs is examined to see if investors anticipated the witnessed accounting performance pattern.

Reverse LBOs seem to perform better in terms of profitability and cash flow than their industry counterparts in the first two years after going public. The accounting performance however declines from the year of the IPO until four years after the IPO. Industry-adjusted accounting performance is even negative in the third and fourth year after going public. This is consistent with DeGeorge and Zeckhauser (1993) who find that the IPO coincides with a peak in operating performance. Holthausen and Larcker (1996) also find that the accounting performance decreases over time, although less sharp. They do not report negative industry-adjusted accounting performance in the third and fourth year after going public. The superior performance in the first two years indicates that LBO lifetime is not constrained by the performance of reverse LBOs. The decreasing outperformance however indicates that the outperformance of reverse LBOs is fuelled by factors that LBOs are exposed to during the private period. This is consistent with Kaplan (1991), who argues that a leveraged buyout is shock therapy on a company. Efficiency improving measures are one-time events.

Reverse LBOs seem to use lower levels of capital expenditures than their industry counterparts especially in the year of the IPO. This is at best partly, but not entirely due to assets write-ups. Capital expenditures are predominantly lower, however not significant, in the rest of the four years after going public. This might indicate that reverse LBOs invest less in intangible fixed assets in the first four years after going public. This is consistent with Muscarella and Vetsuypens (1990) and Smith (1990) who find that LBOs become more efficient during the buyout period. The findings are also consistent with Holthausen & Larcker (1996) who find somewhat lower, but no significant, industry-adjusted capital expenditures for reverse LBOs in the four years after the IPO. The working capital levels are also lower, but not significant, than the levels of their industry counterparts. This is in line with Holthausen and Larcker (1996) who find significant lower industry-adjusted working capital levels. The changes in working capital levels however show an unexpected pattern: the differences between the reverse LBOs and their industry counterparts increase over time. This indicates that reverse LBOs start managing their working capital levels better after the IPO. This is surprising since Smith (1990) finds that LBOs increase their efficiency during the buyout because of improved use of working capital.

Studying the first-day performance of reverse LBOs holds very interesting results: the returns are not significantly different from zero. This is inconsistent with Loughran, Ritter & Rydqvist (1994) and Ritter (1998) and many others who find a positive significant first-day returns for IPOs. It is however consistent with Holthausen and Larcker who also do not find significant first-day returns for reverse LBOs. It is also in line with Hogan, Olgen and Kish (2001) who find that the first-day performance for reverse LBOs is lower than for other IPOs. The lack of underpricing is most likely due to the fact that reverse LBOs have previously been public. Information from before the buyout gives investors more information. The information asymmetry between investors is smaller.

The market-adjusted stock price is positive in the first three years after going public and negative in the fourth. Holthausen & Larcker (1996) also find that reverse LBOs show positive market-adjusted stock price performance in the first three years and negative in the fourth year after going public. It is also consistent with Drahen & Faleiro (2007) who find positive market-adjusted returns for reverse LBOs in the first three years after going public. Mian & Rosenfeld (1993) also find that 85 reverse LBOs show significant outperformance in the first three years after going public. However, they note that the outperformance is largely driven by takeovers, which do not occur in our sample. This might explain the market-adjusted stock price performance turning negative in the fourth year after going public. Cao & Lerner also find that 526 reverse LBOs perform better than the market, companies in the same industry and other IPOs. The outperformance however declines over time like the stock performance of the reverse LBOs in our sample. The positive market-adjusted stock price performance indicates that investors underestimated the superior performance in the first two years. The negative market-adjusted performance in the fourth year however also indicates that investors underestimated the decrease in performance.

The thesis has some limitations, which, if overcome would further improve the robustness of the results.

- Not many results are significant, which is mainly due to the variance in the different measures in the data set. A larger data set might solve this problem.
- The long-run performance is calculated using the S&P500 as the benchmark. More benchmarks should be used in order to come to more robust results. The research should be conducted by comparing the long-run stock price performance of the reverse LBOs to different portfolios: a Portfolio of industry counterparts, a portfolio matched by size and a portfolio matched by book-to-market value.
- The long-run performance can also be calculated using CARs in addition to BAHRS. This, even though CARs are biased, might improve the robustness of the results.
- The reverse LBOs that go public might be successful LBOs, which limits the generalization abilities of the results.

7 Recommendations

The high variance of the data results in a lack of significant results, which makes it difficult to draw conclusions. This is not desirable. Especially data on working capital is not available in many cases. Further research should therefore concentrate on finding better data. If more stock price information is available, better conclusions can be drawn from the data. When working capital data is available research can concentrate on free cash flows instead of cash flows, which gives a better inside into the actual cash a company generates.

Future research might also differentiate between sponsors. It might be possible that certain sponsors are indeed better at improving performance than others. The performance of reverse LBOs of a certain sponsor will be compared to the performance of reverse LBOs of other sponsors. If LBOs performed by certain sponsors outperform LBOs of other sponsors, differences between the different sponsors can be identified.

Another extension of this line of research might be to compare the performance of reverse LBOs that were public before the buyout period to the performance of VC-backed IPOs. Because these two groups are quite similar it should be interesting to see what exactly the effect of small differences such as age and size is.

To really understand what factors influence performance during the buyout period, thorough case studies should be conducted. Case studies should be conducted on LBOs on mature steady state companies, so the performance improving factors in a typical LBOs can be identified.

8 References

- B. Barber and J. Lyon, 1996, *Detecting long-run abnormal returns: The empirical power and specification of test statistics*, Journal of financial economics 43, pp. 341-372.
- C. Barry, R. Gilson and J. Ritter, 1998, *Initial public offerings and the fraud on the market*, Stanford and University of Florida unpublished working paper.
- R. Beatty and I. Welch, 1996, *Issuer expenses and legal liability in initial public offerings*, Journal of law and economics 39, pp. 545-602.
- J. Booth and L. Chua, 1995, *Ownership dispersion, costly information, and IPO underpricing*, Journal of financial economics 41, pp. 291-310.
- A. Brav and A. Gompers, 1997, *Myth or reality? The long-run underperformance of initial public offerings: evidence from venture and nonventure-backed companies*, Journal of finance 52, pp.1791-1821.
- J. Cao and J. Lerner, 2006, *The performance of reverse leveraged buyouts*, National bureau of economic research working paper.
- T. Campbell, 1979, *Optimal investment financing decisions and the value of confidentiality*, Journal of financial and Quantitative analyses 14, pp. 913-924.
- T. Chemmanur and Paolo, 1995, *Information production, private equity financing, and the going public decision*, Columbia University working paper.
- F. DeGeorge and R. Zeckhauser, 1993, *The reverse LBO decision and firm performance: theory and evidence*, Journal of finance 48, pp.1323-1348.
- H. Demsetz, 1983, *The structure of ownership and the theory of the firm*, Journal of law and economics 26, pp. 375-390.
- C. Drathen and F. Faleiro, 2007, *The performance of leveraged buyout-backed initial public offerings in the UK*, London Business School working paper.
- K. Hogas, G. Olson and R. Kish, 2001, *A comparison of reverse leveraged buyouts and original initial public offers: factors impacting their issuance in the IPO market*, The financial review 38, pp. 1-18.
- E. Fama and M. Jensen, 1983, *Separation of ownership and control*, Journal of law and economics 26.
- R. Holthausen and D. Larcker, 1996, *The financial performance of reverse leveraged buyouts*, Journal of financial economics 42, pp. 293-332.
- R. Ibbotson, J. Sindelar and J. Ritter, 1994 (updated in 2002), *The market's problem with the pricing of initial public offerings*, Journal of applied corporate finance, pp. 66-74.
- B. Jain and O. Kini, 1995, *Venture capitalist participation and the post issue operating performance of IPO firms*, Managerial and decision economics 16, pp. 593-606.
- N. Jegadeesh M. Weinstein and I. Welch, 1993, *An empirical investigation of IPO returns and subsequent equity offerings*, Journal of financial economics 34, pp.153-175.
- M. Jensen, 1986, *Agency costs of free cash flow, corporate finance, and takeovers*, American economic review 76, pp. 323-329.
- M. Jensen^a, 1989, *The eclipse of the public corporation*, Harvard business review 67, pp. 61-74.
- M. Jensen^b, 1989, *Active investors, LBOs, and the privatization of Bankruptcy*, Journal of applied corporate finance 2, pp. 35-44.
- M. Jensen and W. Meckling, 1976, *Theory of the firm: Managerial behavior, agency costs and ownership structure*, Journal of financial economics 3, pp. 305-360.

- C. Jones and M. Rhodes-Kropf, 2003, The price of diversifiable risk in venture capital and private equity, Working paper, Columbia University.
- S. Kaplan, 1988, The effects of management buyouts on accounting performance and value, *Journal of financial economics* 24, pp. 217-254.
- S. Kaplan, 1989, *Management buyouts: Evidence on taxes as a source of value*, *Journal of Finance* 44, pp. 611-632.
- S. Kaplan, 1991, *The staying power of leveraged buyouts*, *Journal of Financial Economics* 29, pp. 287-313.
- S. Kaplan and A. Schoar, 2005, *Private equity performance: returns, persistence, and capital flows*, *Journal of finance* 60, pp. 1791-1824.
- S. Kaplan and P. Strömberg, 2008, *Leveraged buyouts and private equity*, NBER working paper, no. 14207.
- M. Keloharju, 1993, *The winner's curse, legal liability, and the long-run performance of initial public offerings in Finland*, *Journal of financial economics* 34, pp. 251-277.
- Kohlberg, Kravis and Roberts & Co., 1989, *Leveraged buy-outs*, *Journal of applied corporate finance* spring 1989, pp. 64.
- J. Lerner and A. Schoar, 2004, *The illiquidity puzzle: Theory and evidence from private equity*, *Journal of Financial Economics* 72, pp. 3-40.
- T. Loughran and J. Ritter, 1995, *The new issues puzzle*, *The journal of finance* 50, pp. 23-51
- T. Loughran, J. Ritter and K. Rydqvist, 1994, *Initial public offerings: international insights*, *Pacific-basin finance journal* 2, pp. 165-199.
- L. Lowenstein, 1985, *Management buyouts*, *Columbia Law review* 85, pp. 730-784.
- R. Merton, 1987, *Presidential address: a simple model of capital market equilibrium*, *Journal of finance* 42, pp. 483-510.
- S. Mian and J. Rosenfeld, 1993, *Takeover activity and the long-run performance of reverse leveraged buyouts*, *Financial management* 22, pp. 46-57.
- C.J. Muscarella and M. Vetsuypens, 1990, *The underpricing of 'second' initial public offerings*, *Journal of Financial Research*, pp. 183-192.
- C.J. Muscarella and M. Vetsuypens, 1990, *Efficiency and organisational structure: A study of reverse LBOs*, *Journal of Finance* 45, pp. 1389-1414.
- M. Pagano, F. Panetta and L. Zingales, 1998, *Why do companies go public? An empirical analysis*, *Journal of finance*, pp. 27-64.
- M. Pagano and A. Roëll, 1998, *The choice of stock ownership structure: agency costs, monitoring and the decision to go public*, *Quarterly journal of economics*, pp. 187-225
- R. Rajan, 1992, *Insiders and outsiders: the choice between informed and arm's length debt*, *Journal of finance* 52, pp.507-529.
- A. Rappaport, 1990, *The staying power of the public corporation*, *Harvard Business Review* (Januari/Februari 1990), pp. 96-104.
- J. Ritter, 1987, *The cost of going public*, *Journal of financial economics* 19, pp. 269-281.
- J. Ritter, 1991, *The long-run performance of initial public offerings*, *Journal of finance* 46, pp. 3-27.

- J. Ritter, 1998, *Initial public offerings*, Contemporary finance digest 2, pp. 5-30.
- K. Rock, 1986, *Why new issues are underpriced*, Journal of financial economics 15, pp. 187-212.
- T. Schröder, 2008, *Buyout backed initial public offerings*, University of St. Gallen.
- A. Smith, 1990, *Corporate ownership structure and performance: The case of management buyouts*, University of Chicago
- A. Schleifer and L. Summers, 1988, *Breach of trust in hostile takeovers*, Alan Auerbach ed. Corporate takeovers: Causes and consequences (University of Chicago Press, Chicago, Illinois.
- A. Schleifer and R. Vishny, 1997, *A survey of corporate governance*, The Journal of Finance, Vol. 52, pp. 737-783. A. Subrahmanyam and S. Titman, 1999, *The going public decision*, Journal of finance, pp. 1045-1082.
- L. Zingales, 1995, *Insider ownership and the decision to go public*, Review of economic studies 62, pp.425-448.