

Capital Structure in Norwegian Private Equity Buyouts

Explanations of debt levels in companies acquired by PE companies

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Master Thesis in Financial Economics

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EXECUTIVE SUMMARY

This thesis analyzes the capital structure in companies acquired by Private Equity companies in the period 1997 to 2007 in Norway.

The purpose of the analysis is to see whether debt ratios in the companies that have been acquired by PE companies increase after the year they were acquired compared to the two years before the acquisition. Secondly, the thesis analyses whether the capital structure, specifically the debt levels in companies that have been acquired by PE companies could be explained by other company or market characteristics than what is commonly said to explain debt levels in companies. Finally, the thesis tests whether there is a relationship between the debt ratios and the General Partner commitment as percentage of average personal wealth.

The results show that the differences between debt ratios in the years after the acquisition and the years before the acquisition are not statistically significantly different from zero, and thus one cannot infer that the companies have larger debt ratios after the acquisition than before the acquisition.

Secondly, the analysis of the sample shows that *size* measured by sales revenue and *profitability* measured by EBITDA both are positively related to debt levels, implying that larger companies and companies that are more profitable have larger debt levels. Further, the analysis shows that there is a negative relationship between *asset tangibility* and debt levels, which implies that companies with high asset tangibility have lower debt levels. The analysis showed also that there is a positive relationship between *investment year* and debt levels, which could be interpreted that debt levels have been increasing since 1997 and until 2007.

Finally, the analysis showed that there is a negative relationship between General Partner commitments as percentage of average wealth per partner and General Partner commitments as percentage of average wealth per professional in the PE company, which implies that in this model, the debt levels decrease when General Partner commitment percentages increase. Based on this, one can infer that General Partners who invest a larger portion of their personal wealth in the fund, take on less risk in the buyout process by having lower debt levels.

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1 INTRODUCTION AND MOTIVATION

This thesis is written as the final part of my Master of Science in Economics and Business Administration with specialization in Financial Economics at Norwegian School of Economics and Business Administration. My interest in the Private Equity industry was found during an internship for PricewaterhouseCoopers during the summer of 2008, and I decided early that I wanted to write my thesis on the topic of Private Equity. The complexity of the industry was one of the features that initially attracted me to the topic, and the complexity was also the feature that at several times during the writing process made me wish I had chosen another topic. Gathering the necessary information to this thesis has been really hard work, and I have learnt much about data search and patience, in addition to gaining an insight into a business that was unknown to me prior to my masters degree at NHH.

The data gathering process has been the most challenging part of this thesis, and I would like to thank my thesis supervisor Carsten Bienz for the great guidance when it came to deciding on the specific topic of my thesis, for guidance and good discussions and for putting me in contact with an large investor that has invested in several Norwegian PE funds which gave me information the role of the General Partner and General Partner compensation structure and commitment to the PE fund. I would also like to thank Leo Grünfeld at Menon Business Economics for information on the capital structure companies acquired by PE companies and for additional information on General Partner commitments. I would also like to thank the Norwegian Ministry of Finance and Bjørn Johansen with the Norwegian Tax Administration for help with data on wealth information for partner of PE companies. Finally, I would like to thank my friends, my boyfriend and my family for supporting me and encouraging me during this process.

Marit Hofset Starnes

2 WHAT IS PRIVATE EQUITY?

2.1 DEFINITIONS

Private Equity is by (Brealey, Myers, & Allen, 2006) defined as *“equity that is not publicly traded and that is used to finance business start-ups, leveraged buyouts etc.”* A more thorough description is given by Müller: *“Private Equity investments comprise all equity investments in non-public, closely held companies that face a transformational situation in their corporate development. Apart from providing financial resources, Private Equity investors offer additional management support mainly by advising the management teams of the portfolio companies.”*(Müller, 2008)

In the article *“Why are Buyouts Levered? The Financial Structure of Private Equity Funds”* by (Axelson, Strömberg, & Weisbach, 2007) an overview of typical characteristics of Private Equity firms is provided: *“They are finite-lived limited partnerships who raise equity capital from limited partners before any investment are made and then supplement this equity financing with third party outside financing at the individual deal level whenever possible. General Partners have most decision rights, and receive a percentage of the profits, which is junior to all other securities.”* The General Partners are the professionals in the Private Equity Company and they are in charge of deal sourcing, selection and evaluation, structuring and monitoring, and finally exiting the investments. A large portion of the financing of a deal, especially for buyouts, consists of debt.

2.2 TYPICAL CHARACTERISTICS OF THE PRIVATE EQUITY INDUSTRY

In the following, some characteristics of the Private Equity Industry are provided. The overview is mainly based on characteristics listed in the article *“Why and How to Invest in Private Equity”* published by the European Private Equity and Venture Capital Association (EVCA), however some additional information and explanations are also included.

1) Private Equity investments are made by a dedicated professional team, predominantly in unquoted companies. The team usually consists of several professionals with significant

investment and operational experience. The partners in the PE fund usually have a strong background in areas like e.g. consulting, investment banking and operations. In addition, they have a strong network in different industries, which makes it possible to get good insight into possible companies to invest in.

2) Private Equity investments involve active ownership, which means that the managers of the private equity fund often sits on the board of directors and thus are able to participate in the management of the company. The PE managers often have experience in and knowledge of the industry that the portfolio company works in, and thus they are able to provide guidance and help to the managers of the portfolio company. An other characteristic is the continuous observation and guidance that takes place in the entire ownership period.

3) In Private Equity investments, the PE managers draw capital from a defined pool, i.e. the committed capital of the fund. Most funds are, as explained by (Kaplan & Strömberg, 2009) closed-end vehicles, which implies that the investors are not able to withdraw their capital until the fund is terminated.

4) The relationship between the investors and the PE managers is regulated by a set of contracts and regulations. In addition, profit sharing schemes are present to align the interests of the investor and the PE managers.

5) Investments in PE are usually medium- to long-term investments, and the investor will only get his capital back once the portfolio company is sold or listed. Thus the investments are usually illiquid and the investors usually commit their capital for a period of ten years.

2.3 FIVE DIFFERENT PRIVATE EQUITY CATEGORIES

A company in need for capital can amongst other choose between raising equity in the private and the public market. Public Equity is usually raised on the stock market, which is characterized as being highly efficient and liquid. As explained by (Moon, 2006), most large companies are believed to be able to “*do so smoothly, at almost any time, and at a relatively low cost that reflects investors’ ability to diversify their portfolios.*” However, one paradox of public capital is its availability in good times when it is not really

needed, and its unavailability in downturns when companies really are in need of financing. Especially for small companies, which constitute a majority of the Norwegian market, companies with complex business plans or companies with financial problems, it might be especially difficult to raise public capital. Even for mature companies with stable cash flows, raising equity through the public market might be an unsatisfactory choice. For these types of companies, private equity is the solution.

The term Private Equity has different meanings in different parts of the world. According to the Norwegian Venture Capital Association (NVCA), in Europe, the term Venture Capital can in many situations be used interchangeably with the term Private Equity, thus including all of the five categories seen in Figure 1. In this thesis however, Private Equity will be used as a generic term for both the Venture Capital and the Buyout segment, which is in accordance with common practice in the US.

The main distinction between the Venture Capital (VC) and Buyouts (BO) lies in the maturity of the portfolio companies and hence the investment strategy applied. While the main focus in the VC segment lies on product development, product and market selection and marketing, more prevalent strategies in the BO segment is restructuring, consolidating, utilizing value potentials and internationalization. In the BO segment, the strategy of “buy and build”, where expansion is done through multiple acquisitions, is very common. Figure 1 is made in accordance with the definitions from the article Why and How to invest in Private Equity by (Bance, 2004).

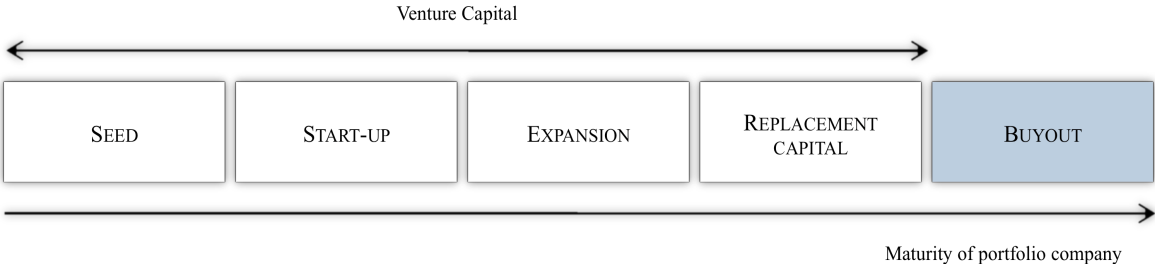


Figure 1: Different segments within Private Equity

Venture Capital

Bance (2004) defines Venture Capital as “the business of building businesses”, i.e. investing in companies that have undeveloped or developing products or revenue. The principal focus of Venture Capital is on young entrepreneurial companies, and often on companies that operate in technological industries. In Venture Capital investments, the initial investment is usually only for a minority stake in the company, however more capital is usually invested in later stages. There are dominantly four phases within the Venture Capital segment, namely Seed, Start-up, Expansion and Replacement capital. In the Seed segment, the capital is raised in order to research, evaluate and develop the business. There is often a great deal of technological and market risk as the product is not finalized and on the market yet. The characteristics of the start-up stage are similar to the seed stage, however, it is also possible that the product is fully developed and that capital is needed in order to get the attention in the market. In the expansion stage, the companies have developed a product or a service and funding is needed to grow and expand. Finally, in the replacement capital stage, funding is needed in order to finance changes in ownership or financial structure.

Buyout

The buyout segment usually involves acquiring a controlling or a majority of shares in a mature company. (Ljungquist, Richardson, & Wolfenzon, 2007) The purpose of the acquisition is often to turn around, expand or restructure a company that has encountered stagnation and that need operational and managerial support in order to increase margins or grow further. Buyout acquisitions are often much larger than venture capital investments, and a large portion of the purchase price will often be financed by debt. The equity ownership will to large degree be concentrated around the PE company and the management of the company. Companies targeted by PE companies in a buyout are predominantly mature, private companies. Active ownership is often the principal key in order to succeed in a buyout, and most buyouts demand active involvement from the general partners of the PE company and collaboration between them and the managers in the portfolio company.

There are several forms of buyouts; the most commonly known one being management buyouts (MBO), where the buyout is executed by the existing management team of the company, usually in collaboration with a Private Equity Fund, and where they together take

over the ownership of the company. The phenomenon of MBOs originate from the US in the 1960s, however, before 1980, MBOs were both infrequent and usually only involved small transactions. (Kaplan S. , 1989) In UK in the 1980s the MBOs resurfaced as a major factor in restructuring the British industry, where a large company or conglomerate were spun off and sold to the managers of the division. (NVCA, 2009). Two somewhat similar concepts are (1) Management Buyins (MBI), which was developed as a mean of changing the ownership of a company in which the managers wanted to sell out and the acquisition is done by the incoming managers in co-operation with a Private Equity firm, and (2) Management Employee Buyout (MEBO) in which a substantial part of the employees and the management acquires shares in the company.

Two other categories of buyouts are Leveraged Buyouts (LBO) and Institutional Buyout (IBO). An LBO is as the name envisions, a term for buyouts in which the equity capital is supported by a significant amount of debt. The rationale behind LBOs lies in the ability to create value through increased leverage. LBOs is a commonly used expression for several kinds of buyouts, as buyouts are commonly known for their higher leverage rate than comparable companies. The term IBO denotes transactions in which a private equity firm acquires and installs its own management, without any collaboration with the existing management team of the company.

Industry specialization

In addition to the focus on a specific maturity or stage of portfolio companies, PE funds can also have an industry specialization. Funds rarely focus on just one industry, but will rather have a small number of industries that they pay close attention to, which often can be based on the funds previous track or the partners' previous experience and knowledge. It is also common to exclude certain industries, based on characteristics such as e.g. cyclicity or industries, that are asset intensive. Based on this, many PE funds avoid investing in companies that are highly influenced by commodity prices, e.g. the petroleum industry. However, in Norway the four industries; Information and Communication Technology (ICT), Petroleum, Life Science and Biotech and New Energy and Clean Tech constitute approximately 70 percent of the all investments made by existing Norwegian PE funds. (NVCA, 2009)

2.4 OVERVIEW OF THE ORGANIZED PRIVATE EQUITY MARKET

In the organized private equity market there are three major players, *investors*, *intermediaries* and *issuers*. The relationship between the different groups of actors is illustrated in Figure 2. In the following, some characteristics of the three groups will be presented and discussed.

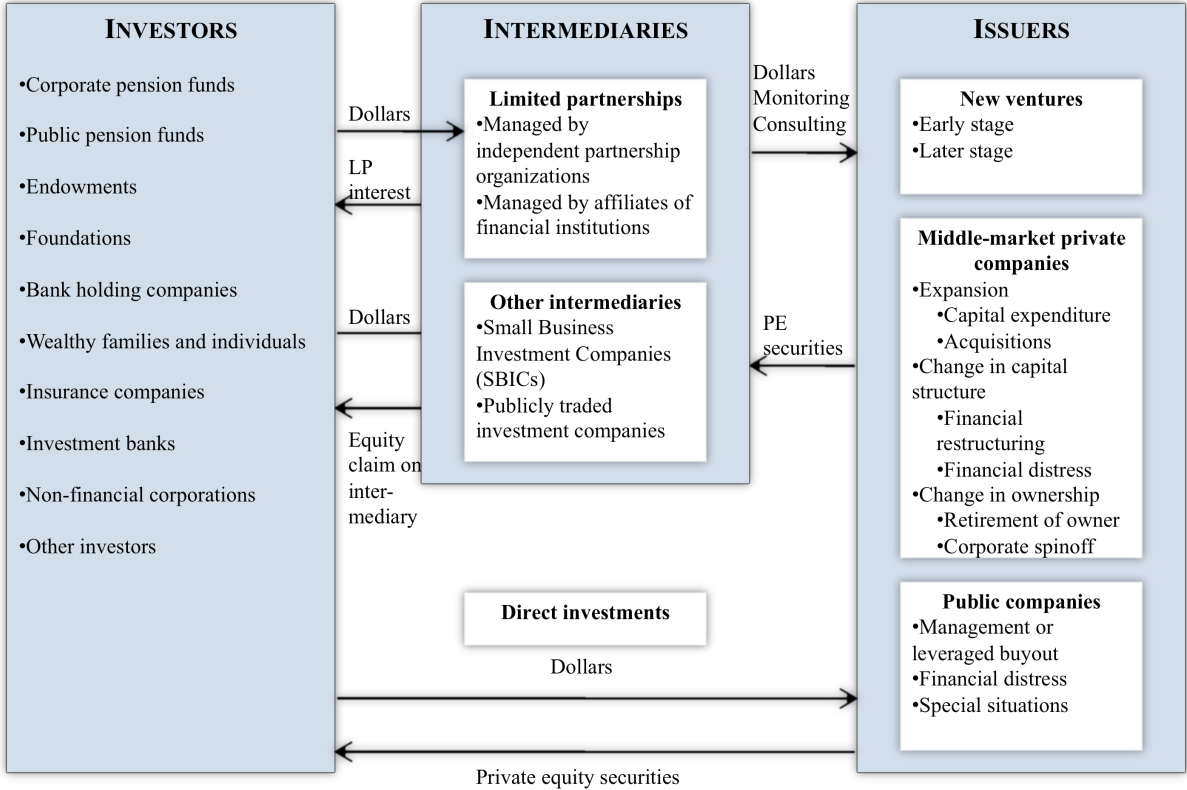


Figure 2: Overview of the organized PE market

Investors

As seen in Figure 2, there are a great variety of different groups of investors in the private equity market. The groups differ substantially when it comes to size, importance and reasons for investing in PE. There are three principal means of investing in Private Equity; (1) investing directly in private companies, (2) investing in Private Equity Funds which allocate the capital to different portfolio companies, and (3) outsourcing the selection of which Private Equity Funds to invest in, by investing in Funds of Funds (FoF). The different means are illustrated in Figure 3.

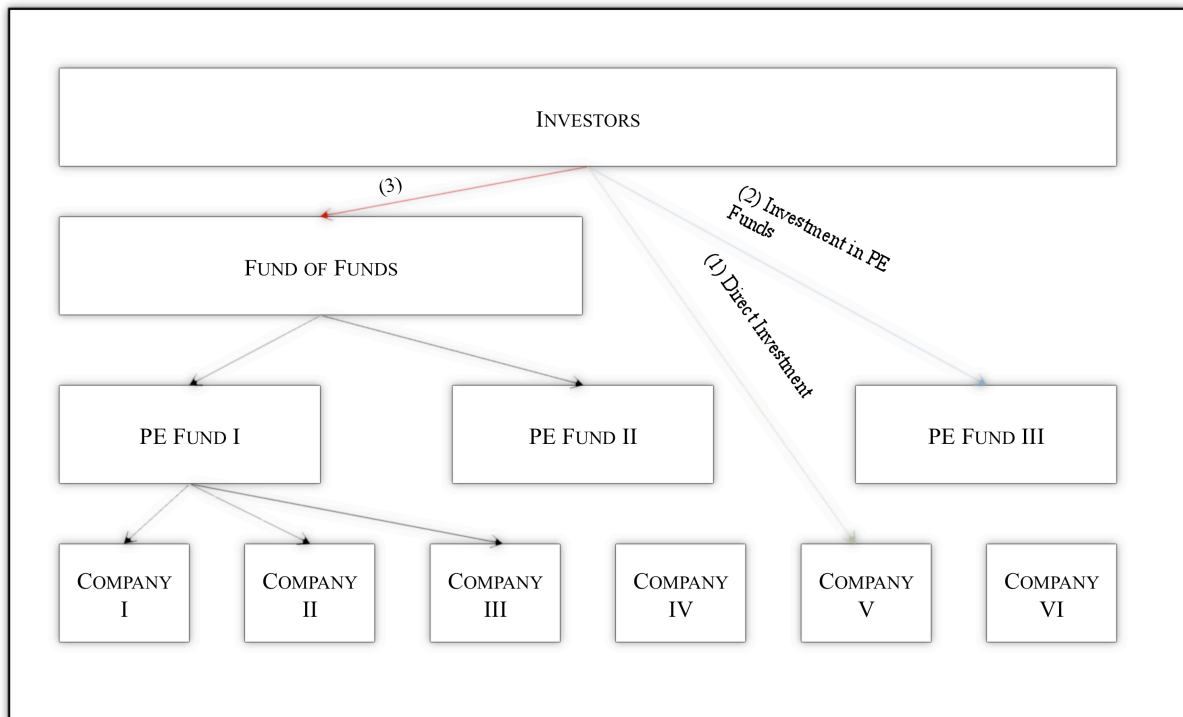


Figure 3: Three different ways of investing in companies

Three means of investing in private equity

(1) The option of investing directly in private companies is illustrated by the green arrow in Figure 3. The investor invests in a company that he or she believes will give a good risk adjusted return on capital. However, direct investments are not suitable for all kinds of investors. It demands a great amount of analysis expertise, previous investment experience, and also the possibility to follow up on the investments. Therefore, such investments are usually reserved for large institutional investors with specialized departments with great due diligence experience and committed personnel.

(2) Secondly, the option of investing in PE Funds is the most common way to invest in Private Equity, as illustrated by the blue arrow in Figure 3. PE Funds are usually organized as Limited Partnerships. In a Limited Partnership, the investor acts as a Limited Partner (LP) and is responsible for *committing* the capital to the PE Fund. The LPs have, as their name entails, limited liability and are not involved in day-to-day operations of the fund. The PE managers act as General Partners (GP), which implies that they have unlimited liability, and are responsible for *finding, evaluation, structuring* and *managing* investments in portfolio

companies. Investments through PE Funds will be the focus area of this thesis, and the relationship between the LP and the GP will be explained more thoroughly in later chapters.

(3) Finally, as illustrated by the red arrow in Figure 3, there is the possibility of outsourcing the selection of Private Equity Funds, by investing in Funds of Funds (FoF). These types of funds have minority investments in several different PE funds at the same time, and their investment strategy involves evaluating, selecting and allocating capital to the best PE managers and funds, rather than the best investment opportunities among private companies. In FoFs, smaller investors are able to pool their resources and thus gain access to a diversified portfolio of different PE Funds, leveraging on the knowledge of the professionals in the FoFs. In the Norwegian market, one example of FoFs is Argentum. Argentum is a government-owned investment company, and is the only fund in Norway that is solely dedicated to investing in PE funds. Through their investments in 21 different PE funds of Norwegian or Nordic origin since their establishment in 2001, they have committed approximately €260 million (NOK 2.26 billion). In addition, in the amendments to Norway's Fiscal Budget for 2009, an additional €230 million (NOK 2 billion) was allocated to Argentum as means of fiscal stimulus in order for them to be able to commit more capital to PE Funds and thus stimulate the economy.

Who are the investors?

Historically, in the US before the late 1970s, PE investments were mainly undertaken by wealthy individuals, industrial corporations and financial institutions investing directly into issuing firms.(Prowse, 1998) In the Activity Survey for Private Equity, Venture Capital and Seed Funds in Norway from 2007 executed by Menon for the Norwegian Venture Capital and Private Equity Association,(NVCA, 2008) it can be seen that in Norway, the funding in the PE and VC environment is still dominated by corporate and private investors. In Figure 4, it can be observed that of the €5,158 million of capital under management by investors in Norway, corporate and private investors constitute approximately 45 percent.

INVESTMENT BY INVESTOR TYPE IN NORWAY 2007

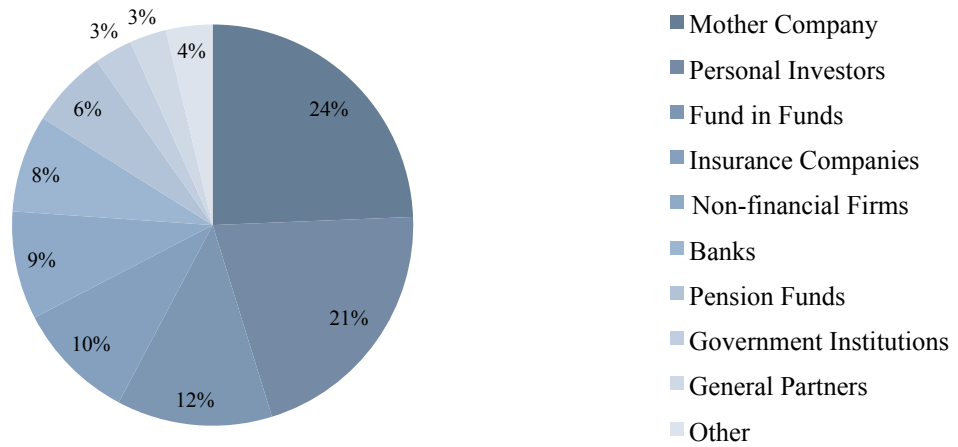


Figure 4: Investment by type of investor in Norway

In contrast, as seen in Figure 5, the largest investors in Europe are pension funds, FoFs and banks with respectively 27 percent, 18 percent and 14 percent of new funds raised in 2006. Institutional investors such as banks, insurance companies and pension funds account for 24 percent of the capital raised in Norway, while in contrast, they constitute a total of 51 percent of the total in Europe.

INVESTMENT BY TYPE OF INVESTOR IN EUROPE 2006

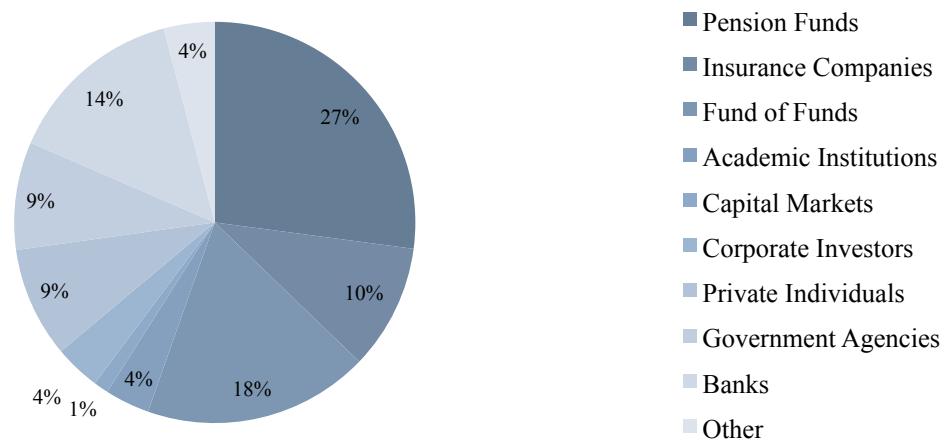


Figure 5: Investment by type of investor in Europe

According to NVCA Yearbook from 2008, the limited exposure to PE and VC by the Norwegian pension funds and insurance companies can also be seen through the small percentage of their total capital under management that is invested in PE, i.e. only approximately 0.7 percent of a total €115 billion. In the initial processes of starting up a PE Fund, the investors commit to provide capital to GPs enabling them to invest in portfolio companies. The minimum commitment is usually \$5 million, however, for some smaller funds the amount could be lower. The commitment period is usually three to six years from the final closing of the fund. However, the lifetime of the partnership is usually ten years, with an option for extension for up to two more years. (Bance, 2004)

Reasons for investing in PE

Most institutional investors invest in private equity for strictly financial reasons. (Fenn, Liang, & Prowse, 1995) It is believed that through active management and involvement in the portfolio companies, the professional managers of a PE Fund are able to get higher returns than passive investors. If looking at PE from a portfolio perspective, the rationale for investing in PE is to improve the risk and reward characteristics of an investment portfolio. Returns in Private Equity investments are often said to be uncorrelated with returns on other instruments, and thus including private equity into a portfolio that already contains e.g. stocks and bonds might lead to diversification benefits. As explained by (Høegh-Krohn, 2008) the inclusion of private equity into a portfolio of other assets will potentially lower the risk of the portfolio and increase the return. One example is provided by (Aaberg & Tennfjord, 2008) where it is explained how the endowment funds of the three Ivy League Schools, Harvard, Princeton and Yale, all have included Private Equity in their portfolios and due to this have been able to get extremely good returns.

Different concepts; committed capital, drawn down capital and invested capital

Three different concepts of capital are commonly used in the PE industry. The committed capital is the sum of all capital that the LPs have committed to pay into the fund, and thus the LPs are obliged to put that amount at disposal to the GPs. Drawn down capital is the portion of the committed capital that the LP has paid out to the fund in order for the GP to invest in portfolio companies. The GP notices the LP of the amount needed, and the LP then has a settled time to place the sum at disposal. The invested capital is the portion of the drawn down capital that is actually invested in portfolio companies. The difference between the drawn down capital and the invested capital is the fees paid out to the GP.

Intermediaries

The different types of intermediaries are found back in the second square of Figure 3. According to (Prowse, 1998), approximately 80 percent of private equity investments are managed by limited partnerships. In a more recent article by (Metrick & Yasuda, 2007) it is stated that “*virtually all private-equity funds are organized as limited partnerships[...]*”. Other types of intermediaries are Small Business Investment Companies (SCICs) and Publicly Traded Investment Companies. These types of intermediaries were much more important in the US in the 1960s and 70s, however, their popularity has decreased in the last decades, and limited partnerships have taken over. The growth of the limited partnership as the major intermediary is “*a result of the limited partnership’s success in mitigating the severe information problems that exists in the market [...]*” (Prowse, 1998, s. 25) Intermediaries organized as Limited Partnerships will be the focus of this thesis, and thus the analysis will not include implications for SCICs and Publicly traded Investment Companies.

As previously mentioned, in a Private Equity partnership, senior managers of a partnership management firm act as the GP. The GP’s investment responsibilities are divided into five stages, (1) deal sourcing, (2) selection and evaluation of investments, (3) structuring and execution, (4) monitoring and value creation and (5) exiting the investment. The first three stages take place before the investment is done, the fourth stage is during the investment and the final stage is exiting the investment. The most important characteristics and task in the different stages are listed in Figure 6.

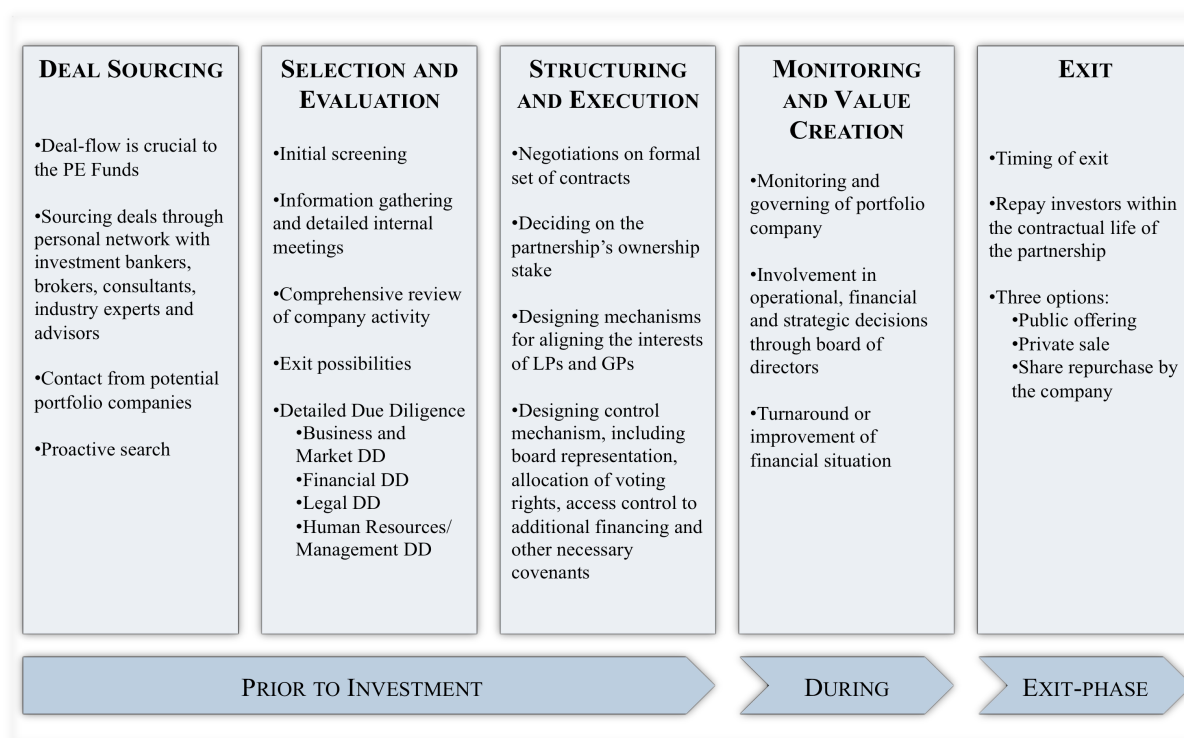


Figure 6: Characteristics of the different stages of the acquisition

General Partner Compensation

According to (Gompers & Lerner, 1999) the compensation to the GP is usually clearly defined in the limited partnership agreement, and will rarely be renegotiated during the life of the fund. In their article named “*Analysis of Compensations in US Venture Capital Partnerships*”, they analyzed whether information on the GPs abilities could explain variation in fixed and variable compensation.

Another analysis of the economics of the PE industry has also been made by (Metrick & Yasuda, 2007), taking a closer look at different fees and profit-sharing rules for managers of PE and VC funds. They found that there are mainly four different fees paid to the GP, where the first, the *management fee* is a fixed fee, i.e. independent of the performance of the fund, and the three other, *carried interest*, *transaction fees* and *monitoring fees* are performance based. In addition, as pointed out by (Covitz & Liang, 2002) GPs also receive distributions as LPs in situations where they have made investments in own funds. These contributions vary, but are relatively small compared to the carried interest.

The management fee is a fixed fee usually meant to cover operating expenses of the partnership, e.g. salary payments and the execution of due diligences in the investment period. There are primarily four different ways of assessing management fees. The calculation varies based on whether the percentage is constant or not over the lifetime of the partnership, and whether the basis of the fee changes after the investment period is over. According to (Metrick & Yasuda, 2007) the historically most commonly used fee involves a constant percentage of committed capital. Thus, e.g. if a fund charge a 2 percent annual management fee (as most funds do) for ten years, the lifetime fees for a ten year fund would make up 20 percent of the committed capital. Recently, a fee schedule of decreasing percentage after the investment period has become more common, as it is said to reflect the reduction in workload after the investment period is over. Thirdly, a solution of constant percentage and a change in the basis for the calculation, i.e. a change from committed capital in the investment period to net invested capital after the investment period, ensures that the GP does not receive management fees for the capital that is committed but not invested. Finally, a fourth type of fee schedule uses both a decreasing percentage after the investment period is over, and also a change from committed capital to net invested capital after the investment period.

The second form of GP compensation is the carried interest, often referred to as “the carry”. The carry is the percentage of the funds’ profit received by the GPs. Of the different variable fees to the GP, the carry provides the largest portion of expected variable revenue (Metrick & Yasuda, 2007) and (Prowse, 1998). The GPs receive a given percentage of the profits from the investments, which is the carry level. (Gompers & Lerner, 1999) found in their analysis of agreements between 419 Venture Capital partnerships that a majority of all (VC) firms had a carry level between 20-21 percent. For BO Funds, (Metrick & Yasuda, 2007) found that all of the 151 funds included in their dataset had a carry of 20 percent. There are however several differences in how the carry is calculated, e.g. differences in the carry basis or the carry level. The level of carry and the carry basis are according to (Metrick & Yasuda, 2007) the main determinants for the actual value of the carry to the GP. In short, two known variations in the carry basis is (1) using profits, i.e. the difference between exit proceeds and committed capital as basis, and (2) using investment capital, i.e. the portion of the committed capital used to make investments, as a basis. In addition, the timing of the carry and whether there is a carry hurdle or clawback agreements are also known variation in the agreements. As explained by

(Axelson, Strömberg, & Weisbach, 2007) the basis for the carry is usually a pool of all the capital in the fund and not an individual carry based on each deal.

In addition to the two mentioned fees, transaction fees and monitoring fees are also common, especially for BO funds. Transaction fee is charged by the BO funds when they buy or sell a portfolio company. The fee is usually included into the purchase price of the portfolio company, and the GP benefits from these fees if they share less than 100% of the fees with the LPs. (Metrick & Yasuda, 2007) Monitoring fees are however charged to the portfolio companies, and in most cases the fees are shared with the LPs, and are usually a small percentage (between 1-5 percent) of the EBITDA of the portfolio company each year.

General partner contribution

Of the 76 partnerships that were surveyed by Venture Economics (1987), 61% report general-partner contributions of exactly 1% of committed capital. This contribution can be, and often is, in the form of a promissory note, rather than cash. Some tax advisors counsel those forming venture-capital partnerships to have the general partners contribute at least 1% in order to be assured of favorable tax treatment. (Sahlman, 1990) The GP then acts as a LP, contributing to the fund and is therefore entitled to a share of the profit of the fund after the fund is finalized.

Restrictive Covenants

In addition to the mechanisms designed to align the interests of the GPs and the LPs, the partnership agreement also includes several covenants that govern the partnership, limiting the GP's activities. In an article by (Gompers & Lerner, 1996), covenants in venture partnership agreements were analyzed. They divide the covenants into three categories: (1) covenants related to the management of the fund, (2) covenants related to the activities of the GP and (3) covenants related to the types of investments that the fund can be involved in. A list over the most common covenants based on the findings of (Gompers & Lerner, 1996) can be seen in Figure 7.

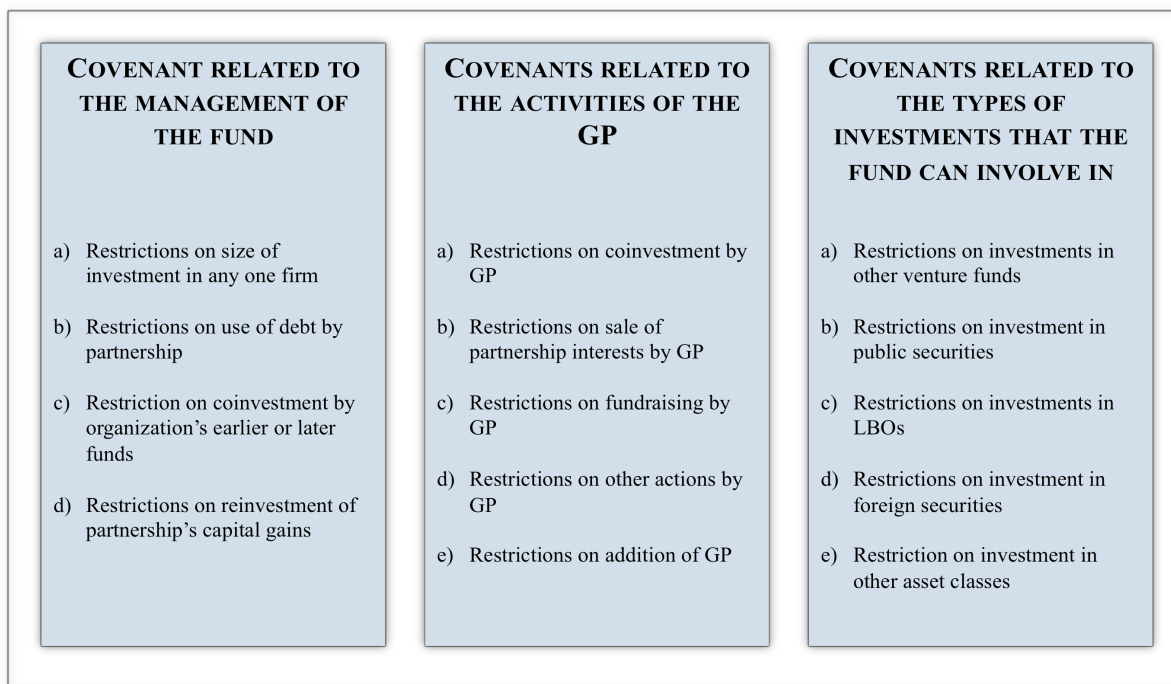


Figure 7: Examples of common covenants in PE buyout agreements

The covenants that restrict investment activities are especially important. When looking at the carry in an option-valuation perspective, one can see that the most important portion of the GP compensation is in the form of an option like claim on the fund's assets. (Axelson, Strömberg, & Weisbach, 2007) The GP receives a percentage of the profits, however in situations where there are losses on investments, the GP does not have to partake. The carry might thus lead to incentive problems as the GP only receives the upside and therefore might be tempted to take on extensive risk. As will be explained more in detail later, the value of the option increases with increased risk, and thus, in the absence of well functioning covenants, the interests of the LP and the GP might differ substantially. The GP might choose to take on substantial amounts of debt, invest in extremely risky projects or invest a larger portion of the fund in one single portfolio company, thus maximizing the expected value of the carry, rather than optimizing the risk adjusted return of the fund. (Sahlman, 1990).

Issuers

When looking back at Figure 3, the different issuers in the PE market can be seen. The main reasons for raising private equity varies from deal to deal, however, one common

characteristic is that the firms are not able to raise funds in other markets, e.g. from the debt or equity markets. As private equity is considered one of the most expensive forms of finance, it is usually one of the last resorts for firms in need of capital. (Prowse, 1998). The equity raised by the issuers can e.g. be used to expand the business to other geographical markets, developing technology and products further, or to rearrange the business.

2.5 THE PRIVATE EQUITY INDUSTRY IN NORWAY

Despite the financial crisis and the changes that have taken place in global capital markets within the last year, 2008 was a historical year for capital raising in the Norwegian PE industry. Nine new funds raised in total more than 16 billion NOK in new capital, equaling approximately €2.1 billion. (NVCA, 2009) At the end of 2008, 107 active PE funds existed in Norway, with approximately 58 billion NOK (€7 billion) of capital under management. In Figure 8 the blue columns show an overview of the amount of new capital raised in each year in the period from 1997 to 2008, and on the right axis the number of new funds raised each year can be seen. This figure also illustrates the increased maturity over the years as can be seen by the growing size of the funds raised.

However, the PE industry was not entirely untouched by the credit crunch, and investments went down in 2008 by on average 25 percent compared to the record year of 2007, and as can be seen in Figure 9, almost down to the same level as in 2006. There was also a fall in divestments compared to the previous years, and only one IPO was conducted in 2007. Figure 9 exhibits the stagnation in growth in investments and divestments that took place in 2008, divided by the different PE categories. The gray area represents buyouts, the light blue expansions and internationalization funds, the red area represents startups and ventures and the dark blue area represents seed activity. The investment activity has not picked up so far during 2009, and is expected to be low also for the near future.

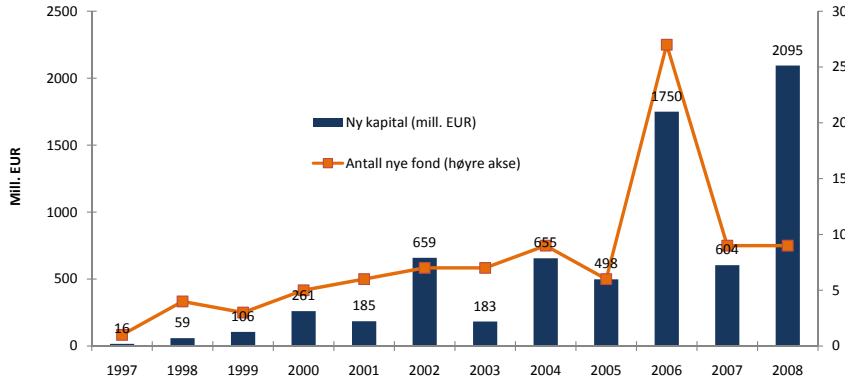


Figure 8: Amount raised in PE funds in Norway in the period from 1997 to 2008 and the number of new funds raised. The figure was copied from NVCA PE Yearbook of 2009

The PE industry in Norway is said to be smaller and younger than the more developed markets in like e.g. neighboring Sweden and the UK.(NVCA, 2008) Until 2008, structure in the industry was also different than in the rest of Europe, with the venture segment being the segment that dominated in Norway, while buyout was the largest in Europe. However, within the last year, the Norwegian PE industry has matured, and today the largest portion of the capital under management is managed by buyout funds.

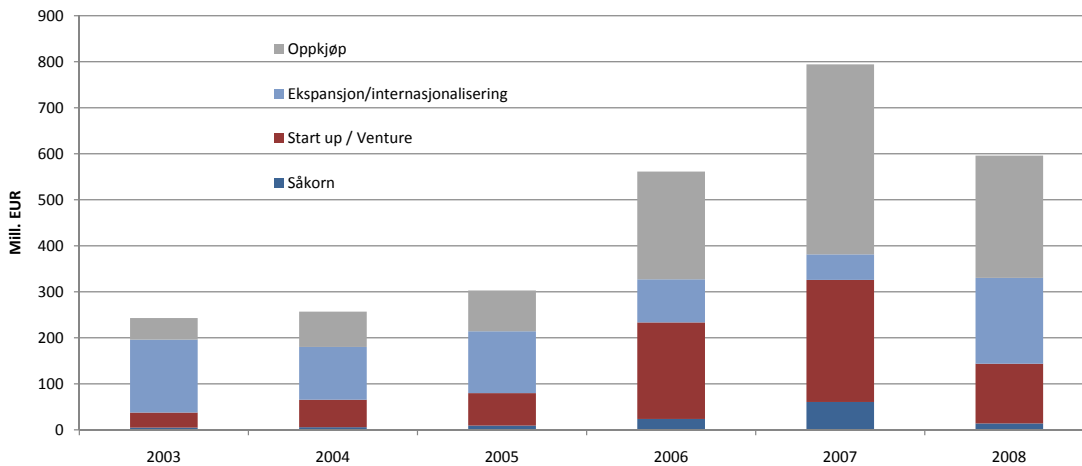


Figure 9: Investments in million Euros by PE segment

3 THEORY

In the following section, several theories concerning capital structure will be presented. The goal is to develop an overview of corporate finance theories and their predictions of capital structure in ordinary companies. This knowledge will be used to see if any of the characteristics that are said to explain capital structure for ordinary companies, also have implications for companies that have been acquired by PE funds.

The term capital structure refers to the combination of different securities that a firm uses to finance its operations and growth, i.e. the choice between e.g. internal financing, debt and equity. The modern theories of capital structure are mostly rooted in the article “*The Cost of Capital, Corporate Finance and Theory of Investment*” by Franco Modigliani and Merton Miller from 1958. The Modigliani Miller irrelevance theorem (MM Proposition 1) states, “*the market value of any firm is independent of its capital structure [...]*” (Modigliani & Miller, 1958). However, the theorem is based on the assumption of perfect capital market conditions, i.e. that there are no taxes, no transaction costs, fully symmetrical information, no bankruptcy costs or costs of financial distress and no incentive issues. (Brealey, Myers, & Allen, 2006). These assumptions cannot be said to be realistic in the real world. However, the MM Proposition 1 can be seen as a basis for understanding how capital structure actually can have an effect on the value of the firm, based on the possible deviations from the perfect market assumptions behind the theory. Conflicting theories on optimal capital structure within the literature is based on aspects such as the effect of involving taxes, agency costs, costs of bankruptcy and financial distress, and asymmetric information.

In the article “The Capital Structure Puzzle”(Myers S. C., 1984) introduced two competing theoretical views to the ideas of Modigliani and Miller, namely the *Trade-off Theory* and the *Pecking Order Theory*. These two theories were at that time new ways of thinking about how companies decided on their capital structure, taking into account the imperfections that were apparent in the market. In the following section, an outline of the theories will be presented.

3.1 THE TRADE-OFF THEORY

As stated by (Myers S. C., The Capital Structure Puzzle, 1984) “*the trade-off theory is a framework in which the firm is viewed as setting a target debt-to-value ratio and gradually moving towards it.[...]*” The target ratio is determined by a trade off between the benefits of debt, e.g. advantages of the tax shield from debt and management discipline, and the disadvantages of increased risk and cost of financial distress. The trade-off theory has its roots in the propositions of Modigliani and Miller. In an article in the American Economic Review in 1963, Modigliani and Miller extended their MM Proposition 1 by including the value of the tax shield from debt financing. (Modigliani & Miller, 1963). According to (Brettel, Breuer, Faass, & Kühn, 2006) and (Frank & Goyal, 2007), the implication of this extension was an optimal debt level of a 100 percent, as there were no offsetting cost of debt. However, as the debt increases, the probability and the costs of bankruptcy also increase, and thus there is a trade off between that and the tax benefits. (Kraus & Litzenger, 1973) This lead to the final trade-off theory by Myers (1984), where the debt-to-value target is fund by balancing the debt tax shield against the cost of financial distress. Thus, as shown in Figure 10, the optimal level of debt in accordance with the trade-off theory is where the marginal benefit from tax-deductible interest payments, i.e. the present value of the interest tax shield, is equal to the marginal increased present value of financial distress.

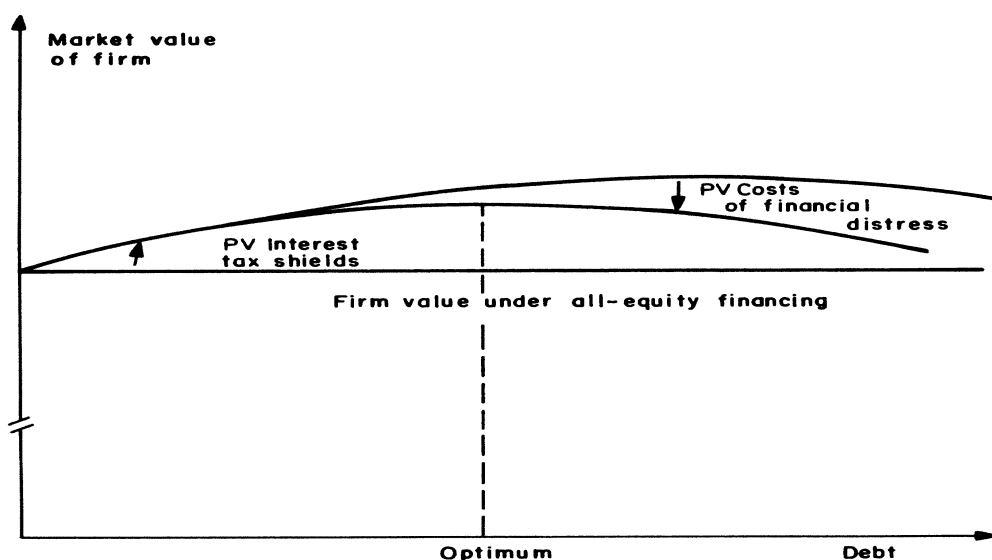


Figure 10: Optimal debt level according to the trade-off theory by Myers (1984)

3.2 THE PECKING ORDER THEORY

As mentioned previously, the pecking order theory also stems from the article by (Myers S. C., 1984) He argues that due to information asymmetry, companies prefer internal financing over external financing, and debt to equity if external financing is used. Equity is said to be information sensitive in the way that it discloses the managers' true beliefs about the state of the company and future growth possibilities. Issuing equity signals that the manager is content with the present share price, and that he might even believe that the company is overpriced. However, a manager that believes his company to be underpriced will never issue equity. Thus, issuing equity signals bad news to the market, as the market then will know that the good companies will abstain from issuing equity. As explained by (Akerlof, 1979) in the article *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, the bad companies (named the Lemons) will drive out the good companies in the market for equity. This effect was also described by (Myers & Majluf, 1984) under the concept of Adverse Selection. Due to information asymmetry and the possibility of adverse selection in the market, the pecking order theory implies that when a company needs to finance a new project or growth, it will first attempt to finance it by internal funds. Secondly, if internal financing is not possible, the company will go on to issue debt. In situations where the planned project is too risky for any lender, or where the company already has exceeded their debt capacity, the final option will be to issue equity.

Companies issuing private equity are a good example of companies that due to information asymmetry often are not able to raise capital in any other way than through issuing equity. Due to the riskiness of the business or the lack of public information, the companies have to resort to issuing equity, despite the costs involved, as they will not be able to get financing in the debt market. Firms that are in the process of undergoing a Leveraged Buyout (LBO) have usually already exceeded their debt capacity, do not have any internal financing options and thus have to rely on raising equity. One choice is then to issue private equity.

In the following section, the Principal-Agent theory will be presented, in order to be able to evaluate the possibility of agency problems when issuing private equity. As explained previously, private equity transactions are usually done using an intermediary, and this intermediary is commonly structured as a Limited Partnership. The principal agent theory will

be used to explain possible agency issues in the market between the investors, intermediaries and the issuers.

3.3 PRINCIPAL-AGENT THEORY

Principal-Agent theory, also known as Agency Theory, describes the conflict of interest that is present in a situation where a principal hires an agent to do a specific task. Jensen and Meckling (1976) defines an agency relationship as “*a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf that involves delegating some decision making authority to the agent.*” The paper by Jensen and Meckling is considered one of the most influential papers on principal-agent issues. According to (Eisenhardt, 1989), the theory is based on the effect of separating ownership on one side and control and responsibility on the other, and the costs related to this separation. The agent makes the decisions for the principal, knowing that what he does, affects both the welfare of himself and the principal. Given that both of the parties act in order to maximize their own utility, there is reason to believe that the agent in some cases will act in his own interest rather than the principal’s, creating what is called an agency conflict. The principal can limit the probability of agency conflicts by establishing appropriate incentives for the agent, e.g. by linking a part of the agent’s income to the welfare of the principal, by monitoring his behavior and by developing contracts and regulations that limit the actions of the agent.

Within the Private Equity market, there are two possible areas for agency problems, (1) between the Limited Partnership and the portfolio company, and (2) within the Partnership, between the Investor (LP) and the GP.

Agency problems between the Partnership and the Portfolio Company

As explained by (Duffner, 2003) possible agency problems between the partnership and the portfolio company can be divided into three main categories, (1) Moral Hazard, (2) Hold Up, and (3) Adverse Selection.

Moral Hazard implies that the agent, i.e. the portfolio company, either uses information that cannot be observed by the principal (hidden information), or performs actions that are not observable by the principal (hidden action) in order to maximize his own utility at the expense of the principal.

Hold Up describes the systematic use of gaps in an unfinished contract in favor of the agent, and later revealing his intentions once the investor has incurred sunk costs and thus are less likely to pull away from the deal (hidden intention).

Finally, the issue of Adverse Selection implies that the principal is not able to separate good agents from bad agents, thus there is hidden characteristics. In the situation between the partnership and the portfolio company, the managers of the portfolio company have full information about their own company and might be tempted to overstate the quality when talking to the GP.

One of the most important insurances against agency problems, and then especially the issue of adverse selection, is the performance of due diligence (DD). Especially for large buyout deals, it is common to do extensive amounts of due diligence work before investing in a portfolio company in order to get an overview and knowledge about the possible future partner. Examples of different analyses are: (1) Commercial DD, (2) Financial DD, (3) Technical DD, (4) Management Audit, and if relevant, (5) Environmental DD. All of these analyses are done, prior to the investments and helps the GP minimize the information asymmetry and thus decrease the possibilities of adverse selection.

(Prowse, 1998) suggests several mechanisms that can ensure that the partnership and the portfolio company have the same interests. The first category includes mechanisms related to *direct control* in order to protect the stake of the partnership and is divided into four mechanisms. The first mechanism is GP representation on the board of directors. GPs can there have a large influence on the management of the firm, and also they have the right incentives to monitor the company, making sure that it is running at its best. Based on the analysis of this relationship in the Norwegian market, it was found that most of the Private Equity funds analyzed had one or more seat in the board during the time of ownership. Secondly, influence can also come through the allocation of voting rights. Investments by Private Equity Funds often have a goal of majority ownership, or at least becoming the largest

non-management shareholder. Thus, the GPs have a large degree of influence in matters where the shareholders are able to vote. The third control mechanism that the GP holds over the portfolio company is the control over access to additional financing. The funding could either be done by the GP's themselves through follow on investments, or through the network of the GP. Finally, in some situations there might be covenants giving the GP the right to inspect and control the portfolio company's facility or books. In total, the mechanisms of control are the most important control aspects of the relationship between the GP and the portfolio company.

The second category includes mechanisms that are related to *performance incentives* for the portfolio company. (Prowse, 1998) provides three examples of mechanisms. Firstly, by including stock ownership as a larger portion of the managers' compensation, one gives the managers of the portfolio company incentives to take care of the company. In later financing rounds, it is also common to use earn-outs in order for the managers of the company to carry a more proportional burden. (Duffner, 2003) Secondly, issuing convertible preferred stock to the Private Equity fund will give incentives to the management, as managers usually hold either common stock or warrants to purchase common stock, and thus the management will be paid second to the partnership, mitigating moral hazard problems. Finally, by including penalties for poor performance, one could diminish excessive risk taking. (Fenn, Liang, & Prowse, 1995)

Agency problems between the Limited Partners and the General Partners

In the Limited Partnership between the Investors (LP) and the professional managers of the Private Equity fund (GP), the LPs act as the principal and the GPs as the agent. The LP is not involved in everyday management of the fund, but has committed a given sum to the fund for the GP to invest. The LPs usually do not have the skill or ability to invest directly in private equity, and thus delegate the responsibility of selecting, structuring, managing and exiting the investment in portfolio companies. In addition, as pointed out by (Gompers & Lerner, 1996) and (Jones & Rhodes-Kropf, 2003), the LPs are prohibited from participating in the management of the fund, as that might endanger their limited liability. Examples of actions that a GP can take in order to further their own interests at the expense of the LP are provided

by (Prowse, 1998): “[...]Not spending enough time on monitoring and advising the portfolio companies, charging excessive management fees, taking unnecessary investment risk and reserving the most attractive investment opportunities for themselves and their associates.”

(Prowse, 1998) provides an overview of the mechanisms that are used to align the LPs and the GPs in the partnership. The mechanisms are divided into two categories: performance incentives and direct means of control. In the relationship between the LP and the GP, the performance incentives are considered most important.

There are two characteristics of the limited partnership between the LP and the GP that lead to incentives for good performance. Firstly, there is the role of reputation. Partnerships have finite lives, and as suggested by (Axelson, Jenkinson, Strömberg, & Weisbach, 2008) one of the reasons is because this gives the GP incentive to build a reputation based on the track record of previous funds. As most funds have a limited life of between ten to thirteen years, and the investment period usually lasts only for five years, most GPs are dependent on raising new funds approximately every five years. Raising new funds is both costly and time consuming, however, the best and the most experienced PE managers are often able to capitalize on their previous experiences and thus raise larger funds faster than their inexperienced competitors. (Metrick & Yasuda, 2007) In addition, it is common for investors to be loyal to fund managers, and thus, managers often turn first to the previous investors when raising a new fund, assuming that the previous partnership was a success.

Secondly, the structure of the GP compensation is a source of performance incentive that motivates the managers. As previously explained, a substantial portion of the managers’ compensation is variable and dependent on the profits of the fund. Through the carry the GPs are able to share the profit, and thus has an incentive to ensure that the investment returns a profit that exceeds the hurdle rate to the investor, in order for them also to share the gain.

(Prowse, 1998) provides two mechanisms that protect the LP’s interests through limiting the actions of the GP. The first mechanism is the existence of covenants that limits the behavior of the GP and which governs the partnership. An overview of the most common covenants is presented in Chapter 2.4 and in Figure 7. The second mechanism is the advisory board of the largest LPs. As the board has some degree of insight into the work of the GP, it enables them to monitor the actions of the GP.

4 EXPLANATIONS OF CAPITAL STRUCTURE

Capital structure is an extensively researched field within the area of corporate finance, and started, as explained in chapter 3, with the capital structure irrelevance theory of Modigliani and Miller (1958), and evolved e.g. with the work of Myers (1984) to include the trade-off theory and the pecking order theory. Since Modigliani and Miller, several firm characteristics have been found to explain capital structure for public firms, such as company size and profitability (Frank & Goyal, 2007). In a study conducted in Norway by (Carlsen & Nilsen, 1993) the theory of relations between leverage and company features was supported. They found that the leverage increased with the size of the company and the amount of long-term assets, while it decreased with profitability. There exist numerous different characteristics, however, the majority of the characteristics are derived from established theoretical frameworks like e.g. the pecking order theory and the trade-off theory, but also more recent theories, such as e.g. the market timing theory by (Baker & Wurgler, 2002). There are several different studies aimed at finding the best suitable characteristics, and several of them end up disagreeing on the relation between the given characteristic and leverage. There exists no finite list of characteristics that are said to explain capital structure, however (Frank & Goyal, 2007) found a set of six factors that according to their analysis was able to explain more than 27 percent of variation in leverage, while the remaining 19 characteristics that they tested only added an additional two percent of explanation power. The core factors that they found and that will be explained here is; (1) median leverage in industry, (2) growth opportunities, (3) asset tangibility, (4) profitability, and (5) company size. In addition, market characteristics such as e.g. debt market liquidity and corporate tax rate are often said to explain leverage. The characteristics' anticipated effect on company leverage is explained in the following section and is based on the theoretical part found in the previous chapter and on the discussions by and (Eisenhardt, 1989)(Axelson, Jenkinson, Strömberg, & Weisbach, 2008)(Frank & Goyal, 2007)(Frank & Goyal, 2008)(Rajan & Zingales, 1995)

4.1 MEDIAN LEVERAGE IN THE INDUSTRY

Different industries are known to have different median leverage ratio. Companies in the same industry are affected by the same market forces, and thus industry affiliation can be said

to reflect a number of otherwise omitted factors that might describe leverage. In situations where the median leverage in an industry also has a strong position, it might be seen as an optimal capital structure and thus be a benchmark for managers determining future leverage. There is usually a *positive* relation between the median leverage found in the industry and the leverage found in any given company. This implies that companies in industries where the median company has high leverage typically tend to have high leverage themselves.

4.2 GROWTH OPPORTUNITIES

According to (Frank & Goyal, 2008), the trade-off theory predicts a *negative* relation between growth and leverage in companies. With increased leverage follows increased possibility of financial distress. A company with large growth opportunities will usually be valued higher, however, in situations of financial distress, they will instantly depreciate if leverage and cost of financial distress is high. Due to this feature, growth companies are often said to best be financed with a larger portion of equity. (Titman & Wessel, 1988) and (Rajan & Zingales, 1995) In addition, with increased leverage comes also the issue of underinvestment. Companies with risky debt have an incentive to underinvest in positive NPV projects as the costs are entirely bared by the shareholders, while they only receive a fraction of the value increase of the company. Investment in positive NPV projects is important for growth companies in order to sustain the growth also into the future. (Myers S. C., 1977) Agency theory also supports the prediction that growth companies have less leverage. As explained by (Frank & Goyal, 2008), agency costs of free cash flow is less for growth companies, and thus the discipline function of debt is less important.

The relationship between leverage and growth has been tested in several cross-sectional studies, and a commonly used proxy for growth opportunities is the ratio of market value to book value of assets. (Adam & Goyal, 2008). Using this proxy, empirical research has shown that there is a significant, *negative* relation between leverage and growth. (Rajan & Zingales, 1995) which is in line with the theoretical expectations.

4.3 ASSET TANGIBILITY

If a company enters into financial distress, intangible assets have a tendency to depreciate quicker than tangible ones. In companies where intangible assets make up a larger portion of total assets, the costs of financial distress will thus be higher than for companies that are able to sell off inventory or machines. Thereby the portion of tangible assets determines the security that the debt holders have in getting their money back in case of financial distress. Tangible assets are easier to collateralize and agency costs of debt are lower for companies with more tangible assets. Thus to conclude, based on both the trade-off theory and agency theories, it is expected to be a *positive* relation between leverage and tangibility of assets. However, according to (Harris & Raviv, 1991), the pecking order theory on the contrary implies that the low information asymmetry related to tangible assets makes issuing equity less costly and based on that, one could expect that the relationship between tangibility and leverage would be *negative*.

The tangibility of assets is usually proxied by the ratio of fixed assets to assets, and has been tested in several studies, and as seen summed up in appendix 3 of (Brettel, Breuer, Faass, & Kühn, 2006), most studies conclude with a *positive* relation. One example is the study conducted by (Rajan & Zingales, 1995) that included data from seven countries. The result of the analysis showed that asset tangibility was *positively* related to leverage in six of the seven countries. The same result was also presented by (Frank & Goyal, 2008). This is in line with the trade-off theory and the agency theory.

4.4 COMPANY PROFITABILITY

When again turning to the static trade-off theory by (Myers S. C., 1984), it predicts that more profitable firms should have more leverage. The tax shield of debt is usually more valuable for profitable companies, in addition to the fact that expected costs of financial distress is also lower. In addition, as explained by (Jensen, 1986), debt also helps discipline the management of profitable companies through limiting free cash flows. Based on this, one could expect that profitability would be *positively* related to leverage. However, according to the pecking order theory, companies prefer to finance projects by the use of internal funds, and thus profitable companies with available cash flow, ceteris paribus, is expected to have relatively lower

leverage than less profitable companies. This implies that profitability would be *negatively* related to leverage. Based on this, there is not really a theoretical expectation of whether there is a positive or negative relation between profitability and leverage. Profitability is usually proxied by return on investment (ROI), return on assets (ROA) or on the ratio of EBITDA to sales. Most empirical studies have found a *negative* relation, thus usually interpreted as in favor of the pecking order theory. However, as explained by (Frank & Goyal, 2008), profitability might also proxy for growth opportunities, and thus this could affect the results. And since the trade-off theory predicts a negative relation between growth and leverage, the predictions are ambiguous.

4.5 COMPANY SIZE

When considering the trade-off theory, larger companies are expected to have lower bankruptcy costs because they have more diversification possibilities opposed to smaller companies and thus have a lower risk of default. In addition, larger firms are often also more mature and thus will often be able to benefit from a stronger reputation in the debt markets (Frank & Goyal, 2008). Also, large companies are thought to have lower agency costs when issuing debt. Based on these theories, one would expect that there is a *positive* relation between company size and leverage, and thus large companies would have a larger optimal leverage than smaller companies.

A commonly used measure of firm size is the natural logarithm of sales (Titman & Wessel, 1988) and (Rajan & Zingales, 1995) and a common result is that there is a statistically significant *positive* relationship between firm size and leverage, which supports the theoretical expectations. The use of the natural logarithm is due to the fact that it corrects for outliers in the sample.

Summing up, one can see that there are several company characteristics that are said to be related to leverage. According to the studies by Frank and Goyal, leverage in the industry, tangibility of assets and size of the company are all factors that are *positively* related to leverage. Growth opportunities and profitability are however *negatively* related to leverage.

5 CAPITAL STRUCTURE IN BUYOUTS – WHAT DRIVES LEVERAGE?

5.1 EVIDENCE FROM PREVIOUS STUDIES

The topic of company characteristics and leverage is however a much more untouched area within the private equity and buyout industry. In an early article by (Roden & Lewellen, 1995), it was found that the capital structure in the LBOs from the sample that they had collected seemed to be explained by the trade-off theory. However, since then, several other studies have emerged indicating that there are other factors than the classical capital structure theories that explain the large amount of leverage that is so common in buyouts. In these studies, it is claimed that the leverage of buyouts is independent of all the previously mentioned characteristics. This is also supported by practitioners in the Private Equity industry, and as stated in (Axelson, Strömberg, & Weisbach, 2007) and (Brinkhuis & De Maeseneire, 2009) leverage is often more dependent on the actual debt available in the market and GPs will thus lever up the deals as much as possible.

In an analysis of 153 buyouts from mainly the US and Europe, (Axelson, Strömberg, & Weisbach, 2007) found that debt on average accounted for approximately 75 percent of the purchase price. This finding has also been supported by other researches (71% by (Brinkhuis & De Maeseneire, 2009)) and typically between 60-80 percent according to (Rajan & Zingales, 1995)) and a high debt proportion has been said to one of the main characteristics of buyouts, hence the name Leveraged Buyouts (LBOs).

As mentioned, (Axelson, Strömberg, & Weisbach, 2007) found in their study that leverage in buyouts is believed to be driven by other factors than the ones that drive capital structure in comparable public firms, and that the economy-wide cost of borrowing seemed to drive both leverage and pricing in buyouts. In a similar study conducted by (Brinkhuis & De Maeseneire, 2009), it was shown that leverage determinants that are derived from the classical capital structure theories, did not explain the capital structure of buyouts, while however they did explain the leverage in the control group of comparable public firms. It was also found in that study that the conditions in the debt market were related to leverage in LBOs.

In the following section, a closer look will be taken on the two mentioned studies on capital structure in buyouts, namely the article “*Leverage and Pricing in Buyouts: An Empirical Analysis*” by (Axelson, Strömberg, & Weisbach, 2007) and “*What Drives Leverage in Leveraged Buyouts? An analysis of European LBOs’ Capital Structure*” by (Brinkhuis & De Maeseneire, 2009). The two studies are both empirical analyses of the financial structure of buyouts and several leverage determinants have been used in order to test whether classical capital structure theories are able to explain the leverage in buyouts. In addition, an article by (Axelson, Strömberg, & Weisbach, 2007) provides an explanation of why the prevailing practice of financing a buyout with ex ante equity and ex post risky debt financing is seen as the most efficient type of financing.

Leverage and Pricing in Buyouts

The article by (Axelson, Strömberg, & Weisbach, 2007) is aimed at analyzing the financial structure of companies that have been acquired by private equity funds. The three main goals of the study was to (1) describe the way leverage is used in financial buyouts, (2) compare the portfolio companies acquired by PE funds with comparable publicly traded companies, and (3) see whether there is a relation between leverage and transaction prices in buyouts. The purpose of the first goal was mainly to document how financing is done. The second goal was developed in order to understand the cross-sectional determinants of capital structure and see whether there is a relation between the leverage in buyouts and in public firms, and whether the “*capital structure in buyouts provides a benchmark for understanding optimal capital structure in public firms.*” In addition it was meant to analyze to which extent the observed leverage tendencies can be explained by existing capital structure theories. Finally, the third goal was initiated in order to see whether leverage drives pricing in buyouts and the dependence on the liquidity in the debt market. In the following sections, the result from their analysis will be discussed.

(1) Describe the way leverage is used: In the sample, debt accounted on average for approximately 75 percent of the purchase price, or also expressed as a total debt to EBITDA ratio mean of 6.9. The debt was found to be from several different sources, where the debt provided by banks were the most important one, and provided an average of 81.3 percent of non-equity financing. The bank debt is usually divided into several tranches, with a mean of 2.9 and 4.7 tranches in the US and Europe respectively. In addition, non-equity sources of

capital were found to be bonds, assumed debt from the portfolio company, vendor loans and off-balance-sheet funding.

(2) Comparison of portfolio companies and publicly traded companies: The leverage in the sample of portfolio companies and the matched publicly traded companies were plotted. From the plots, it was apparent that there was no strong relation between the two types of companies, neither when leverage were measured as the ratio of debt to total enterprise value, nor when the leverage were measured by the ratio of debt to EBITDA. Neither in the regression of leverage in the two types of companies, there is any relation. The most emphasized explanation to this was that *“the choice of leverage in buyouts is driven by completely different considerations than the choice of leverage in an otherwise identical public firm.”* (Axelson, Strömberg, & Weisbach, 2007) The study also provided an analysis of the different company characteristics that affected leverage. It was then found that for the sample of comparable firms that companies with more variable cash flows, companies with larger profitability and companies with more growth opportunities had lower leverage than average. This is in line with the theoretical basis that was provided in Chapter 4. Financial market returns appeared not to affect leverage. However, the results from the identical regression when applied to the portfolio companies differed substantially. As contrasted to the previous result, none of the tested characteristics had a significant relationship with leverage. However, when regressing on the ratio of debt to EBITDA, it seems as if conditions in the debt market, measured by the LIBOR plus the loan spread, has a statistically significant relation to leverage. Based on these results, the conclusion is that there seems to be no relation between leverage in the two samples, and in addition, variations within each sample seems to be explained by different factors, and thus that the leverage in buyouts are based on different reasons than in public firms.

(3) Relationship between leverage and pricing for LBOs: When using total enterprise value divided by EBITDA as a measure of price, (Axelson, Strömberg, & Weisbach, 2007) found that that there is a strong relationship between pricing for public firms and for the portfolio companies. They also found that pricing of buyouts is *negatively* related to current market interest rates on leveraged loans, while the pricing of public firms had no relation to interest rates. Based on this, one could conclude that an increase in interest rates actually would have a negative impact on both leverage and pricing for portfolio companies that have been bought up by a PE fund, while neither leverage nor pricing in the matching public firms

were related to the interest rates. Based on this, (Axelson, Strömberg, & Weisbach, 2007) concluded that there probably was a *positive* relation between leverage and pricing in buyouts. Two possible explanations are given: firstly a company with strong future cash flows relative to EBITDA will usually be priced higher in addition to being able to sustain higher leverage as measured by debt to EBITDA, and secondly, the explanation could be rooted in the relationship between the LP and the GP. As previously mentioned, the GP hold an option-like stake in the fund, and thus have an incentive to lever up each deal as much as possible. Thus when the conditions in the debt market is favorable, i.e. when interest rates are low or when the liquidity in the debt market is high, the GPs will be able to lever up the deal more. Since this increases the value of their option, the GPs will also be willing to pay more, thus one could expect higher prices.

In the article “What Drives Leverage in Leveraged Buyouts? An Analysis of European LBOs’ Capital Structure by (Brinkhuis & De Maeseneire, 2009) the aim was to provide evidence on which factors determined leverage in European LBOs. As an answer to their first sub question, “*what does the typical financing package in a European buyout transaction look like*”, Brinkhuis and De Maeseneire found that on average, 71 percent of buyout financing consists of debt. It was also found that a great variety of debt types were used to finance the LBO. The senior debt accounted for 64 percent of non-equity financing in the given example, mezzanine debt for approximately 21 percent and other debt facilities for the remaining 15 percent. In addition to the different types of debt mentioned in the previous example, second-lien debt, which is a subordinated debt, has also become more popular when financing LBOs in the last five years.

As previously mentioned, measuring debt as a multiple of EBITDA is common among practitioners in the PE industry. From their sample, Brinkhuis and De Maeseneire found that the average ratio of total debt to EBITDA was 5.3, while as mentioned previously, the European Leveraged Loan Review from August 2007 found that in 2006, the average debt multiple for European buyouts was 6.3.

Analyzing the explanatory power of different company characteristics and macro economic variables on leverage

(Brinkhuis & De Maeseneire, 2009) measured the effect of the four characteristics mentioned previously on leverage of LBOs that was also suggested by (Axelson, Strömberg, & Weisbach, 2007). The four characteristics were: growth opportunities, asset tangibility, company profitability and company size. In addition, they also analyzed the explanatory power of tax rate, debt market liquidity, whether it was a primary or secondary deal and the reputation of the PE intermediary. The dependent variable in their research was leverage, proxied by the debt to EBITDA ratio and the ratio of debt to total capital. The results from the regressions support the results from the study by (Axelson, Strömberg, & Weisbach, 2007) in that there is no significant relation between the leverage levels in the LBOs and the public company control group. In addition, it was shown that the characteristics that was derived from the classical capital structure theories, could not explain leverage in the LBOs, while, as in (Axelson, Strömberg, & Weisbach, 2007), it could so for the comparable public companies. However, leverage proved to be significantly related to the debt market conditions. The result supports the prevailing view in the industry, i.e. that the capital structure is heavily influenced by credit condition. Finally, it was also concluded that leverage was positively related to the reputation of the PE intermediary, and that on average secondary deals were more highly leveraged than primary deals.

5.2 WHY ARE BUYOUTS LEVERED?

Until this point, the capital structure of buyouts has been neglected, and neither the question of why buyouts are structured in the way they are, or the consequences of the capital structure choices have been considered. In the article “*Why are Buyouts Levered? The Financial Structure of Private Equity Funds*” by (Axelson, Jenkinson, Strömberg, & Weisbach, 2008) two questions are asked that are especially interesting in this case: Why are most buyouts undertaken by funds with large sums of committed equity capital, and complemented with deal-level financing from a third party debt provider? What is it that makes this structure so popular? The purpose is to find an explanation of why the observed structure in the industry is so widespread.

A company can finance its investments *ex ante*, i.e. by building a fund of money that can finance a number of investments, or *ex post*, i.e. by raising capital on a deal-by-deal basis, or through a combination of *ex ante* and *ex post* financing. The latter alternative is most common for buyouts, where a fund is built up in advance, prior to finding specific deals, and later, the *ex post* financing is done with debt that have to be raised from third parties. In their article, (Axelson, Strömberg, & Weisbach, 2007) show that the prevailing practices in the industry actually is the optimal financial structure as it “*maximizes the values of investments by minimizing the expected value of negative NPV investments undertaken and good investments ignored.*” With pure *ex post financing* by debt, the GP will take on all investments that they will be able to get financing for. That implies that when the economy is in a good state there is a good chance of overinvestment, and in bad times, there is a possibility of underinvestment. In a solution with pure *ex ante financing*, one has the option of performance based GP compensation, like e.g. a carried interest, which gives the GP incentives to stay away from bad investments in good times. However, the GP also enjoys a great amount of freedom, and after the fund is raised, the GP is not forced to go back to the capital markets for additional funding and thus he is able to invest also in bad times. As most funds have a finite life, there is a possibility that when the fund approaches its end, the GP might take on less attractive investments, thus taking on more risk than optimal in order to maximize the expected value of his own payoff. The solution to the issues of under- and overinvestment is a combination of *ex ante* and *ex post* financing. Providing portion of the investment *ex ante* ensures that the GP maintains his incentives to avoid less attractive deals in good times, and by forcing him to seek additional funding *ex post*, it prevents him from investing in less attractive deals also in bad times. The conclusion is that the observed financial structure in the PE industry actually can be explained as a being a solution of the agency conflict that is present between the LP and the GP in the limited partnership. As previously explained, the LPs have the role of the principal and the GPs the role of the agent. Because the GPs have limited liability, they do not partake in the downside risk and thus, according to (Axelson, Strömberg, & Weisbach, 2007) they will have incentives to overstate the quality of the investment when raising capital from uninformed investors. With this solution, the LPs receive both a debt claim on their committed capital, in addition to the levered equity stake in profits from the investments.

Structure of General Partner Compensation

(Axelson, Strömberg, & Weisbach, 2007) concludes in their analysis that the non-linearity of GP compensations is a result of agency conflicts in the limited partnership. Because of adverse selection issues, it is difficult for the principals to separate the good PE managers from what they name the “fly-by-night operators”, i.e. GPs that “*can only find real investments that have a maximum payout less than capital invested, store money at the riskless rate, or invest in a fairly priced publicly traded asset.*” It is thus necessary to include a performance-based compensation to the GP in order to separate out the fly-by-night operators. Giving the GP a straight equity claim would ensure that only the good GPs stay in the market and that they invest in high standard deal. However, it is necessary to include risk-shifting incentives in order to mitigate excessive risk taking. With the GPs holding a levered equity claim and the LPs a debt claim, the GPs would have incentives to increase the risk. The solution is giving the LPs and the GPs each a share of the profit, thus reducing the levered equity claim of the GP. The non-linear structure of the GP compensation has also been analyzed by (Jones & Rhodes-Kropf, 2003). As previously explained, since a large portion of the GP compensation stems from the carry, and hence the limited liability and the option like payoff structure, the GPs might be tempted to invest in more risky projects than requested by the LP. Thus there is a possibility of agency conflicts. A possible solution to this problem is the GP contribution of a given percentage of the committed capital of the fund so that they are personally exposed to the risk and the possible downturn of the investment. In theory, risk sharing reduces the incentive to leverage up the investment extensively.

The next part of this thesis is the analysis, which is mainly focused on the capital structure commonly observed in buyouts and whether debt ratios are larger for companies that have been acquired by PE companies than the ratios that was before the buyout. Secondly, the analysis tries to explain the role of the GP, and especially the question whether GPs investing in their own funds take on less debt in buyouts.

6 DATA COLLECTION AND SAMPLE DESCRIPTION

The following section presents the empirical analysis of leverage in the Norwegian PE market and the process of data gathering that was done prior to the analysis.

The purpose of this thesis is to analyze leverage levels in the Norwegian buyouts conducted over the last ten years. All deals that, in accordance with previously explained definitions of venture and buyout, can be categorized as venture deals, and acquisitions made by PE funds that mainly focus on venture activity, have been excluded from this analysis. The data gathering process started by identifying all buyout firms that have been active in the Norwegian buyout market in the years between 1997 and 2008, or in shorter sub periods. The sample includes both Norwegian PE companies and foreign PE companies that have an office in Norway with designated employees. In addition, two further criteria required that the PE companies had invested in Norwegian companies over the given time period and that there were at least one partner with Norwegian citizenship working in the Norwegian branch. Based on these requests, 13 different PE companies were identified and included in the analysis. As previously explained, it is common for PE companies to manage several funds, and the sample contains data on total of 33 different PE funds. The different PE companies and the number of funds from each that is included in the sample are illustrated in Figure 11.

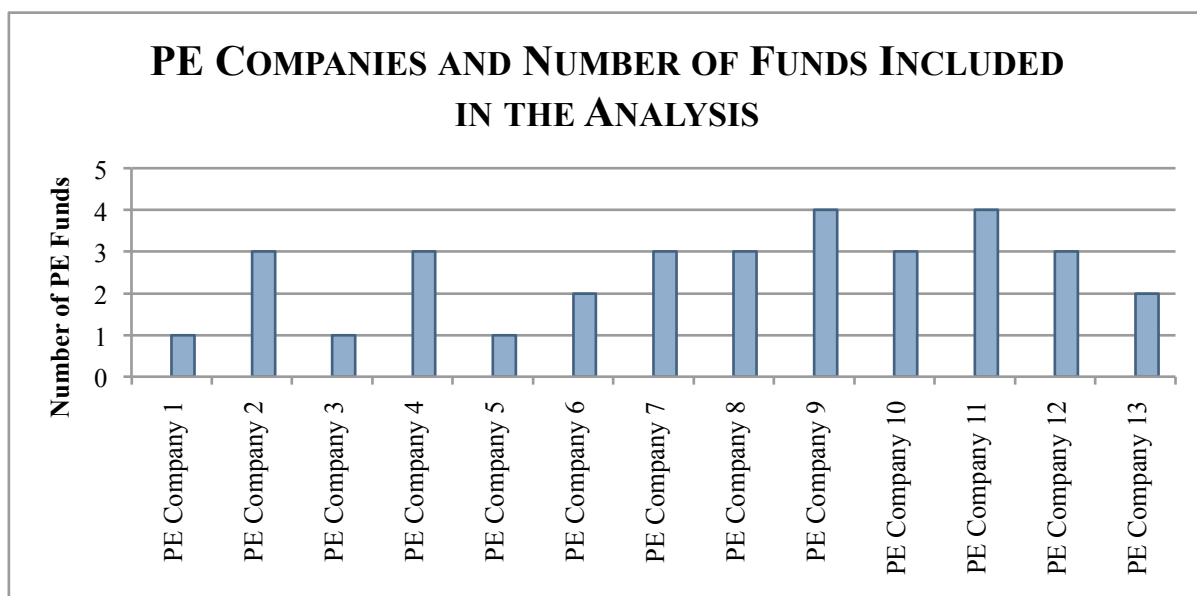


Figure 11: Number of funds from each PE company included in the sample

6.1 CHARACTERISTICS OF THE PE COMPANIES

PE fund characteristics were gathered from several different sources. For some PE companies, their web pages proved to be a good source of information, especially for areas such as the number of employees, names of partners and their experience in the PE industry, capital under management and investments in portfolio companies. The sample of funds collected stem from several different years in the period from 1989 to 2009. As can be seen in Figure 12, 2006 was the year with most new funds raised, with a total of 6 new funds. As can also be seen in the Figure, at least one fund was raised each year in the period between 1996 and 2009.

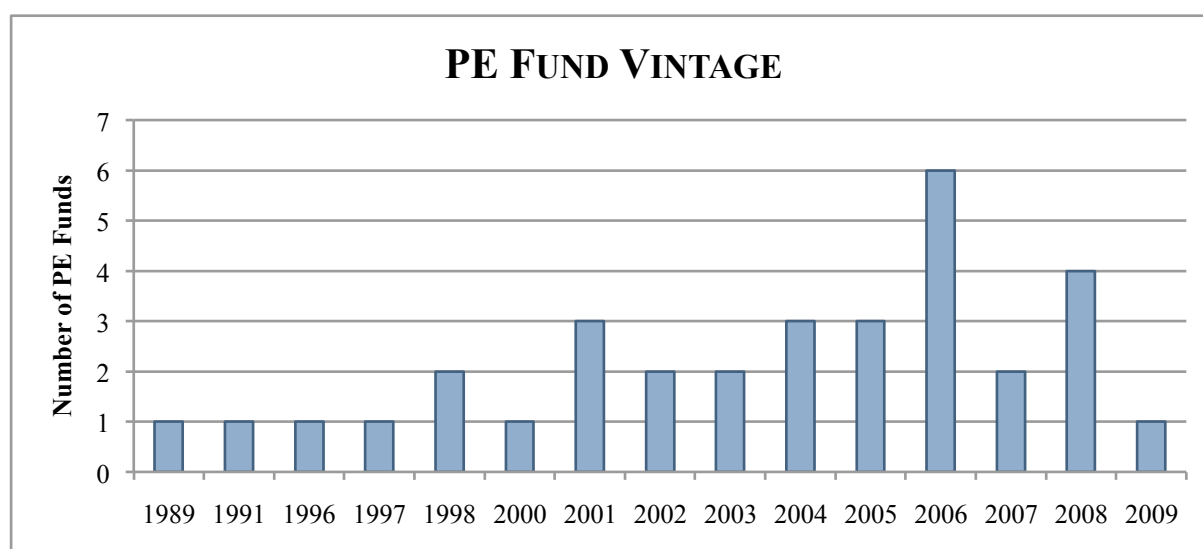


Figure 12: PE fund vintage

However, in addition to publicly available information, some data was made also available by Menon Business Economics through their collaboration with the Norwegian Venture Capital Association (NVCA). Twice a year, Menon conducts an activity survey for the NVCA and thus have developed a large database containing information on the buyout activity of NVCA members. In addition, more specific information on PE company and fund characteristics was also made available by a large investor that has invested in several Norwegian PE funds. The information gathered from this source regarded the role of the General Partner and the GP compensation structure and commitment to the PE fund. The data from this investor also contained information on the industry- and geographical specialization that the different funds might have. In addition, some information stem directly from some of the PE companies directly. The information is illustrated in Figure 13 and 14.

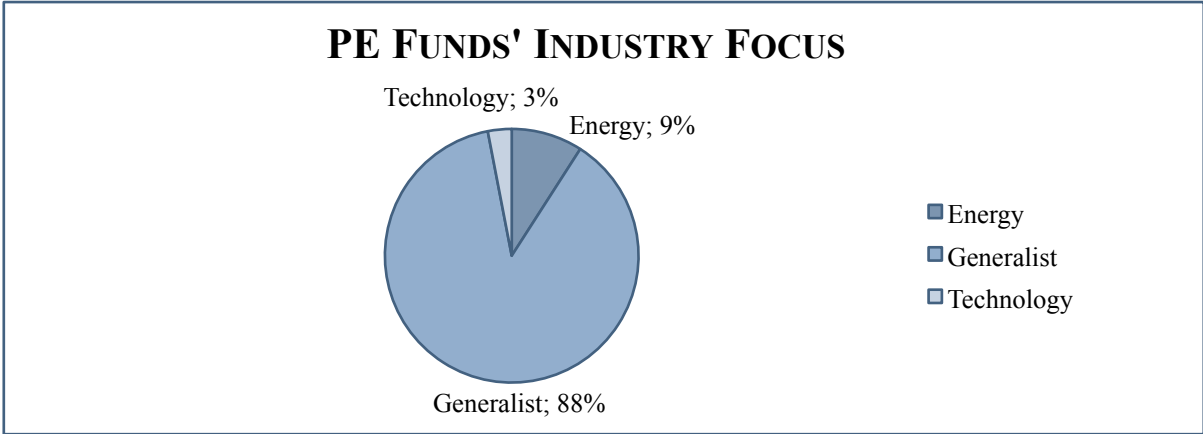


Figure 13: The industry focus of the PE funds in the sample

As can be seen in the figure, most PE funds are considered to be generalists, covering a great variety of industries in their buyouts. When it comes to geographical specialization, approximately two-thirds of the funds in the sample have main interest in companies located in the Nordic Countries, whereas approximately a quarter of the funds have wider geographical target area including parts of Europe and also the US. A small fraction of the funds have a more specific focus, and mainly target portfolio companies located in Western-Norway.

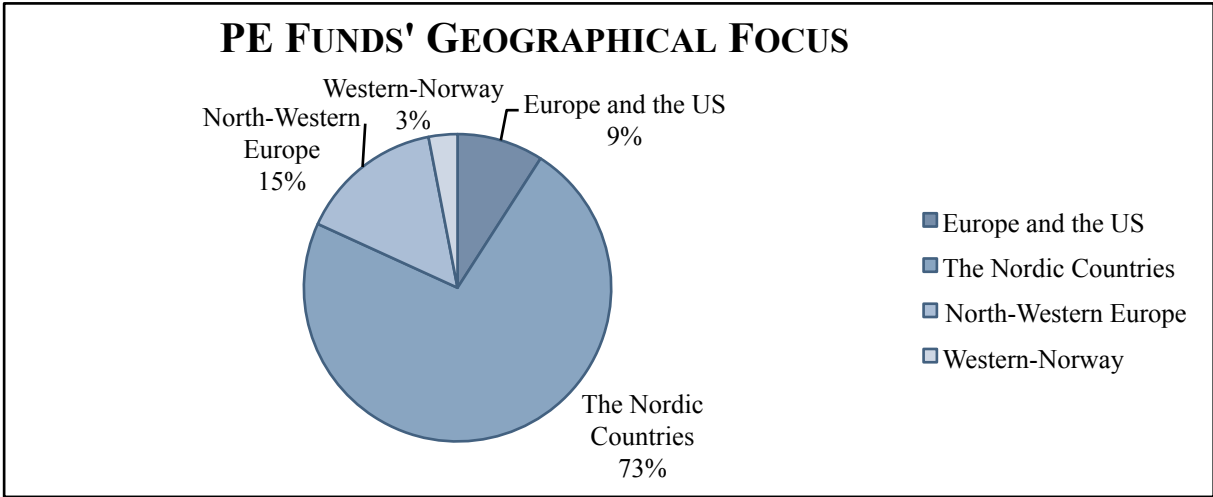


Figure 14: The geographical focus of the PE funds in the sample

It is also common for PE funds to specify the target size range of potential portfolio companies, specified in enterprise value and or equity size. The gathered information on target size is illustrated in Figure 13 where it is obvious that most PE funds target companies in the mid-marked, both in terms of enterprise size and equity size. The classification is based on standards provided by the EVCA and shown in Figure 15.

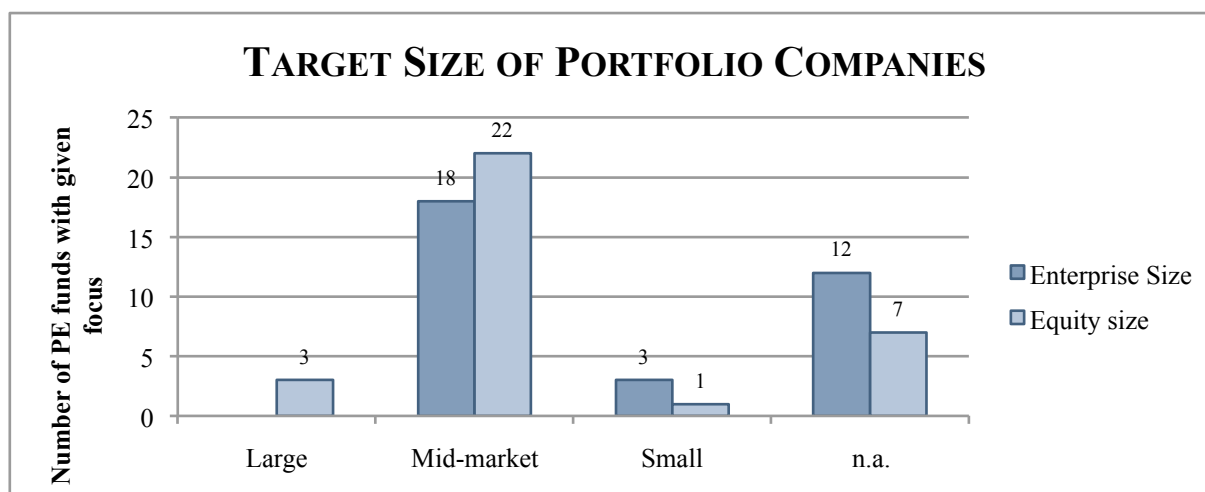


Figure 15: PE companies target sizes when considering acquiring portfolio companies

| Buyout segment | Large | Mid-market | Small |
|-----------------------------|----------------|--------------|-------|
| Equity value (€million) | 150 < X < 300 | 15 < X < 150 | < 15 |
| Enterprise value (€million) | 500 < X < 1000 | 50 < X < 500 | < 50 |

Figure 16: Overview of definitions of definitions of buyout segment size

Finally, thanks to the Norwegian Ministry of Finance and Bjørn Johansen with the Norwegian Tax Administration, private income and wealth information on the partners of the PE companies were available and used to calculate GP commitment as a share of average personal wealth.

To sum up, Figure 17 provides description of several variables in the sample. As can be seen in the figure, there are large differences in size and age. The most recent fund included in the sample was raised in 2009, while the oldest one in the sample stems from 1989.

| Variable | Mean | Std. Dev. | Min | Max | N |
|---|--------|-----------|-----|-----|----|
| Age PE Fund | 5.970 | 4.792 | 0 | 20 | 33 |
| Number of Professionals in the Norwegian Branch | 10.879 | 7.419 | 3 | 24 | 33 |
| Number of Professionals (in total) | 21.152 | 12.971 | 4 | 59 | 33 |
| Number of Partners in the Norwegian Branch | 3.636 | 2.329 | 1 | 9 | 33 |
| Number of Partners (in total) | 7.788 | 4.622 | 2 | 17 | 33 |

Figure 17: Descriptive statistics of PE company characteristics

Size wise, there are also large differences in the number of professionals and partners. A second point that should be noticed is the large difference between the mean number of professionals and partners in the Norwegian branches and in the company in total. The sample contains a total of 12 foreign PE funds, which are making investments in Norway, where a large portion of professionals and partners work in offices outside Norway. Several of the foreign funds are much larger than the remaining Norwegian funds, however usually only a small portion of their investments are undertaken in Norway and thus the Norwegian branch is usually much smaller.

Figure 18 describes other important variables in the sample. As requested by the providers of the information, neither each PE fund's GP commitment, i.e. the percentage of the total committed capital to the fund that is provided by the General Partner, nor the Partners individual income and wealth is presented. Instead, as shown in the Figure 17, the summary statistics show the characteristics of the Norwegian PE market. The GP commitment varies greatly between different PE companies, but also between different funds raised by the same company. As can be seen in the figure, the GPs commit on average 4% of total capital managed in the fund, a figure which is much larger than what is considered normal in the industry. However, further analysis of the sample has proved that the median GP commitment percentage is 3% and the mode, i.e. the observation that occurs with the greatest frequency is 1%. The actual amount committed varies between a minimum of zero, i.e. that the GP does not contribute to the committed capital to the fund, and to the maximum committed amount of 45.7 million NOK per partner or 22.5 million NOK per professional in the PE company.

| Variable | Mean | Std. Dev. | Min | Max | N |
|---|-----------|-----------|---------|------------|----|
| Capital Managed by Fund (million NOK) | 5,060.000 | 7,270.000 | 300.000 | 35,300.000 | 33 |
| GP Commitment (million NOK) | 118.000 | 171.000 | 0.000 | 707.000 | 24 |
| GP Commitment as share of capital managed | 0.040 | 0.042 | 0.000 | 0.150 | 24 |
| GP Commitment per professional (million NOK) | 5.716 | 6.014 | 0.000 | 22.500 | 24 |
| GP Commitment per partner (million NOK) | 14.600 | 13.500 | 0.000 | 45.700 | 24 |
| GP Commitment as share of average wealth per professional | 0.837 | 1.131 | 0.000 | 3.960 | 19 |
| GP Commitment as share of average wealth per partner | 2.258 | 3.216 | 0.000 | 13.360 | 19 |

Figure 18: Descriptive statistics of PE company characteristics, focusing on GP commitment

As previously mentioned, based on information from the Norwegian Tax Administration on the private wealth of the partners of the PE companies over the period from 1997 to 2007, it was possible to calculate the average wealth for partners of each PE company. However, this calculation has several flaws, especially due to problems with the wealth figures. First of all, the list of partners contains only those who were partners in February 2009, when the data gathering process was carried out. It does not contain information on *when* these people became partners in the PE company, and neither whether anyone has left the company recently. Thus, the data might not take into consideration partners that have been working in the company for several years and participated on numerous acquisitions, and then left the company in January 2009, nor those that in February of 2009 had just been appointed partner and that had not had an central role in earlier acquisitions. Secondly, for the foreign PE funds, the non-Norwegian citizens are not included in the average, and it is possible that the average found in this calculation thus cannot be said to be representative for the entire PE fund. Finally, there are issues related to the accuracy of the wealth figures.

Despite the issues concerning the accuracy of the wealth figures, it is believed that it is important to take personal wealth into consideration when analyzing GP commitments. As previously explained, the largest portion of the GP compensation, i.e. the carry, is in fact in the form of an option like claim on the fund's assets. Thus the GP might face incentive problems and might in turn be tempted to take on extensive amount of risk by leveraging up the deals as much as possible. As explained in Chapter 2.4, most partnership agreements between the GPs and the LPs include different covenants intended to align the interests of the GPs and the LPs. However, in many situations, direct incentives designed to ensure that the GP act in the best interest of the LP will be a better mechanism than direct means of control. Through a GP commitment requirement of e.g. 2% commitment of total fund size, the LPs can ensure that the GP also takes part in the investment, risking a portion of their own wealth.

6.2 CHARACTERISTICS OF THE PORTFOLIO COMPANIES

Secondly after gaining knowledge on the PE companies and funds, information on the portfolio companies had to be gathered. The portfolio companies that have been acquired by the selected PE companies were identified on the basis of the following criteria: (1) the acquisition took place between 1997 and 2007 and (2) the portfolio company was originally Norwegian and (3) the PE company acquired a majority of the company's shares in the acquisition. The portfolio companies were identified using several different sources. Firstly, as previously mentioned, the PE companies' web pages often contain a list of current and realized investments and this was gathered. However, for some PE companies, such a list was either not present or not entirely complete and in such situations press releases made by the PE company or by the acquired company were used to try to complete the list. In addition, in order to rule out any biased selection, the VentureXpert database and Mergermarket were used to search for additional deals. Finally, to ensure that that all deals had been found, the list was compared to a list of all acquisitions made by Norwegian PE companies, which was collected by Menon Business Economics and commissioned by the Norwegian Venture Capital Association (NVCA). The data provided by Menon and NVCA was also used in order to link the deals to the companies' unique organization number. In several cases, it proved difficult to confirm which was the original portfolio company before the acquisition as they often are reorganized and incorporated into other business units after the acquisition. In addition, the portfolio company names that were listed on the PE companies' web pages were

in some cases different from information in e.g. VentureXpert and in the list provided by Menon. In situations where there conflicting information is found in the different sources, Ravn Foretaksregister and the information found there on ownership was used to find the correct organization numbers, however, unfortunately, for some companies the necessary information was not available and the portfolio companies had to be excluded from the sample.

As can be seen in Figure 19, the buyouts were spread out over the entire period from 1997 and to 2007, however the majority of the buyouts stem from the three last years. In the sample, 2006 proved to be the most popular year for buyouts with a total of 21 deals.

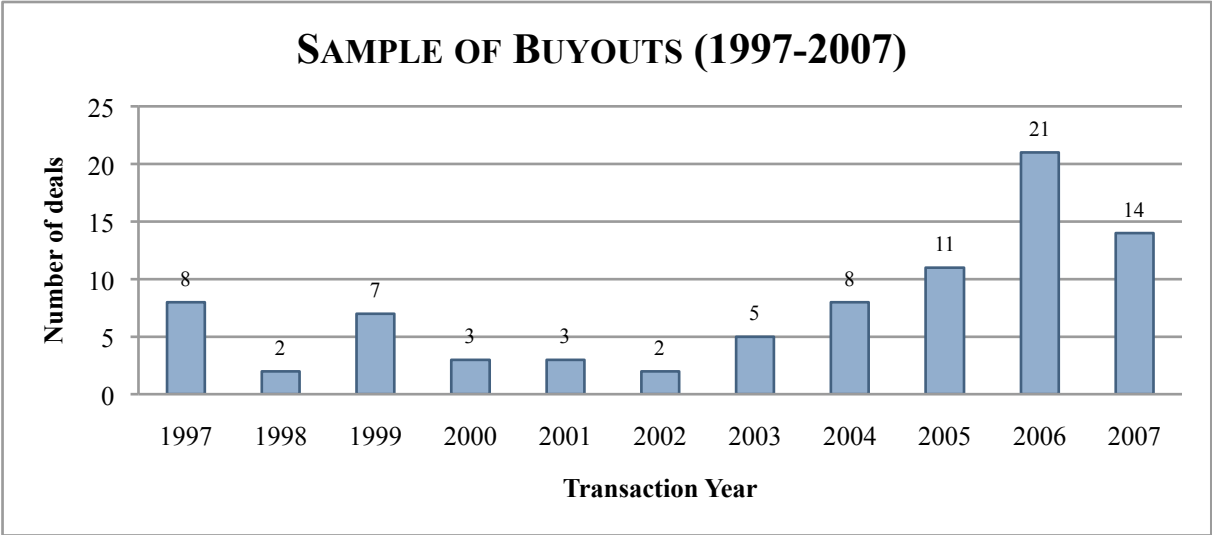


Figure 19: Transaction year for buyouts in the sample

The objective of the data gathering process was to try to collect financial figures from two years before the buyout (t-2) and to two years after the buyout (t+2). Figure 19 provides summary statistics for some selected variables in the sample from year (t-1), that is the year before the buyout.

| Explanation | Variable | Mean | Std. Dev. | Min | Max | N |
|-----------------------|--------------|-----------|-----------|----------|----------|----|
| Investment year | investmen~ar | 2004.14 | 2.777534 | 1998 | 2007 | 50 |
| Sales revenue | salgsinn | 170627 | 264947.6 | 0 | 1192036 | 47 |
| Total Assets | sumeierend | 259596.5 | 368987.9 | 100 | 1949484 | 47 |
| Equity | ek | 115603.9 | 222026.1 | -16502 | 1074992 | 47 |
| Debt | gjeld | 132783.3 | 159670.6 | 1 | 834000 | 42 |
| Equity-to-asset ratio | ekandel | 0.3559539 | 0.2832251 | -0.22321 | 0.998867 | 47 |
| EBITDA | ebitda | 10864.82 | 21585.19 | -52000 | 65097 | 50 |
| Age when acquired | agewhenacq~d | 9.06 | 5.726451 | 0 | 18 | 50 |

Figure 20: Descriptive statistics of portfolio company characteristics

However, finding information for all five years proved to be difficult for some of the buyouts. At the time of the data gathering process, the most recent financial data available was from 2007. Therefore it was impossible to gather information for year (t+1) and (t+2) for the 14 buyouts from 2007 and for year (t+2) for the 21 deals from 2006. The buyouts from 1997 and 1998 had the equivalent problems when it comes to financial data for year (t-1) and (t-2). In addition, as company restructurings and reorganization is very common after a buyout, for some portfolio companies it proved very difficult to trace the “original” business unit. This could either be because the initial business unit was part of a larger corporation and hence, standalone data is not available for the unit. Secondly, after the buyout the portfolio company might have been merged into an existing company or merged together with other portfolio companies into a newly established company and financial data for the years after the buyout could then be missing. Therefore data for some of the years are missing for some portfolio companies and an overview of the number of observations for the different years can be seen in Figure 21.

Looking back at Figure 20 it can be seen that the average investment year was 2004. On average, the portfolio companies were nine years when they were acquired and the average sales revenue in year (t-1) of approximately 277 million NOK.

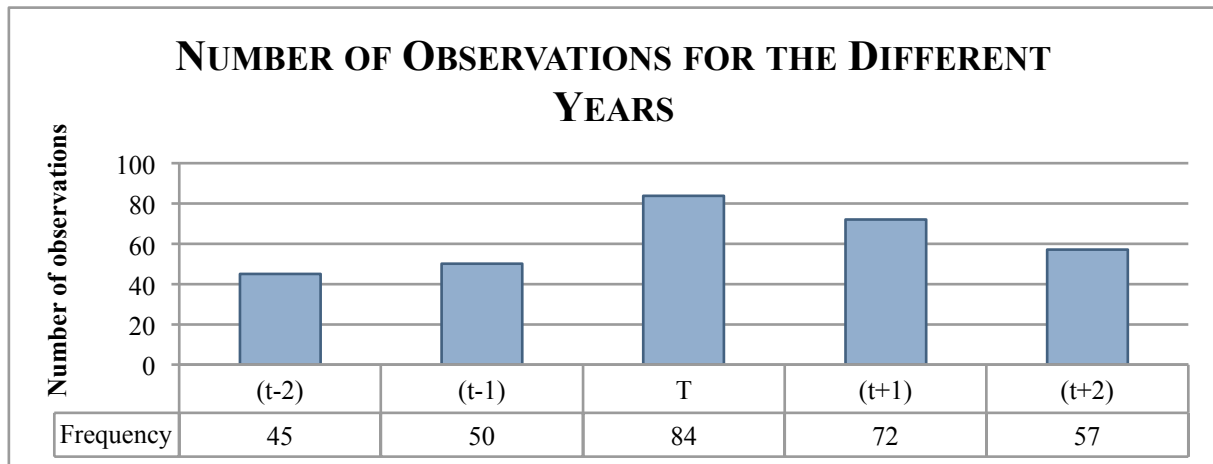


Figure 21: Number of observations for each year from (t-2) to (t+2)

| Explanation | Variable | Mean | Std. Dev. | Min | Max | N |
|-----------------------|--------------|-----------|------------|----------|----------|----|
| Investment year | investmen~ar | 2003.61 | 3.33 | 1997 | 2007 | 84 |
| Sales revenue | salgsinn | 276890.60 | 1103065.00 | 0 | 9449211 | 79 |
| Total Assets | sumeierend | 389655.70 | 686708.10 | 671 | 4780673 | 79 |
| Equity | ek | 118552.40 | 197227.70 | -95000 | 1106224 | 79 |
| Debt | gjeld | 294499.90 | 607751.60 | 832 | 4155036 | 70 |
| Equity-to-asset ratio | ekandel | 0.33 | 0.29 | -0.73094 | 0.995588 | 79 |
| EBITDA | ebitda | -4820.63 | 95203.05 | -814182 | 102835 | 84 |
| Age when acquired | agewhenacq~d | 5.71 | 6.00 | 0 | 18 | 84 |

Figure 22: Descriptive statistics of portfolio company characteristics

Figure 22 presents the same sample statistics for year T as Figure 20 did for year (t-1). The financial data in the sample was made available by Aksel Mjøs at the Norwegian School of Economics and Business Administration and collected for his doctoral dissertation (Mjøs, 2007) The organization numbers found in the initial part of the data gathering process were used to search Mjøs' database and extract financial information for the (t-2) to (t+2) period. Financial information for private and public limited companies in Norway is considered public information and all companies are obliged to submit their annual accounts to the Register of Company Accounts (Foretaksregisteret, a part of Brønnøysundsregistrene) within

one month after they have been adopted by the annual general meeting. Thus, all financial information in this sample is publicly available information, and can be accessed through Ravn Foretaksinformasjon, which gathers its information from the Register of Company Accounts.

The main purpose of this thesis is to examine leverage levels in portfolio companies acquired by PE companies, and hence debt is one of the most important variables. As also discussed by (Mjøs, 2007) one broad definition of debt can be all non-equity financing. The total debt ratio (TDR) can then be defined by: **TDR = Debt / Total Assets** where debt then includes all non-equity liabilities. This debt ratio definition will be the core measure for the analysis in this thesis.

7 HYPOTHESES AND APPLIED METHODOLOGY

7.1 HYPOTHESES

The following section presents the research questions and the methodology used in order to analyze the sample. Buyouts by PE funds are commonly named LBOs due to the significant amount of debt that is used to finance the deals. In theory, if buyouts are financed by large amounts of debt, then one would expect to find a result similar to the one found by the Centre for Economic and Business Research (CEBR) when they analyzed the Danish PE market in 2008. They found that the total debt ratio on average increased from 41% in the year before the buyout to 55% in the year of the buyout, i.e. a significant increase in the debt ratio. In a recently published article by (Grimsby & Grünfeld, 2009) it was found that total debt ratios in companies owned by PE funds in Norway were higher than for comparable companies in a peer group. However, they found a mean total debt ratio of 35%, a percentage that is far below the results from Denmark and also far below what is commonly perceived to be normal in the PE industry.

The first hypothesis of this thesis is motivated by this discrepancy between the results in Norway and Denmark. In order to see whether portfolio companies in Norway in fact has a much lower average total debt ratio than portfolio companies in Denmark, the average leverage for the period (t-2) to (t+2) is calculated and illustrated. Secondly, in order to test whether PE funds *actively* leverage their acquisitions, the differences between total debt ratios in the years after the acquisition and in the years prior to the acquisition are calculated and the changes are tested for significance.

Hypothesis 1: Debt ratios in companies acquired by PE companies increase after year T and the differences are statistically significant.

The second hypothesis is motivated by the gained insight into the relationship between the LPs and the GPs in the limited partnership and the GP compensation. As mentioned several times, the compensation received by the GP through the carry might lead to agency problems between the GP and the LP in the sense that the GP chooses to lever up each deal as much as

possible and thus increases the riskiness of the deal to the LPs. However, as GPs often are required to contribute a given percentage of the committed capital to the fund, this might prevent excessive risk taking as it triggers a down side risk to the GP. Based on this theoretical view, one could expect that the smaller the GP commitment, the higher the leverage and vice versa. Extending this by taking into consideration the wealth of decision makers in the PE companies, i.e. the partners, leads to the second hypothesis that is tested in this thesis:

Hypothesis 2: *There is a statistically significant relationship between total debt ratios and the GP commitment as a percentage of average wealth.*

7.2 APPLIED METHODOLOGY AND DESCRIPTION

When considering hypothesis 1, the data were tested for normality, and the differences proved to be mostly normal, and hence a t-test will be used to test the differences between the means. However, since the sample is rather small, and as some of the differences show slight signs of non-normality, the non-parametric Wilcoxon signed rank sum test for matched pairs will also be employed and the results of the two tests will be compared. The average total debt ratio is displayed in Figure 23 and Figure 24.

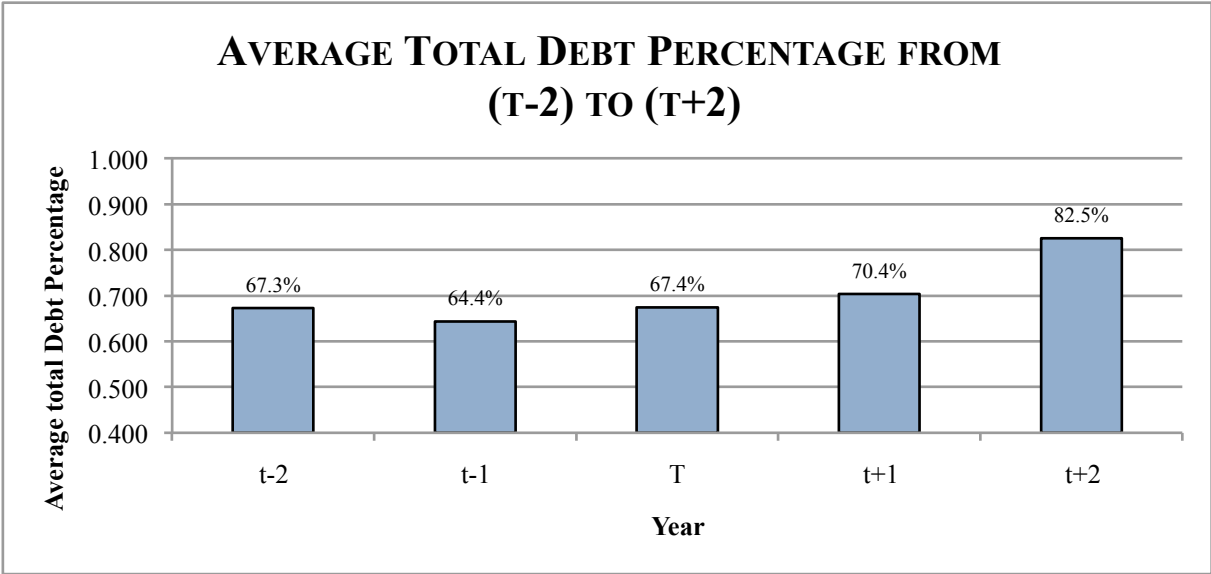


Figure 23: Overview of average total debt percentage from year t-2 to t+2

| Year | Variable | Mean | Std. Dev. | Min | Max | N |
|------|----------------------|-------|-----------|-------|--------|----|
| t-2 | Leverage in year t-2 | 0.673 | 0.305 | 0.043 | 1.700 | 45 |
| t-1 | Leverage in year t-1 | 0.644 | 0.283 | 0.001 | 1.223 | 47 |
| T | Leverage in year T | 0.674 | 0.285 | 0.004 | 1.731 | 79 |
| t+1 | Leverage in year t+1 | 0.704 | 0.596 | 0.000 | 5.128 | 72 |
| t+2 | Leverage in year t+2 | 0.825 | 1.563 | 0.002 | 12.161 | 57 |

Figure 24: Descriptive statistics of average total debt percentage from year t-2 to t+2

| Variable | Difference | Mean | Std. Dev. | Min | Max | N |
|--------------------|-----------------------------|-----------|-----------|----------|----------|----|
| Diff lev. a | $TDR_T - TDR_{(t-2)}$ | 0.004605 | 0.287594 | -0.85953 | 1.043912 | 42 |
| Diff lev. b | $TDR_T - TDR_{(t-1)}$ | 0.010118 | 0.261966 | -0.56384 | 0.948817 | 47 |
| Diff lev. c | $TDR_T - TDR_{(t+2)}$ | -0.210820 | 1.634875 | -10.4303 | 0.848275 | 42 |
| Diff lev. d | $TDR_T - TDR_{(t+1)}$ | -0.056920 | 0.468155 | -3.39737 | 0.641701 | 63 |
| Diff lev. e | $TDR_{(t+1)} - TDR_{(t-1)}$ | 0.002107 | 0.307531 | -0.63849 | 0.948817 | 38 |
| Diff lev. f | $TDR_{(t+2)} - TDR_{(t-2)}$ | -0.098420 | 0.310487 | -0.78294 | 0.435353 | 19 |
| Diff lev. g | $TDR_{(t+2)} - TDR_{(t-1)}$ | -0.076130 | 0.319317 | -0.69167 | 0.769634 | 23 |
| Diff lev. h | $TDR_{(t+1)} - TDR_{(t-2)}$ | -0.006639 | 0.323646 | -0.91839 | 1.043912 | 34 |

Figure 25: Descriptive statistics of the calculated differences

Figure 25 shows the eight differences that were calculated for the sample. As can be seen in the figure, the first variable named Diff lev. a consists of the differences between total debt ratios in year T and the total debt ratios in year (t-2). The variable can be defined as:

$$\text{Diff lev. A} = TDR_T - TDR_{(t-2)}$$

The seven other variables are calculated equivalently and the summary statistics for the variables are presented in the figure.

7.3 THE T-TEST - INFERENCE ABOUT THE DIFFERENCE BETWEEN THE TWO MEAN TOTAL DEBT RATIOS

The parameter used in a t-test for matched pairs is the difference between the two means, e.g. in the case for the difference between the total debt ratios in year T and in year (t-2) the parameter is given by $\mu_D = \mu_T - \mu_{(t-2)}$ and the test statistic is given by $t = (x_D - \mu_D) / (s_D / (n_D)^{1/2})$, which is Student t distributed with $v = n_D - 1$ degrees of freedom, provided that the differences are normally distributed. A two-sided test is used in order not to rule out any solutions. The null hypothesis and the alternative hypothesis for the t-test are given by:

H₀: There are no changes in total debt ratios after the acquisition in year T, and thus the differences are not significantly different from zero.

$$\mathbf{H_0: \mu_D = 0}$$

H_A: There are changes in total debt ratios from before to after the acquisition in year T, and thus the differences are significantly different from zero

$$\mathbf{H_A: \mu_D \neq 0}$$

7.4 THE WILCOXON SIGNED RANK SUM TEST – INFERENCE ABOUT POPULATION LOCATION

The Wilcoxon test is the non-parametric counterpart of the t-test and is commonly used in situations where the data is interval but when it does not meet the required normality condition of the t-test. Given a null hypothesis that the median differences between the paired data is equal to zero, the purpose of the test is to calculate the probability of observing the actual differences that are present in the sample. As in the t-test, the parameter is given by the differences, θ_D , however the null hypothesis and the alternative hypothesis are given by:

H₀: The location of the total debt ratios are the same for the different years, and thus the median of the difference between the ratios is zero.

$$\mathbf{H_0: \theta_D = 0}$$

H_A: The location of the samples of total debt ratios is different for the different years and thus the median of the difference between the ratios is different from zero.

$$\mathbf{H_A: \theta_D \neq 0}$$

7.5 MULTIPLE REGRESSIONS

Multiple regressions are applied to a dataset in order to test the relationship between the dependent variable (Y), the independent variables (X_1, X_2, \dots, X_k) and the error variable (ε). The model is represented by the following equation: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon$ where β_i are the parameters of the model, describing the direction and the strength of the relationship between the different independent variables and the dependent variable, *ceteris paribus*, i.e. while holding other factors fixed. β_0 provides the intercept with the Y and the error term ε contains all other factors than X_1, X_2, \dots, X_k that affect Y .

A multiple regression analysis is based on six assumptions that have to be satisfied in order for the model to be valid. (Wooldridge, 2009) The first assumption states as explained in the previous paragraph that $\beta_0, \beta_1, \dots, \beta_k$ are the parameters of interest in the regression and that the ε is the unobservable error term. The second assumption requires that the observations given by X_1, X_2, \dots, X_k are randomly sampled and can be used to estimate $\beta_0, \beta_1, \dots, \beta_k$. The third assumption states that there is no perfect collinearity, which implies that none of the independent variables are constant and that there are no linear relationships among the independent variables. The fourth necessary assumption states that the expected value of the error term has to be zero for any given value of the independent variables. This implies that $E(\varepsilon) = 0$. The fifth assumption requires that the variance of ε is given by $\text{Var}(\varepsilon) = \sigma^2$, i.e. one assumes homoscedasticity of the error terms. The final assumption named the normality assumption requires that the error terms ε are independent of the independent variables X_1, X_2, \dots, X_k and normally distributed with zero mean and variance σ^2 , i.e. $\varepsilon \sim \text{Normal}(0, \sigma^2)$

The regressions will be used in the analysis of the data set in order to test whether there is a significant relationship between leverage levels and GP commitments. Several other variables are also included in the regression in order to separate out other effects. The other variables are selected based on several corporate finance theories and previous research and their selection were discussed previously.

8 RESULTS AND INTERPRETATION

8.1 HYPOTHESIS 1

Hypothesis 1: Debt ratios in companies acquired by PE companies increase after year T and the differences are statistically significant.

The results of the t-test and the Wilcoxon test (z-value) are presented in Figure 26. As can be seen, the two tests provide somewhat different results and probabilities, however they provide similar conclusions to whether there is a significant change in total debt ratios from before to after the acquisitions, except for the difference between debt ratios in (t+2) and (t-1).

| Variable | Difference | t-value | Prob. (t) | z-value | Prob. (z) |
|-------------|-----------------------------|---------|---------------|---------|---------------|
| Diff lev. a | $TDR_T - TDR_{(t+2)}$ | 0.1038 | 0.9179 | -0.256 | 0.7977 |
| Diff lev. b | $TDR_T - TDR_{(t-1)}$ | 0.2648 | 0.7924 | -0.730 | 0.4653 |
| Diff lev. c | $TDR_T - TDR_{(t+2)}$ | -0.8357 | 0.4082 | 1.082 | 0.2794 |
| Diff lev. d | $TDR_T - TDR_{(t+1)}$ | -0.9651 | 0.3383 | -0.058 | 0.9536 |
| Diff lev. e | $TDR_{(t+1)} - TDR_{(t-1)}$ | 0.0422 | 0.9665 | -0.428 | 0.6688 |
| Diff lev. f | $TDR_{(t+2)} - TDR_{(t-2)}$ | -1.3817 | 0.1840 | -1.449 | 0.1474 |
| Diff lev. g | $TDR_{(t+2)} - TDR_{(t-1)}$ | -1.1434 | 0.2652 | -1.369 | 0.1711 |
| Diff lev. h | $TDR_{(t+1)} - TDR_{(t-2)}$ | -0.1196 | 0.9055 | -0.214 | 0.8308 |

Figure 26: Results of the t-test (left) and the Wilcoxon test (right)

As can be seen in the results, based on the analysis of this data set, there is *not* enough statistical evidence to reject the null hypothesis and therefore there is *not* enough evidence to infer that there is a significant change in leverage from before the acquisition year to after the acquisition. Only for the test of the difference in total debt ratios between year (t+2) and (t-2) can there be said to be weak evidence of difference, both in the t-test and in the Wilcoxon test with probabilities of 0.184 and 0.147 respectively. The Wilcoxon test also provided weak evidence of significant change in debt ratios from year (t-1) to year (t+2), however this was not supported by the t-test. However, none of the probabilities can be said to infer a significant change. Even though Figure 22 showed a tendency of increasing debt ratios from (t-1) to (t+2), and some of the mean differences were relatively large, the differences cannot

be said to be statistically significant and based on this sample one cannot infer that PE companies actively leverage their portfolio companies.

8.2 HYPOTHESIS 2

Hypothesis 2: There is a statistically significant relationship between total debt ratios and the GP commitment as a percentage of average wealth.

In order to test hypothesis 2, the leverage in year T was used as the dependent variable. Based on corporate finance theories on firm characteristics that have been said to explain the capital structure and based on knowledge about PE buyouts, several independent variables were selected. As previously mentioned, according to (Frank & Goyal, 2007), leverage in the industry, tangibility of assets, size of the company and expected inflation are all factors that are said to be *positively* related to leverage, while factors like growth opportunity and profitability are said to be *negatively* related to leverage. However, studies specializing on LBOs (Axelson, Strömberg, & Weisbach, 2007) and (Brinkhuis & De Maeseneire, 2009) have found that the above-mentioned factors did not drive capital structure decisions in companies acquired by PE companies. (Axelson, Strömberg, & Weisbach, 2007) also suggested that there are other factors that drive debt levels in buyouts.

The purpose of the regression is as explained in hypothesis 2 to test for a statistically significant relationship between the debt ratios and the GP commitment as percentage of average wealth. Thus the first included independent variables, and the most important variables in this regression is the variables named (*gp_percent_avrg_wealth_partner*) and the (*gp_percent_avrg_wealth_prof*) which represents the GP Commitment as share of average wealth per partner and GP Commitment as share of average wealth per professional respectively. In order to control for any other possible relationships, four other variables were included in the analysis; *sales revenue*, *EBITDA*, *asset tangibility* and *investment year*. Sales revenue was chosen as a measure of company size, as according to the trade-off theory larger companies are expected to have lower bankruptcy costs due to more possibilities of diversification, they are usually more mature, and they usually have lower agency costs when issuing debt. Hence one could expect a positive relationship between debt ratios and sales revenue.

Secondly, EBITDA is chosen as a measure of profitability, however, as previously explained, profitability can also proxy as a measure of growth opportunities. According to the theoretical discussions, the expected results and interpretations are uncertain, and hence the variable is there in order to control for the possible effects.

The third independent variable that was included in the regression was asset tangibility, which is proxied by the ratio of fixed assets to total assets. According to the pecking order theory, the trade-off theory and previous evidence, the relationship between asset tangibility and debt ratios are expected to be positive.

Finally, the fourth variable included in the regression is the investment year. As suggested by (Axelson, Strömberg, & Weisbach, 2007), leverage in companies is often dependent on the actual amount of debt available in the market. In order to control for this possibility of changing debt availability, the investment year is included as debt market conditions and debt availability have changed over the sample period.

| Independent variables | Expected coefficient sign | Experienced coefficient sign |
|---|---------------------------|------------------------------|
| GP Commitment as share of average wealth per partner | Negative | Negative |
| GP Commitment as share of average wealth per professional | Negative | Negative |
| Size (Sales revenue) | Positive | Positive |
| Profitability (EBITDA) | Uncertain | Positive |
| Asset tangibility | Positive | Negative |
| Investment year | Uncertain | Positive |

Figure 27: Independent variables with expected and experienced coefficients

Figure 27 shows the different independent variables that are included in the two regressions and both the expected sign of the coefficients and the observed sign of the coefficients. Two regressions are made with GP commitment as a share of average wealth per partner and per professional respectively, and the results can be seen in Figure 28 and Figure 29.

| Leverage | Coefficient | Standard Error | t | Prob. (t) |
|---|-------------|----------------|-------|-----------|
| GP Commitment as share of average wealth per partner | -0.0413 | 0.0064 | -6.45 | 0.000 |
| Size (Sales revenue) | 9.64E-08 | 3.24E-08 | 2.98 | 0.014 |
| Profitability (EBITDA) | 9.52E-07 | 3.51E-07 | 2.71 | 0.022 |
| Asset tangibility | -0.1167 | 0.0530 | -2.20 | 0.053 |
| Investment year | 0.0217 | 0.0114 | 1.89 | 0.087 |
| Constant | -42.8934 | 22.9983 | -1.87 | 0.092 |

Figure 28: Regression with GP commitment as a share of average wealth per partner

| Leverage | Coefficient | Standard Error | t | Prob. (t) |
|--|-------------|----------------|-------|-----------|
| GP Commitment as share of average wealth per professional | -0.0198 | 0.004 | -4.89 | 0.001 |
| Size (Sales revenue) | 1.05E-07 | 3.11E-08 | 3.39 | 0.007 |
| Profitability (EBITDA) | 1.02E-06 | 3.33E-07 | 3.07 | 0.012 |
| Asset tangibility | -0.1167 | 0.0539 | -2.17 | 0.056 |
| Investment year | 0.0236 | 0.0114 | 2.06 | 0.066 |
| Constant | -46.5940 | 22.930 | -2.03 | 0.070 |

Figure 29: Regression with GP commitment as a share of average wealth per professional

As can be seen in both regressions, there is a negative relationship between the GP commitment and leverage, implying that in this model, leverage decreases when the GP commitment as a percentage of average wealth increases. This supports the theory that when GPs commit a share of the fund, there is less incentive to lever up the deals as much as possible. The result is also statistically significant at a 5 percent level for both partners and professionals. Thus, there is enough statistical evidence to infer that there is a relationship between the total debt ratios of companies acquired by PE funds that are included in this sample and the GP commitment to the PE fund.

Secondly, when looking at the other variables that were included in the analysis, all of the coefficients are significant at a ten percent level. Hence, this suggests that for this sample, the three company characteristics of size, profitability and asset tangibility are related to leverage.

The sign of the coefficient of size is the same as expected one can interpret that there is a positive relationship between size and leverage, supporting the theory of larger companies being able to sustain larger leverage ratios. When considering asset tangibility, the regression results shows a negative relationship, implying that companies with higher asset tangibility in fact have lower total debt ratios, holding all other variables constant. As discussed by (Harris & Raviv, 1991), this supports the pecking order theory claiming that the lower information asymmetry related to tangible assets actually make issuing equity less costly. Hence, for companies with higher asset tangibility, issuing equity will be the preferred source of financing and thus one could, as shown in this sample, expect a lower total debt ratio. The third company characteristic included in the regression, profitability, showed a small positive relationship with leverage for both the regressions. This supports the trade-off theory stating that tax shields for more profitable firms are more valuable and hence more profitable firms have higher debt ratios in order to make the most use of the tax shield of debt. In addition, as mentioned in the theoretical discussion in Chapter 3, expected costs of financial distress for profitable firms are also lower, enabling them to sustain higher leverage rates. Finally, one explanation of the positive relationship between profitability and leverage that was found in this analysis could be the use of debt as a mean to limit the free cash flow in the acquired companies and thus controlling and disciplining the managers of the portfolio company. The coefficient of the investment year is also statistically significant at a ten percent level and the positive sign implies that the debt levels increase over the time period of the sample, so that debt levels are higher in 2007 than they were in 2006.

9 CONCLUSIONS

This thesis has analyzed the capital structure of companies acquired by Private Equity companies in the period from 1997 to 2007 in Norway. The purpose of the analysis was to see whether the capital structure in these companies could be explained by other company or market characteristics than what is commonly said to explain debt levels in companies. In addition, the thesis also tests whether debt ratios in the companies that have been acquired by PE companies increase after the year they were acquired compared to the two years before the acquisition.

The results show that the differences between debt ratios in the years after the acquisition and the years before the acquisition are not statistically significantly different from zero, and thus one cannot infer that the companies have larger debt ratios after the acquisition than before the acquisition.

Secondly, the analysis of the sample shows that *size* measured by sales revenue and *profitability* measured by EBITDA both are positively related to debt levels, implying that larger companies have larger debt levels and that more profitable companies have larger debt levels. Further, the analysis show that there is a negative relationship between *asset tangibility* and debt levels, which implies that companies with high asset tangibility have lower debt levels. The analysis showed also that there is a positive relationship between *investment year* and debt levels, which could be interpreted that debt levels have been increasing since 1997 and until 2007.

Finally, the analysis showed that there is a negative relationship between General Partner commitments as percentage of average wealth per partner and General Partner commitments as percentage of average wealth per professional in the PE company, which implies that in this model, the debt levels decrease when General Partner commitment percentages increases.

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