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**VALUE CREATION OF LEVERAGED BUYOUT
INVESTMENTS AND PRIVATE EQUITY: EMPIRICAL
EVIDENCE FROM FINNISH PRIVATE EQUITY
TRANSACTIONS**

Master's Thesis in
Accounting and Finance
Finance

VAASA 2018

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Year of Completing the Thesis:	2018	Pages:

ABSTRACT

The purpose of this thesis is to investigate the performance of leveraged buyout acquisitions and investments (LBOs) backed and exited by Finnish private equity firms. Specifically, the study focuses on value creation of leveraged buyouts and improvements in operating performance of the target companies.

The thesis concentrates on the latest evidence from LBOs, while literature and studies from previous decades cannot be sided. In this thesis, the evidence of leveraged buyout value creation has been reviewed by using earlier research and literature. Due to a lack of studies contributed on Finnish LBO transactions considering value creation and operational performance, the study uses theory from European and U.S. buyouts. Improvements in operational performance and value creation in funds have been investigated by using earlier studies and by conducting empirical study about the effects of leveraged buyout investments to portfolio company's operational performance and value creation to portfolio investors.

Overall, it can be concluded that private equity firms are often able to improve portfolio company's operating performance, while sometimes improvements remain smaller, partly due to the situation in the debt markets. Previous empirical findings provide controversial results from performance of the private equity fund investments compared to public investments. Findings suggest that, private equity fund is often able to create similar returns to investors than public counterparts. One explanation for these mixed results could be the fee structure of the private equity fund. There is large gap between gross-of-fees and net-of-fees returns.

Keywords: Leveraged buyouts, private equity financing, acquisitions, buyouts

1. INTRODUCTION

Is success in buyouts more depending on choosing the right horse, while emphases on the rider are being brushed away? Leveraged buyouts, also known as LBOs, are relatively new and have been a significant element in the area of mergers and acquisitions over the last three decades. Value creation in LBO investments can be divided into two different sources: improvements in company's operational performance and leverage benefits that cause tax shield and improvements in management incentives. Despite improvements made to buyout companies, private equity firms are time to time accused of over leveraging their portfolios. Situation in the debt markets has significant affect on LBOs and therefore, the leverage in LBO investments has varied a lot over the time due to changes in economy factors.

Previous empirical literature regarding LBOs suggests that these investments cause higher corporate performance. These improvements in corporate performance are caused by managerial discipline, increased use of leverage and better managerial incentives.

Achleitner et al. (2011) points out that there is still a lack of research that investigates mechanisms of value creation in buyout targets and private equity returns. When concerning returns of private equity, the difference between return on enterprise value (EV) and return on equity value, must be considered. In addition, there is a need for more research about entry and exit pricing in private equity markets. There are plenty of unanswered questions regarding private equity. Does pricing explain private equity company's abnormal returns? For now that question remains unanswered, while there is a large consensus that ex post EBITDA multiple expansion is one of the key value drivers explaining returns of private equity. Entry and exit pricing is interesting when considering the illiquidity and diverse information asymmetries between different parties, and therefore, an understanding of determinants for entry and exit pricing in buyouts is important (Achleitner et al. 2011: 146-148).

Wright et al. (1994) defines a buyout as the purchase of a major stake in a company for a certain time using usually both equity and debt. (Wright et al., 1994a: 216.) In a leveraged buyout transaction, an investment firm (private equity firm) acquires a company by using only a small amount of own equity and a large amount of outside debt to finance the acquisition. Leveraged buyouts first emerged as widely known phenomena in the 1980s when the number of corporate mergers and acquisitions increased rapidly. Mergers and acquisitions were already common before the 1980s but the size of the mergers was increasing rapidly. Since 1980s private equity has received more attention amongst academic researchers and investors. Leveraged buyouts became an important tool of acquisitions and takeovers partly due to an easier access to debt markets. In 2007, U.S. private equity assets were almost 200 billion dollars and the growth has been considerable since then. Before the subprime crisis (2006-2007), a record amount of capital was committed to private equity industry, but crisis and turmoil in the debt markets declined the amount of capital committed to private equity (see figure 1. and 2.) (Pignataro 2014: xi) (Kaplan & Strömberg 2009:121-125).

Global Private Equity Transaction Volume 1985-2006

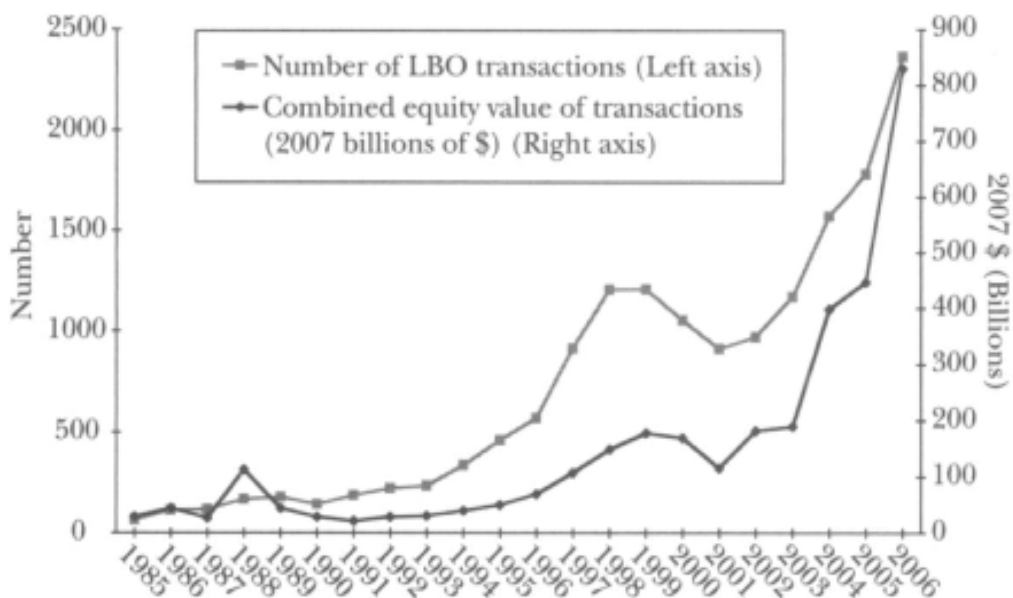


Figure 1: Global private equity transaction volume 1985-2006 (Kaplan & Strömberg 2009: 126)

LBO Loan Volume Since 1997

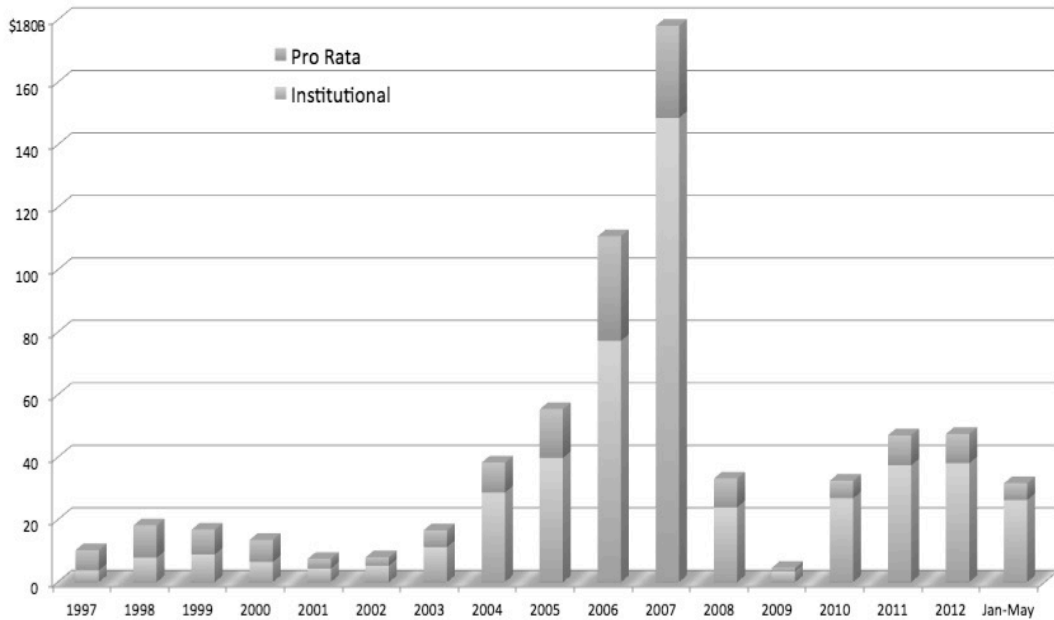


Figure 2: LBO loan volume since 1997 (Cross, 2013)

Financial crisis in 2008 raised questions regarding the role of the private equity and the effects of private equity buyouts, which are by far the largest investments of the private equity industry (Wilson, Wright, Siegel & Scholes 2012).

Private equity firms often use significant amounts of debt to finance their buyouts and therefore they have to use only a small amount of their own equity. Despite controversial reputation, private equity has become an important strategic way to allocate assets in the portfolios of institutional investors, pension funds and wealthy individuals. (Kaplan & Strömberg 2009:123-124).

1.1 Objective and Research Questions

Private equity has come an important strategic part of portfolios of insurance companies, pension fund, bank and wealthy individuals. Leveraged buyout companies or private equity firms finance their buyouts using 60 to 90 per cent debt. Previously banks invested in these loans, but at this date investors are mainly institutional. (Kaplan & Strömberg 2009: 124). Due to a large growth of this asset class, many investors believe that private equity is able to create really high returns and outperform public counterparts. (Phalippou & Gottschalg 2009: 1747). According to Cressy et al. (2007) and Kaplan (1989), it is widely believed that leveraged buyouts have created value to investee companies by improving performance and profitability more than their public counterparts. Nevertheless, the evidence from leveraged buyouts and private equity's profitability is not completely clear, as there is also academic evidence that privately owned companies have underperformed (in terms of operational performance) in comparison to their industry's public counterparts.

The main goal of this study is to examine the value creation and operating performance of leveraged buyout investments from a perspective of a private equity firm. The study provides an answer to the following question: how does the involvement of a private equity firm impact the operating performance and value of firms undergoing a leveraged buyout? This study investigates whether private equity firms are able to create abnormal returns by leveraged buyouts and improvements in the operating performance of investee companies.

First hypothesis of the thesis is focuses on relationship between private equity firm and the target company. Furthermore the first hypothesis of thesis is that there is a positive relationship between private equity ownership and the operating performance of the target company during the holding period of the sponsor. Also study investigates the relationship of the sales growth and enterprise value of the target company. Therefore the second hypothesis of the thesis is that leveraged buyout transactions with higher sales growth during the holding period yield a higher enterprise value.

1.2 Structure of the Thesis

The thesis is divided into four main chapters. The first main section defines and introduces the private equity industry and leveraged buyouts. Furthermore, main characteristics and backgrounds of both are demonstrated. Thus, the section defines, what is private equity financing, what are private equity funds and what are the risks and opportunities of private equity. In addition, chapter introduces leveraged buyout investments.

The determinants of leveraged buyout investments are presented in the second main section. This chapter focuses on the estimates of value creation and introduces the main sources of value creation in leveraged buyout investments. This part of the thesis review the methodologies used in study to define value creation in buyouts by estimating private equity firm's ability to improve portfolio company's and value creation in private equity funds.

Evidence of value creation in leveraged buyout investments is presented in the third part. This section is divided into two parts: LBOs ability to create improvements to portfolio company's operational performance and LBO funds ability to create returns to fund investors. Evidence is collected from earlier literature about LBOs. Section of this provides answers to these stated research questions and presents whether private equity firms are able to improve portfolio company's operational performance and whether private equity funds are able to create abnormal returns by using LBOs. Fourth chapter of the thesis introduces the data that is being used to produce empirical results of the study. Furthermore, the next chapter shows the empirical results of the study. The Last section of this thesis then concludes the results.

2. PRIVATE EQUITY INDUSTRY

2.1 Private Equity Financing

The private equity market has become an important source of funds for young start-up firms, private middle-market firms, firms in financial distress, and public firms seeking buyout financing. While private equity has been a fastest growing market for corporate finance, it has received relatively little attention in the press. (Fenn et al. 1997: 1).

As stated above, the main issue concerning private equity research is the amount of data available. Due to the fact that private equity companies are not publicly traded, they do not have to follow the same disclosure requirements as their public counterparts. There are also differences concerning the publicity of accounting statements among private equity companies, as European private equity companies are required to deliver accounting statements to public domain while U.S private equity companies do not. (Jenkinson & Sousa 2014: 401).

There are two main types of private equity investments: venture capital investments and leveraged buyouts. Venture capital investments focus mainly on early stages of companies and they are often used to fund product development and research. Venture capital investments concentrate to help a company in launch, development and expansion. The buyout is the only type of private equity investments that contains debt. Therefore it is a mistake to think that all private equity firms use leverage as a tool (Frasier-Sampson 2011: 2-13) (Cendrowski et al. 2008: 19-20). Unlike venture capital deals, leveraged buyouts focus more on mature and public companies that want to expand their market share. Leveraged buyouts often include a large amount of debt as it is assumed that a higher debt-to-equity ratio causes a higher return on equity for equity holders. According to Kaplan & Strömberg (2008), in a typical transaction, the private equity company buys another company with a premium of 15-50% over the current stock price. These transactions or buyouts are often financed with large amounts of debt and therefore referred as leveraged buyouts. The value of U.S. private equity transactions compared to U.S.

stock market value increased rapidly between 2000-2007. (Cendrowski et al. 2008: 21-22)(Kaplan & Strömberg 2008: 124-125).

According to Kaplan & Strömberg (2009) private equity firms are typically arranged as a certain kind of partnership or limited liability corporation. Jensen (1989) mentions that professional investors including famous LBO partnerships like Kohlberg Kravis Roberts and Clayton & Dubalier (including legendary investor Warren Buffet) were among the first to build a new model of general management, which became the most used management model of private equity industry. Characteristics for this business model are pay-for-performance compensation system, high leverage level, value maximization and large equity ownership by management team. Thus these organizations are able to motivate people, resources and perform more effectively than in public corporate form due to a lack of conflict problems between the management and owners. (Jensen 1989: 7).

According to Axelson et al. (2009), transaction types in private equity can be divided in three categories. In the first category private equity fund tries to find a target and work on an exclusive basis with the vendor. In the second category different private equity companies compete in an auction to purchase a company. In the third category the private equity firm tries to take over a publicly quoted company. In these public-to-private deals shareholders ultimately decide whether they accept deal or not. (Axelson, Jenkinson, Strömberg & Weisbach 2009: 8)

2.2 Private Equity Funds

Private equity market connects talented managers and institutional investors when both benefit from new partnership. This private equity partnership or private equity fund can be seen as a connector of highly talented managers and capital providers and therefore as a really powerful investment machine. Through a private equity fund, a private equity firm is able to raise equity capital. General partners (GPs) are responsible for managing the fund and handle investments to portfolio/investee companies while limited partners (LPs) provide the most of the capital. LPs are typically institutional investors or wealthy individuals, while a private equity firm

usually works as a GP. GPs often provide their share of the capital to the fund first. After providing the capital, LPs are not able to affect to GPs investments decisions while GPs must follow the fund agreements, which often include different sorts of restrictions. Thus there are often limits on how large capital portion can be invested into one company, what assets a fund can invest in and how high the leverage ratio can be. Private equity funds' final goal is to realize value increase in portfolio companies. There are three ways for GPs to earn compensations through funds. GPs earn management fees, which are usually a certain percentage of committed capital. Thus GPs also earn a carried interest, which is often roughly 20% and deal charges and monitoring fees of investee companies (Kaplan & Strömberg 2008: 124).

The Private Equity Business Model

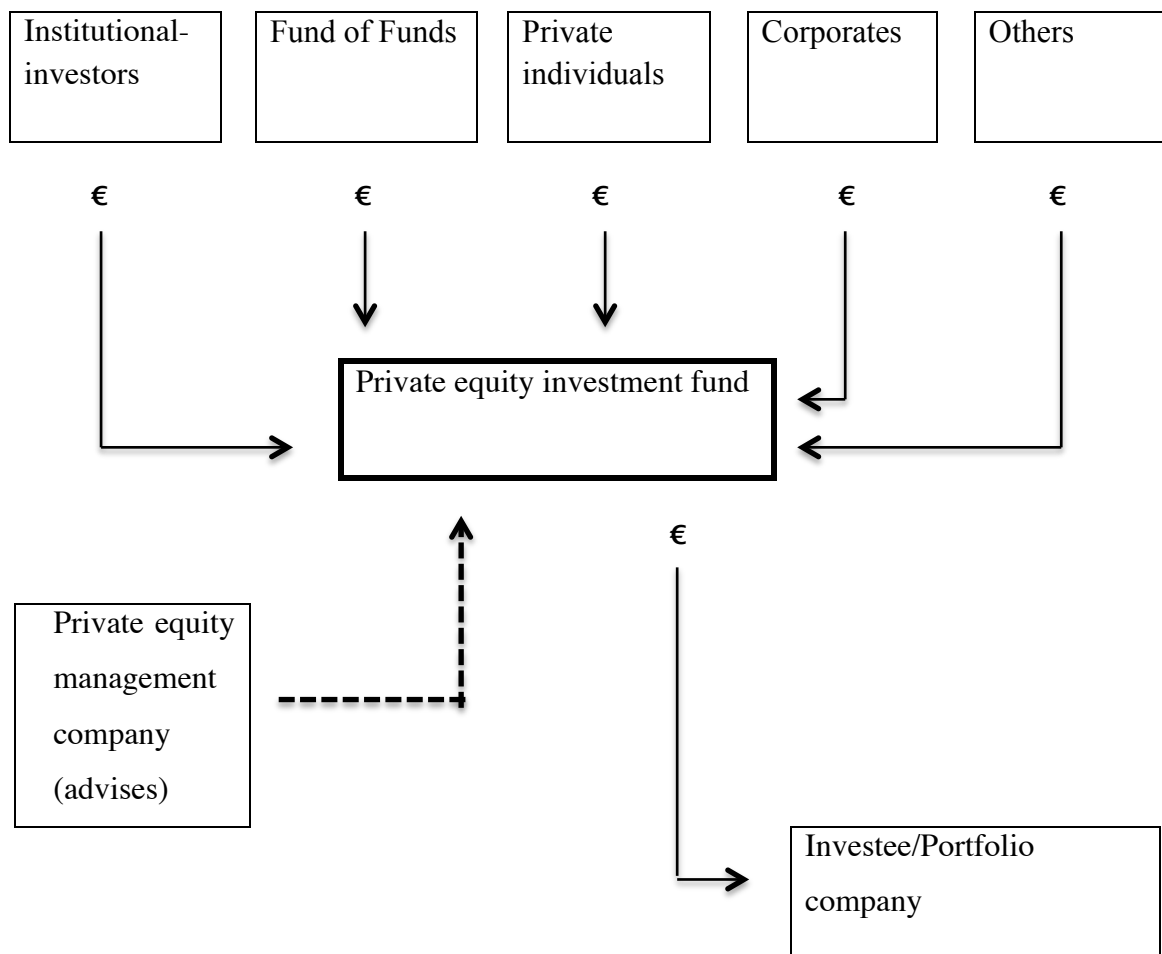


Figure 3. The private equity business model (EVCA 2007)

2.3 Risks and Opportunities of Private Equity

While private equity fund seems to be an optimal investment opportunity with highest possible returns, there are different uncertainties and risks due to the nature of these investments. Zhu et al. (2004) divides risks of portfolio into six different categories. These risks are bankruptcy risk, liquidity risk, reinvestment risk, partnership/management risk, historical data risk and tax management risk. Bankruptcy risk means that there is a risk that a portfolio company runs out of money. If a portfolio company has not invested heavily on tangible assets, there is a possibility that financiers are not able to recover much of their investments. Thus the illiquidity is the main risk for investors concerning investments to private equity funds (Emery 2003: 47). Kaserer and Diller (2005) point out that there are no secondary markets for private equity fund investments. Thus trading with LPs investments is not possible during the fund's lifetime and therefore investors must hold their capital in the fund in question until their exit. (Kaserer & Diller 2005: 112). Nonetheless, there is one opportunity for LPs to liquidate committed capital before the end of a fund. In a "secondary buyout" a private equity firm buys stakes of the portfolio company of another private equity firm. These secondary buyouts have developed substantially and they should decrease the level of illiquidity of the asset class (Diller & Kaserer 2009: 645). Due to limited investment opportunities, private equity firms are not able to invest distributions from private equity fund to fund and therefore distributions are not able to generate similar returns to original investment. Thus there might be different conflicts between GPs and LPs. For example, GPs might take too much risk in investments to get higher returns due to a small amount of committed capital. Historical data risk refers to a limited amount of data and information about previous business performance of the portfolio companies. Tax management problems occur if private equity cannot smooth out this tax liability over the life of the investment. (Zhu et al. 2004: 32). On the other hand, private equity is an attractive possibility for the asset allocation. A private equity firm aims to maximize the performance of the portfolio company, while there are also other reasons to invest in private equity. For example, investing in private equity might stimulate local economy (Lerner et al. 2007: 755).

2.5 Private Equity in Finland

Finnish private equity funds raised 532 million euros in 2016 at which 114 million was raised for venture capital funds and 418 million for buyout funds. Investors were for example pensions companies, state investing companies, family offices, insurance companies and private investors. Furthermore, foreign investments tripled compared to 2015. More than 100 million came from international investors. Thus, there are 30 members at the Finnish Venture Capital Association that focus on buyout transactions. According to FVCA, the average buyout investment in Finland is about 4.7 million euros. (FVCA)

2.5 Leveraged buyouts

In a leveraged buyout, a company is acquired by an investment firm, (private equity firm), using a small amount of own equity and significant amount of outside debt to finance the acquisition. Private equity firms and investment banks use leveraged buyouts. In a buyout transaction, the investment firm usually buys a majority control of a company.

In the 1980s, leveraged buyouts became more common, partly because it was easier for buyers to borrow more money. Leverage buyouts of public companies were relatively rare during the 1990s and in the beginning of the 2000-century, but in the mid-2000s these transactions reappeared (Second leveraged buyout boom, Kaplan & Strömberg 2009: 122). If a company is able to borrow more money, it needs less own equity to finance the acquisition. The leveraged buyout model is also used in investment banking.

Successful leverage buyouts consist of three elements: cash availability (interest, debt pay-down), operation improvements and multiple expansions. A private equity firm has to calculate optimal exit opportunities. Private equity firms try to benefit from the cash flow of the acquired company. Cash flow is used to pay down debt and interest and therefore by the time debt will transfer into equity value.

After the buyout, a private equity firm tries to make improvements to the company's operating performance and make business more efficient. Improvement in operating performance should increase cash flow and consequently, the overall value of the business. Increase in overall business value means that business can be sold at a higher price. Investors, funds and companies have expertise in different industries and are thus more able to improve certain parts of the business. Generally speaking, the private equity firm's aim is always to improve the overall value of the acquired company.

Multiple expansion means that an overall value of the company will increase. Multiples are set for the purchase and exits of the target company. Returns from buyouts are realized when the business is sold. There are different ways to exit a buyout: strategic sale, financial sponsor, initial public offering and dividend recapitalization. Strategic sale means that a company can be sold to a strategic buyer who finds strategic benefits to owning the business. Financial sponsor often means another private equity firm that has a different focus. Initial public offering (IPO) means that a company can be sold to the public markets. In a dividend recapitalization a company receives liquidity from business investments. (Pignataro 2014: 1-4)

2.5.1 Different types of buyouts

Leveraged buyout deal process includes many different theories and concepts thus these interact differently with each other. The main concept is the leveraged buyout (LBO), which can be defined as a buyout transaction that is financed with using a significant amount debt and a small portion of own equity. Almost all transactions are financed through debt and hence they are named as LBOs. LBOs can be divided into three different subcategories. These buyout types are management buyouts (MBO), management buy-ins (MBI) and institutional buyouts (IBO) (Talmor & Vasvari 2011: 275). LBO is called a management buyout (MBO), if the incumbent management team (backed by PE investors) leads the transaction. On the other hand if there is an outside management team that acquires the company it is referred as a management buy in (MBI). MBOs and MBIs differ in terms of information levels as

the incumbent management team has more private information about the company. MBIs often happen if the incumbent management is not able to realize the full potential of the company and therefore these transactions are more often hostile. If the new owners of the acquired company are entirely institutional, the transaction is referred to be an institutional buyout (IBO). Renneboog & Simons (2005) describes differences between MBOs and IBOs: “In terms of equity ownership, what separates MBOs from IBOs is whether the management team gained its equity interest through being part of the bidding group (in case of an MBO) or as a component of a remuneration package (in case of an IBO). As the incumbent management in an IBO does not negotiate on behalf of the bidding group, IBOs do not spark same controversy as MBOs”. (Renneboog & Simos 2005: 3).

2.5.2 LBO transaction process

Talmor & Varvari (2011) describes the LBO analysis: “ The analysis of LBOs requires knowledge of many concepts, theories and instruments. For example, knowledge of the different debt and equity instruments as well as ways to determine the debt capacity of a company is needed to understand the capital structure of buyouts.” Thus LBO financing includes a large amount of assumptions and decisions that correlate with each other in very different ways. Typical LBO transaction process consists of five different phases that are used in LBOs execution. These phases are: (1) Screening of deal opportunities, (2) due diligence, (3) acquisition of the target, (4) active ownership and management and (5) exit of the target.

First stage in LBO deal transaction process is the *screening of deal opportunities*, which includes searching and screening different opportunities and possible deals. GPs in private equity firm are typically in charge of sourcing potential deals and there they use their personal networks that include different sorts of experts, CEOs and investment bankers. After sourcing, the initial screening (based on available information from the company) is conducted in order to crop deal opportunities. Usually a potential LBO target is able to work under a high leverage, potential exit opportunity is within 5-to-10-years and should be able to generate 20% IRR.

Furthermore, searching and choosing LBO target companies is perhaps the most important job of private equity firms. Talmor & Vasvari (2011) name seven important characteristics for LBO target: (1) Low current leverage, (2) predictable and strong cash flows, (3) strong asset base, (4) operational improvement opportunities, (5) growth opportunities, (6) exit opportunities and (7) availability of a strong management team. Other considerations concerning LBO targets include size of the company, ownership structure, geography and industry.

Second stage of deal process includes *due diligence and negotiation*. Due diligence means an investigation of a business being acquired. Due diligence is an important process where all possible aspects of the acquired company are estimated and evaluated. Thus, the meaning of due diligence is to understand the structure of the company and what are the possible risks that may occur with investment. Most firms hire consultants to complete the due diligence, while sometimes private equity firms have expertise to handle some parts of the due diligence process. Due diligence process takes often 2-6 months, while sometimes process is being done faster due to time pressure. Furthermore, the due diligence process can be divided into four different stages: (1) Strategic due diligence, (2) operational due diligence, (3) financial and accounting due diligence and (4) legal due diligence.

In *acquisition of the target*, private equity firm must be able to structure financing as well as possible in order to get highest possible returns. Therefore right price is one of the key factors when acquiring a company. Buyout must be able to generate returns to fund and investors, but at the same time, price must be higher than competitors offers. Acquisition phase and process is different in different types of deals. Private equity firms create LBO models to help in deal structuring and to get information and data that price for each acquisition is optimal.

Active ownership and management of the target is one of the key value drivers in leveraged buyouts. Active ownership can be divided in six different substages: (1) Defining the full potential of the firm, (2) develop the blueprint of the company, (3) accelerate performance, (4) harness the talent, (5) make equity sweat and (6) result-oriented mindset, which refers to management incentives.

Exit is the last stage in buyout transaction process. Usually the holding period of the buyout company is relatively short and varies between three and seven years due to

the fact that success of a fund depends on the internal rate of return (IRR) of the investment. When considering an exit, a private equity firm detects current and future market conditions, growth potential of the buyout company, and additional investment opportunities. Private equity firms aim to generate increase in EBITDA, use cash flows to pay debt and generate higher exit multiple before exiting from investment (Talmor & Vasvari 2011: 258-269).

LBO transaction process

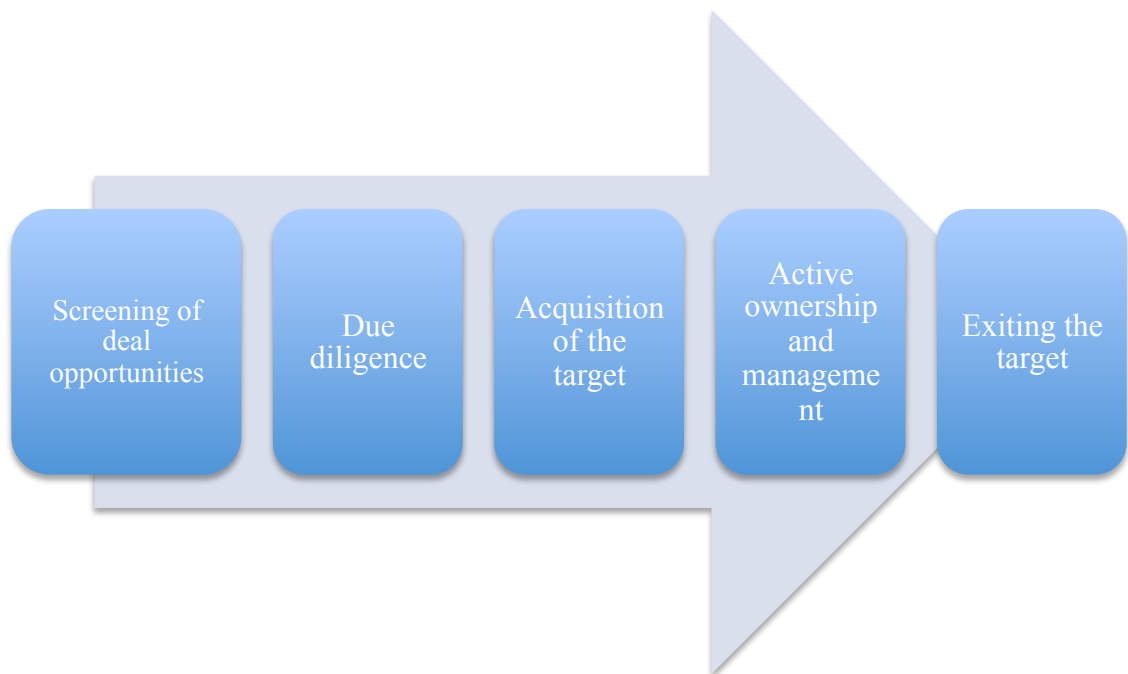


Figure 4. LBO transaction process (Talmor & Vasvari 2011: 276)

2.4.3 Capital structure of LBOs

LBOs often have different debt structures due to the nature of the target, different market conditions and investors. Usually LBO transaction contains 50-70% debt and 30-50% equity. High leverage increases in returns, while it also causes higher financial distress costs. Thus, the debt consists from different instruments, which include different risk levels and return possibilities (See table x). Senior instruments

face lower risks and therefore an interest rate and payments are lower. These instruments are typically responsible for 25-50% of the whole amount needed to finance the acquisition and consist of bank loans and corporate bonds. Investment banks are strongly involved in terms of issuing loans to these investments. Senior debt contains stricter covenants, which causes pressure to the buyout company to maintain certain credit situation in terms of leverage ratio, interest service coverage ratio and debt service coverage ratio. Thus these covenants may limit the flexibility of the buyout company. In contrast, junior debt instruments allow higher operational flexibility for the target companies, but are also more expensive. This Mezzanine financing is a deal between private equity firm and mezzanine providers and it can be modified to meet both parties' interests. Mezzanine financing typically covers 0-10% of the funds needed. Equity provided in LBO transactions varies due to changes in the debt markets. In accordance, private equity firms may form consortiums for large LBO transactions. These deals are known as *club deals* and their purpose is to decrease the equity commitment of each private equity firm.

LBO Capital Structure

Standard and Poors' computed averages for the period 1999-2008

			Seniority		
Debt	70%	Senior	45%	Revolver facility Senior term debt Tranche A Tranche B Tranche C Tranche D	
		Junior	20%	Subordinated debt High-yield bonds	
		Mezzanine	5%	Convertible debt	
Equity	30%	Preferred stock Common stock		Low	

Table 1: Example of an LBO capital structure (Talmor & Vasvari 2011: 263).

3. DETERMINANTS OF LEVERAGED BUYOUTS VALUE CREATION

3.1 Estimates of value creation

Estimates of buyout value creation are determined from the point of equity investor in an equity fund based on value in the acquired company over the investment period. The equity value of acquired company can be divided into four different determinants: valuation multiple, revenues, margin and net debt.

$$\text{Equity Value} = \text{Valuation Multiple} * \text{Revenues} * \text{Margin} - \text{Net Debt}$$

$$\text{Valuation multiple} = \text{EV} / \text{EBITDA}$$

$$\text{Revenues} = \text{Company's sales}$$

$$\text{Margin} = \text{EBITDA} / \text{Sales}$$

$$\text{Net Debt} = \text{Long term debt} + \text{Short term debt} - \text{cash and marketable securities}$$

The first determinant of value generation driver is the valuation multiple, which is often considered to be the ratio of enterprise value and the EBITDA figure. Enterprise value is calculated as a sum of the value equity and net debt at the time of the buyout. (Berg & Gottschalg 2015: 7)

$$(2) \text{ Enterprise value} = \text{Equity} + \text{Net debt}$$

EBITDA refers to earnings before interest, taxes, depreciation and amortization and it is used as a measure for estimating the operational performance and earning potential of the potential company (Kaplan & Strömberg 2009: 138). According to Berg & Gottschalg this determinant has no impact on the financial performance of the acquired company because changes in the multiple are not correlated with the financial performance of the company. Generation of value creation through valuation multiple is due to changes in the other market factors, such as private

information, different expectations regarding the financial performance and industries and other factors that affect on the markets.

The second determinant is related to revenue growth, margin improvements and net debt of the acquired company. These three factors can improve the financial performance of the acquired company and in addition these have affect on the operational performance of the company. Improvements in financial performance of the acquired company are often due to improvements in operating performance through revenue growth or/and margin improvements. In addition, the company can optimize its cost structure in order to reduce costs of capital. Optimizing the company's cost structure does not always lead to financial improvements as debt and equity portions have no direct effect on the value of the company. Improvements in these factors mentioned above will ultimately lead to greater equity value of the company. (Berg & Gottschlag 2005:12)

Combining the equations (1) and (2), it is possible to form an equation (3) that helps to determine the enterprise value. The equation can be shown as:

$$(3) \text{ Enterprise value} = \text{Equity value} + \text{Net debt} = \text{Valuation multiple} * \text{EBITDA}$$

Therefore value creation must be due changes in some component of equity value which are valuation multiple, revenues, margin and net debt.

Berg & Gottschalg divide the conceptual framework of buyout value creation into three different dimensions. The dimension one is about phases of buyout value generation. There are three phases in a buyout process; acquisition phase, holding phase and divestments phase. Second one is about causes of buyout generation. Value creation is often analyzed from the point of an equity investor. Third tells the sources of buyout value generation. Buyout value generation can depend on the characteristics of the investor involved. Value generation is then often created by improvements in operating performance and it can be achieved by expertise of an equity investor. (Berg & Gottschalg 2015: 5-10)

3.2 Sources of value creation

According to Kaplan & Strömberg (2009), sources of leveraged buyout value creation can be divided into three different dimensions; financial, governance and operational engineering. These levers are used in investee/portfolio companies in order to improve buyout companies' overall value. Value creation drivers are closely related to sources of value creation and therefore to financial engineering, governance engineering and operational engineering. Value creation drivers create value within these classes.

Loos et al. (2007) divided value creation drivers into three lower categories; direct drivers of value creation effect directly to free cash flow generation of the acquired company by cost reductions, asset utilization, growth generation and financial engineering. These drivers improve the financial performance and therefore create value to private equity firms' portfolio companies. Indirect drivers amplify the positive attributes of direct drivers. These drivers are related to changes in organization, corporate governance, ownership structure and use of leverage in buyouts. In addition to direct and indirect drivers of value creation, there are also other sources of value creation, which are related to information asymmetries and market inefficiency around buyouts and acquisition and negotiation skills in buyouts (Loos et al. 2007: 21-34).

3.2.1 Financial engineering

According to Jensen (1988), the value of the company is maximized when debt and equity ratio is optimal and marginal benefits and marginal costs are equal (Jensen 1988: 30). Private equity firms use financial leverage in order to create value to their investee companies. According to Guo et al. (2011) there is a positive correlation between the debt financing and cost structure of the investee/portfolio company. Companies are able to lower their WACC (Weighted average cost of capital) and increase valuation multiple by taking large amounts of cheap debt (Guo et al. 2011: 513).

Another important source of value creation in LBO's is tax shield. In leverage financing the interest payment is tax deductible. This view is valid only until the debt cost is lower than the advantage from the tax shield. If the amount of leverage is too large, the debt costs can exceed the benefits and lead to lower returns and value. (Talmor & Vasvari: 293).

Guo et al. (2011) contains information about the benefits of increased debt to operating performance of the portfolio company. Study argues that tax benefits from larger leverage account for 33,8 of the sample returns to pre-buyout capital (Guo 2011: 508-509). These results and studies support theory that larger realized tax benefits due to leverage create larger returns for private equity companies.

Kaplan & Strömberg (2009) suggests that certain controlled amount of debt also controls the portfolio company's management. Because of interests and regular payments, the management is not able to use more money than they should, and therefore it is easier to control the free cash flow of the company. Private equity firms also pay attention management incentives in investee companies by giving upside possibilities for the management through stocks and options. Firms often demand the management of the portfolio company to make investment in the company so that there is also possibility for downside risk. These investments cannot be liquidated because companies are now private and value becomes liquid only in exits. Therefore the purpose of these management's investments is to lower the risk of short-term manipulation and reduce agency problems. Management incentives are connected also connected to governance engineering. (Kaplan & Strömberg 2009: 131).

3.2.2 Governance engineering

Governance engineering is another important source of value creation in LBOs. When a private equity company acquires a company, it often makes improvements in the buyout company's governance. With improved corporate governance, a private equity company tries to lower its agency costs. In practice governance engineering means that a private equity firm is controlling an investee company's

board and are more active in corporate governance than boards in companies operating in public markets (Kaplan & Strömberg 2009: 131)

According to Acharya and Kehoe (2008), private equity boards do not hesitate to replace the management if needed and about 33% of chief executive officers are fired within 100 days period after buyout and 66% are replaced during first four years (Acharya & Kehoe 2008: Page?). Berg & Gottschalg (2005) argues that private equity firms try to hire managers with pay-to-performance system in order to attract most talented managers in the markets (Berg & Gottschalg 2005: 29).

Kaplan & Stein (1992) founds that there are positive changes in median percentage between pre-buyout and post-buyout equity when the post buyout management owns equity. Before the buyout, the new management owns about 5% of the equity and after the buyout the median management equity of the company is 22,3%. Kaplan & Stein also provides a ratio of the percentage of post- to pre-buyout equity owned by the management team. This ratio measures changes in the intensity of the relationship between managerial effort and compensation. Ratio in their research, which included 102 buyouts with pre and post information, was 4,14. While a large percentage of post-buyouts suggest that the management team tries to maximize value after the buyouts, they also tend to “cash out” at the time of a buyout. Management team’s cash out may cause adverse ex ante incentive effects which means that value of their pre-buyout equity lowers while post-buyout equity ownership has risen. Kaplan and Stein also calculated median ratios for the dollar value of post- to pre-buyout equity using sample of 124 management buyouts between 1980-1989. Ratio 0,46 indicates that management team invests almost half in post-buyout equity compared to what they receive for pre-buyout equity (Kaplan & Stein 1993: 341-342).

Similarly Guo et al. (2011) argue that company’s managements greater equity proportions provided for the buyout are in alignment to larger management incentives with shareholders. Their sample consisted of 94 post-buyout samples and in 58 (about 62%) of the deals management invested equity for the buyout (Guo et al. 2011: 498).

3.2.3 Operational engineering

In addition to financial and governance engineering, private equity firms use their operating knowledge in order to find profitable investments, to create value creation plan for these investments and to implement these plans. Due to a situation in debt markets and modern business model, private equity firms focus more on developing operating effectiveness of the investee company. As mentioned earlier, improvements in operational performance lead to greater economical value. (Kaplan & Strömberg 2009: 130-132).

Berg & Gottschalg (2005) argues that the development in operational effectiveness has impact on operating margins and cash flow of the company. These improvements are achieved with more efficient overall productivity and more efficient operations. Private equity firms start to tighten cost control immediately after the acquisition (Berg & Gottschalg 2005: 20). Muscarella & Vetsuypens (1990) confirms that most firms disclosed activities after the LBO. They found that 57 out of 72 (75%) firms closed at least one of the ongoing activities since the LBO (Muscarella & Vetsuypens 1990: 1396).

According to Nikoskelainen (2006), European LBOs provide value creation opportunities through improved cash flow and growth possibilities. Characteristics for typical LBO target are relatively low gearing, relatively low EBITDA margin, high cash flow volatility, relatively high operating profit and high turnover on assets. Therefore the real value is created through improved operating efficiency and growth (Nikoskelainen 2006: 332).

Guo et al (2011) investigated the potential determinants of returns to pre- and post-buyout capital and the proportion of the return that can be explained by changes in operating performance. Determinants being investigated were operating performance, valuation multiple and impact of realized tax benefits on returns. Findings suggest that there is a 22,9% adjusted change of the return to pre-buyout capital and 18,5% change to post-buyout capital in operating performance. Positive results could also result from changes in industry or markets and 17,7% of the return to pre-buyout capital and 12% to post-buyout capital were due to changes in valuation multiple/changes in industry valuation. Last 33,8% (pre-buyout) and

44,5% (post-buyout) of the changes in returns were due to tax benefits of debt. (Guo et al. 2011: 503-509).

Cressy et al. (2007) discovered that private equity firms' expertise in some industry causes competitive advantage over other private equity firms, which are not specialized. Premium contributed for this expertise is between 6% and 8,5%. Profitability and efficiency of the PE-backed firm during the buyout year, affected significantly to its post-buyout profitability. These findings suggest that expertise in investment selection and financial engineering explain improved performance more than management incentives for example (Cressy et al. 2007: 666-667). In a risk adjusted-basis, private equity funds average returns after management fees have not been as large as many investors have though (Conroy & Harris 2007: 106).

4. EVIDENCE OF VALUE CREATION IN LEVERAGED BUYOUTS

4.1 Operational performance

There is large empirical evidence of the increase of operating performance of companies acquired with leveraged buyouts. According to Kaplan & Strömberg (2009) the operating income to sales ratio increased 10-20% and cash flow to sales ratio increased about 40% during the 1980s private equity deals (public to private deals), while capital expenditures to sales- ratio lowered. Therefore the value of private equity portfolio companies increased during the first leveraged buyout wave in the 1980s. (Kaplan & Strömberg 2009: 132).

Guo et al. (2011) investigates U.S public-to-private transactions between 1990 and 2006 and it provides similar results while points that increase in cash flow and operating margin are more conservative than in the 1980s. Deals between 1990 and 2006 are much more conservatively priced and contain less leverage than deals made in the 1980s while deals still include caused default risk to companies. Guo et al. describes: “The returns to either pre-or post-buyout capital invested on average are large and positive, and are positive for all outcome groups except those ending in a distressed restructuring”. LBO-gains regarding operating performance are higher than gains for their industry counterparts and increased operating performance accounted for about 20% of the returns compared to pre-buyout capital. Due to a larger leverage, the cash flow of the company increases while the replacement of the CEO also boosts company’s cash flow. Returns from tax benefits depend on if the leverage will be held until the exit from portfolio-company. Authors remind that these LBO returns might not occur under other credit and market conditions. (Guo et al. 2011: 514).

Cohn et al. (2014) investigates financial structure of LBO and performance after LBOs and contains evidence from 317 LBOs between 1995-2007. Authors found only little evidence of LBOs improvement on the operating performance of the acquired company, while these results do not necessarily generalize the entire

population of LBOs because of limited data sources. Leverage and debt levels of the acquired company increase after the LBO (Cohn et al. 2014: 493).

Scellato & Ughetto (2013) investigates whether European buyouts have an impact on the performance of the target company's performance during the three year period after the buyout. Asset and employee growth rates are higher in companies undergoing a buyout than in non-buyout companies. Thus there is a lack of evidence from the impact of controlling companies regarding the profitability of the acquired company. The buyout variable and average profitability of PE-backed company are not correlated three years after buyout. Increases in total assets and improved EBITDA figure seem not to be large enough in order to improve the profitability of the company. These findings are opposite to results of previous studies conducted in the 1980s that show improvements in performance and profitability of the company post-LBO (Scellato & Ughetto 2013: 2648).

Groh & Gottschalg (2006) analyzes the financial performance of 199 U.S buyout investments between 1984-2004 and compares buyout returns to S&P 500 index portfolio returns. There is a significant alpha for buyouts, which means that buyout returns are larger than returns of the control portfolio and therefore the study suggests that buyouts would be able to outperform S&P 500 index and create abnormal returns. According to authors, buyout investors detect industries that have low operating risk while they use leverage to finance the transactions. By using leverage as a tool, private equity firms transfer part from the risk to the risk lenders. (Groh & Gottschalg 2006: Sivu)

Braub & Latham (2009) suggests that board characteristics predict whether the performance of the acquired company is going to be positive or not and modification to company board causes changes to firm performance. It can be assumed that the buyout company and banks are involved in company board structuring due to the fact that both want to raise company's operational performance. Results indicate that increases in board sizes after the LBO caused positive improvements to the company's performance while changes to smaller boards have a negative impact on the performance. Authors found also evidence for the under-valuation hypothesis as potential LBO- candidates have high agency costs of cash flow (low growth prospects and large free cash flow). These findings

suggest that boards and board modifications are an additional source of value creation in leveraged buyouts and improve operational performance of the portfolio company (Braub & Latham 2009: 721-722).

Colla et al. (2011) investigates impact of leverage in buyouts using a sample of 238 LBOs between 1997 and 2008. The study shows that the use of leverage in LBOs affect positively to the company's profitability. Authors remark that " Use of debt and its pricing are simultaneously determined and find that spreads increase with leverage, after accounting for the endogeneity of leverage in the spread regressions". There are also differences in types of lenders, as senior investors tend to lend more generously during hot buyout markets. This supports a theory that when debt is cheap, there is an oversupply of debt to finance buyouts. (Colla et al. 2011: 136).

Similarly, Achleitner et al. (2010) investigates European buyouts between 1991-2005 with sample of 206 buyout transactions and concludes that the leverage is explaining the returns to private equity firm by improving the return on equity percentage. The effect of leverage accounted for about 33.3% of the value creation and the rest can be attributed to operational improvements and changes in EBITDA multiples (Achleitner et al. 2010: 25).

Kaplan & Strömberg (2009) points similarly that companies are now focusing more on operational engineering than in financial engineering and governance engineering (Kaplan & Strömberg 2009: 132).

These findings on the effect of the buyout on operating performance of the acquired company from previous academic studies suggest that there is not enough evidence on improvements in the company's performance and profitability over different time periods (1980-2014). Similarly, Kaplan & Strömberg (2009) argues that more recent evidence from impacts of LBOs to company's operating performance is needed (Kaplan & Strömberg 2009: 131)

4.2 Value creation in funds

According to Harris et al. (2013), evidence of private equity firm's performance is still uncertain, while there has been a large increase in investments to private equity funds. Uncertainty is mainly caused by limited amount of data available for research purposes. (Harris et al. 2013: 3). Previous studies and empirical findings provide controversial results from performance of the private equity fund investments compared to public investments. There is a large amount of studies that support the theory that private equity funds have created positive abnormal returns compared to other investments.

Ljungqvist & Richardson (2003) made a cross-sectional analysis of the excess internal rate of returns (IRR) and concluded that private equity investments create five to eight percent higher annual returns compared to public alternatives. Excess returns of private equity are related to timing, portfolio company risk measurements and to different measurement methodologies. (Ljungqvist & Richardson 2003: 28).

Jenkinson & Sousa (2014) investigates determinants of exit decisions for leveraged buyouts with a large sample of 1022 European private equity exits. Exiting from portfolio company investment is an important decision for private equity fund. Private equity firm has three ways to deliver the exit; first, and probably the best known is the IPO (Initial Public Offering), second is the trade sale (Sale to another company), and third, the secondary exit (Sale to another private equity fund). When exiting, private equity firms' aim is to get the best price possible from the selling of Portfolio Company. Capital market conditions offer different windows for exits. For example, secondary buyouts are the most profitable exit route when IPO- markets are cold and there is a higher availability of cheap debt and large amount of committed capital, which is not yet invested in the private equity industry. Study suggests that capital market conditions are the most important determinant of the exit decision. When stock markets are increasing steadily, the usage of IPOs seem to be larger compared to usage of secondary buyouts while facing cheap debt markets, situation is vice versa. Previous academic literature largely presumes that IPOs are superior exit route for private equity funds, while later literature does not take it for granted automatically. For example, Jenkinson & Sousa points, "At the IPO, the private equity owner is only able to sell a proportion of their holding, and

is subject to a lengthy lock-up on the reminder". Therefore, the selling of stakes remaining can take a while and thus private equity funds are also interested in secondary sales (Jenkinson & Sousa 2015: 400-407).

Robinson & Sensoy (2011) conducted a study with sample of 837 funds between 1984-2010 and found similar results than Ljungqvist & Richardson. Private equity funds performances were in sample 15 % higher than public companies performances. Private equity fund returns outperformed indices even their performance was calculated relative to a leveraged counterpart in the public index matching estimates of portfolio company beta. Buyout funds outperformed the S&P 500 index by 18%. See table 2 (Robinson & Sensoy 2011: 1-28).

Higson & Stucke (2012) compared the IRR numbers of U.S buyout funds and S&P 500 between 1980-2000 and found that more than 60% of private equity funds outperformed the S&P 500- index. In their research average fund outperformed the median counterpart and therefore the impact of positive outliers was significant. See table 3 (Higson & Stucke 2012: 3).

Thus, there is a large amount of studies that suggest private equity funds do not outperform other investments classes. Kaserer & Diller (2004) found that about 66% of the European private equity funds between 1989-2003 underperformed in comparison to MSCI Europe Equity Index. (Kaserer & Diller 2004: 46).

Kaplan & Schoar (2005) provides similar results; calculated with weighted committed capital, buyout funds were not able outperform the S&P 500 in returns between 1980-1997 while venture funds were able generate larger returns than index (Kaplan & Schoar 2005: 1821). Similarly Phalippou & Gottschalg (2009) found that average private equity fund outperforms S&P 500 before fees by 3% while it underperforms after fees by 3% (Phalippou & Gottschalg 2009: 1774).

Driessen et al. (2012) suggests that buyouts funds have relatively low market beta and that there is now evidence of outperformance. (Driessen et al. 2012: 511). One explanation for these mixed results could be the fee structure of the private equity fund. Studies mentioned earlier clearly indicate that there is large gap between gross-of-fees and net-of-fees returns. Before taking the fees into account, large amount of private equity funds seem to outperform the public indices. After fees

private equity funds seem to underperform against the public equity markets returns. These findings suggest that after taking fees into account private equity fund is able to generate about similar returns than public equity markets and in some cases even lower. These findings also suggest that two main factors explaining private equity fund returns are the performance persistence effect and money chasing deals- phenomena.

Contrarily Gompers & Lerner (2000) found that increased fundraising and prices are not due to better investment prospects as demand in vintage fundraising periods drives prices up (Gompers & Lerner 2000: 321). As a conclusion, it can be said that more studies and research from private equity funds performance is needed in the future. Private equity as an investment class is still quite new and there is still not clear evidence of positive abnormal returns of private equity fund in comparison to public counterparts, while huge amount of capital is committed to the private equity industry every year.

Vintage	Number of funds				Ave. IRR				Wtd. Ave. IRR		
	Our sample	VE	Preqin	CA	Our sample	VE	Preqin	CA	Our sample	VE	Preqin
1986	1	10	6	7	13.2	18.0	18.3	15.4	13.2	20.9	21.7
1987	8	25	6	10	15.7	9.8	24.6	15.9	20.6	13.4	24.3
1988	14	14	8	11	9.3	8.7	14.6	10.8	8.7	9.7	14.0
1989	16	23	10	14	14.8	13.8	35.0	21.5	19.4	25.6	31.3
1990	7	9	10	4	21.5	5.0	21.9	16.7	27.6	11.3	22.4
1991	2	5	7	7	6.3	13.7	29.4	31.8	15.8	13.2	25.9
1992	4	15	13	6	30.5	20.0	15.3	34.4	37.3	23.9	22.1
1993	9	22	16	18	40.2	18.9	22.1	21.0	36.4	21.1	20.8
1994	24	26	21	13	22.8	14.0	22.1	13.3	25.7	15.9	24.1
1995	24	24	18	22	16.2	9.3	20.4	13.5	19.4	10.1	15.8
1996	41	26	22	25	10.2	8.3	12.2	9.1	8.3	6.6	8.2
1997	40	41	28	37	5.4	6.0	8.1	4.8	10.7	8.8	8.4
1998	59	55	44	38	4.8	5.5	6.0	7.7	3.9	1.3	2.2
1999	59	41	29	41	2.1	4.2	6.0	11.6	-4.1	7.7	6.6
2000	68	48	43	52	6.6	10.6	15.4	14.1	6.8	11.1	16.2
2001	26	27	18	12	12.0	11.3	22.0	25.5	3.6	11.1	25.8
2002	5	15	21	24	17.9	9.9	12.4	17.2	25.1	12.4	16.3
2003	8	11	20	19	37.5	9.1	15.7	13.1	48.2	17.3	26.7
2004	3	19	26	49	18.8	14.2	12.9	6.3	18.9	10.7	12.3
2005	2	20	50	44	-1.1	0.4	4.1	-0.8	-0.6	-3.9	4.8
2006	8	26	43	41	-18.3	-7.1	-6.3	-5.6	-4.6	-9.6	-7.8
2007	6	19	47	45	-17.6	-2.9	-5.5	-9.0	-14.6	-8.2	-7.4
2008	12	14	34	22	-17.7	-7.7	-7.0	-22.2	-30.3	-19.9	-8.5
Total	446	535	540	561							

Table 2: Buyout fund comparison to public databases, Robinson & Sensoy 2011: 38)

Vintage Year	# of Funds	IRR Spread (bps)			Spread > 0		Adjusted TVPI		
		Cap	Eq1	Med	#	%	Cap	Eq1	Med
1980	6	1,394	779	615	3	50	1.88	1.54	1.29
1981	2	1,551	1,168	864	1	50	2.02	1.71	1.73
1982	4	1,839	418	624	2	50	1.67	1.20	1.22
1983	8	244	491	-166	3	38	1.10	1.22	0.91
1984	10	637	44	-225	5	50	1.38	1.02	0.85
1985	8	1,170	749	680	5	63	1.35	1.25	1.25
1986	18	648	773	303	10	56	1.28	1.33	1.17
1987	24	-123	42	1	12	50	0.89	1.03	0.96
1988	23	-43	-29	-318	7	30	0.95	0.97	0.84
1989	26	611	557	456	15	58	1.25	1.19	1.12
1990	16	241	148	78	9	56	1.09	1.09	1.04
1991	11	1,319	1,422	1,207	10	91	1.41	1.44	1.39
1992	21	422	233	157	12	57	1.27	1.17	1.11
1993	23	194	341	138	13	57	1.14	1.23	1.06
1994	42	475	194	-76	19	45	1.43	1.14	0.93
1995	36	442	437	268	23	64	1.26	1.28	1.19
1996	36	6	61	-31	17	47	1.00	1.04	0.98
1997	56	765	516	311	33	59	1.37	1.23	1.16
1998	72	387	804	655	52	72	1.20	1.38	1.28
1999	58	550	547	618	41	71	1.28	1.30	1.40
2000	84	918	992	785	72	86	1.48	1.52	1.41
2001	47	1,167	1,032	1,125	38	81	1.55	1.50	1.44
2002	37	1,284	1,029	1,153	32	86	1.55	1.43	1.42
2003	34	1,709	1,727	1,259	29	85	1.59	1.71	1.48
2004	62	1,209	1,053	895	48	77	1.41	1.35	1.33
2005	92	932	704	626	68	74	1.28	1.19	1.16
2006	108	290	179	26	58	54	1.07	1.04	1.01
2007	107	-10	215	193	62	58	1.00	1.04	1.03
2008	98	-424	-790	-1,166	33	34	0.96	0.92	0.90
1980-89	129	244	370	-59	63	49	1.08	1.16	0.97
1990-99	371	470	472	297	229	62	1.25	1.24	1.14
2000-08	669	588	484	518	440	66	1.24	1.22	1.14
1980-99	500	434	446	246	292	58	1.22	1.22	1.12
1980-05	856	809	680	530	579	68	1.35	1.30	1.21
1980-08	1169	544	468	390	732	63	1.23	1.22	1.13

Table 3: Full sample of U.S buyout funds benchmarked against the S&P 500, (Higson & Stucke 2012: 33)

5. DATA AND METHODOLOGY

This part defines the data and methodology used in this thesis. Thus, the part contains information about the data selection of the study. Furthermore, this part includes descriptive statistics of the buyout sample and methodology and variables of the thesis. Study uses different methods in order to provide answer whether the null hypothesis is rejected. Table 3 shows the distribution of the private equity transactions. Significantly largest amount of entries in the data set were conducted in 2008 when there was 24 private equity entries (20,9 %). Table shows that there were also 13 (11.3 %) private equity entries in 2010, which is interesting due to difficult situation in the financial markets. On the other hand, largest amount of exits in the dataset were conducted in 2016 when there were 20 exits (17,4 %). Furthermore, when looking at the industry distribution, significantly largest amount of target companies operated within either *business & industrial products* (18,3 %) or *business & industrial services* industry (18,3 %). Also the dataset contains only one target company that operates under *energy & environment* industry.

Industry	Entry Year																		
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017			
Agriculture																	0	0,0%	
Chemicals & Materials			2		1	1	2	2	1								9	7,8%	
Business & Industrial Products			2	4	4	2	2	3	2		1		1				21	18,3%	
Business & Industrial Services	2		3	2	7	3	2		1			1					21	18,3%	
Construction				0			1		2								3	2,6%	
Transportation							2		1								3	2,6%	
Consumer Goods & Retail			3	2	1		3		2	3			1				15	13,0%	
Consumer Services; Other	1					1	2			1							5	4,3%	
Energy & Environment					1												1	0,9%	
Financial Services	1				1	2	3		1	1			1	1			11	9,6%	
Real Estate						1	2	1	1								5	4,3%	
Communications			1	1			2										4	3,5%	
Computer & Consumer Electronics			2	1					1								4	3,5%	
Life Sciences			1		3	1	3	3	1		1						13	11,3%	
Number of observations	4	0	14	10	18	11	24	9	13	5	2	1	3	1	0	0	115	100,0%	
	3,5%	0,0%	12,2%	8,7%	15,7%	9,6%	20,9%	7,8%	11,3%	4,3%	1,7%	0,9%	2,6%	0,9%	0,0%	0,0%			

Industry	Exit Year																		
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017			
Agriculture																	0	0,0%	
Chemicals & Materials						1	1		1		2	2		2			9	7,8%	
Business & Industrial Products								1	2	5		4	1	5	3		21	18,3%	
Business & Industrial Services								3	3	4	2	2		1	6		21	18,3%	
Construction												1			2		3	2,6%	
Transportation												2			1		3	2,6%	
Consumer Goods & Retail									4		1	1	2	4	1	2	15	13,0%	
Consumer Services; Other									2			1		1		1	5	4,3%	
Energy & Environment										1							1	0,9%	
Financial Services						1	1				2		1	4	2		11	9,6%	
Real Estate										2	1	1		1			5	4,3%	
Communications										1		1			2		4	3,5%	
Computer & Consumer Electronics										1		1		2			4	3,5%	
Life Sciences					1				1	1	3	3	1		3		13	11,3%	
Number of observations	0	0	0	0	1	2	2	4	15	15	10	19	6	18	20	3	115	100,0%	
	0,0%	0,0%	0,0%	0,0%	0,9%	1,7%	1,7%	3,5%	13,0%	13,0%	8,7%	16,5%	5,2%	15,7%	17,4%	2,6%			

Table 4. Distribution of buyout the sample by industry (Entry/ Exit).

5.1 Data Description

Data sample of this study is hand collected and adjusted in order to meet standards from the study. Thus, the final sample includes 230 Finnish private equity LBO-transactions between 2002 and 2017. Furthermore, the data-sample is restricted to Finnish companies and contains only Finnish PE-firms. Furthermore, the dataset is collected from income statements and balance sheets of the target companies at the entry and exit. Raw sample included roughly 600 private equity transactions.

Despite large amount financial statements of the target companies, the final sample for the actual study is considerably smaller due to a limited availability of the annual reports of the target companies in exit or entry years. Purpose of the study is to compare entry figures to the exit-figures of the buyout and investigate the real affect of the private equity ownership to the performance of the target company. Furthermore, the study investigates whether private equity firm is able to enhance the operational performance of the buyout-target. Table 4 presents statistics and financial determinants obtained from the financial statements of the target companies.

This study investigates Finnish private equity transactions between 2002 and 2017. Thus the purpose of this study is to investigate whether private equity firms are able to increase the operational performance and enterprise value of the target company. Furthermore, the questions is that are private equity company's valuable to the target companies or are they hunting merely financial opportunities. Previous academic literature indicates that private equity firms are often able increase value of the target company while there are only a handful of studies conducted about Finnish private equity field. Time period of 2002-2017 contains multiple crisis and market turmoil, but also strong uprising of the economy. In the beginning of 2000-century the internet-bubble caused multiple bankruptcies. Furthermore, the financial crisis in 2008 reflected heavily on markets and private equity field.

The transactions for the dataset of this study are hand-collect by using web pages and personnel of private equity companies. The Finnish Venture Capital Association (FVCA) also helped building dataset of the study and association provided valuable help to data gathering process. As mentioned earlier, the dataset is hand-collected and obtained from the personnel and the web-pages of the Finnish private equity firms. Figures of the target companies are from the archive of the National Bureau and registration of Finland (NBPR). Furthermore, the assistance of NBPR was critical for the study as they offered a permission to use their archive and VIRRE-service. Thus, the service provided the financial statements of the target companies. Finally, the data for regressions was calculated from the financial statements of the target companies.

The study uses also data from smaller target companies, but the data does not contain venture capital transactions. Private equity firms being used in this study concentrate on buyout transactions instead of venture capital transactions. To be pointed, the data gathering process was not easy and took great amount of time, while it was necessary to conduct gathering process manually as there are no publicly available datasets, which contain a large sample of Finnish private equity transactions. The data is gathered from different sources and contains different types of buyout deals. Furthermore, the data sample contains both public- to private deals and private-to-private transactions. Similar to Kielenniva (2014), it can be seen as advantage that previous academic literature focuses on public-to-private transactions. Thus, the data contains only buyout transactions, which include all necessary information and therefore many buyout transactions had to be left out of the final sample. Biggest problems of the data gathering process were the investigation about time of entry and exit year and the availability of right and comprehensive financial statements of the target companies as many of the financial statement were in different forms and covered some information differently. Furthermore, it must be pointed that results are subjected to biased upwards as the sample may include more successful deals.

5.2 Regression variables

Logarithmic change in EV of the target company is used as a dependent variable in regression. Thus, the data uses simple equations mentioned earlier in the study. Value of the company is calculated by using these formulas.

(1) $EV = \text{Book Equity} + \text{Net debt}$.

$\Delta(EV)_{i,t} = \log(1 + EV_{i,\text{exit}}) - \log(1 + EV_{i,\text{entry}})$

The change of EV_i is the change in EV of the target company over time-period of t . $EV_{i,\text{entry}}$ is the EV for portfolio company I at the entry year. $EV_{i,\text{exit}}$ is the EV for portfolio company I at the exit.

Furthermore, the operational improvements are investigated by using the EBITDA as it stands as generally used as a proxy for free cash flow of the target company. Furthermore, it is commonly used in valuation methods of the private equity companies (Achleitner et al. 2011:151; Guo et al. 2011; Acharya et al. 2013). Thus, in order to test the hypothesis, the deltas are calculated for the respective operating performance measures (EBITDA/ Sales ratio and sales growth). Furthermore, the deltas are calculated for entry and exit years of PE ownership for the target companies. The equation for deltas is following:

$$(2) \text{DeltaP}(i,t) = \text{Log}(1+\text{Pi.exit}) - \text{log}(1+\text{pi.entry})$$

DeltaP(i,t) is the change in EBITDA margin, and sales growth of the target company during the holding period t. Pi.entry refers to sales and EBITDA margin for the entry and Pi.exit for the exit years of target companies, respectively.

Similarly with study of Achleitner et al. (2011), the EV/ EBITDA multiple is used as an independent variable in the regression analyses. The EV/EBITDA multiple at the exit is compared to the entry figure. The EV/ EBITDA multiple cannot be calculated as a logarithmic number as the sample contains also negative EBITDA values. Furthermore, the difference in the EBITDA multiple is measured by comparing exit value with the entry value.

$$(3) \text{DeltaPi},t = \text{Pi},\text{exit} / \text{Pi},\text{entry}$$

Where DeltaPi,t is operating performance change in the EBITDA multiple for firm over the holding period t. Pi.entry and Pi,exit refer to the EBITDA/ Sales ratio for the entry and exit year of the target companies, respectively.

5.3 Methodology

The study uses univariate analysis test for testing hypothesis about the magnitude of the operational improvements during the buyout period. The test investigates the difference of the entry and exit figures of the target companies. The test calculates the median of delta change in enterprise value and in operating performance measures between the entry and exit year of the target company. Furthermore, the study uses univariate analysis compares only median values due to high skewness of the median values. I use two alternative change measures for univariate analysis depending on the performance measure under study. For sales growth and EBITDA margin improvements, the difference in logarithmic change between the exit and entry year of the measure is calculated and tested for difference from zero:

$$(4) \text{DeltaP}(i,t) = \text{Log}(1 + P_{i,\text{exit}}) - \text{log}(1 + P_{i,\text{entry}})$$

Delta P(i,t) is a performance change in the EBITDA margin and sales growth for the firm i over the holding period t. $P_{i,\text{entry}}$ and $P_{i,\text{exit}}$ refer to sales figure and EBITDA/sales ratio for the entry and exit year of target companies.

As mentioned earlier, the EBITDA multiple changes that contain negative values the calculation is simplified just by deducting the entry multiple from the exit multiple. Furthermore, the data would be biased if the negative value would not be included.

$$(5) \text{DeltaP}(i,t) = P_{i(\text{exit})} - P_{i(\text{entry})}$$

6. EMPIRICAL RESULTS

This chapter shows the empirical findings of the value creation in buyout-target companies. Thus, the descriptive statistics for the study are presented at first part of the chapter. Furthermore, the part shows the raw descriptive statistics and mean, median, max, min and standard deviation of the different variables. Second part of the chapter shows how much private equity firms are able to increase the value of the target company. Finally the last part of the chapter shows findings for the multivariate regressions.

Full Sample (at entry)	Obs.	Mean	Median	Max	Min	Std Dev
Sales (EUR m)	115	18,7	2,1	469,2	0,0	52,0
Total assets (EUR m)	115	24,7	5,6	345,8	0,0	56,2
EBITDA (EUR m)	115	-0,1	-0,1	9,2	-24,9	3,9
Book Equity (EUR m)	115	6,3	1,0	137,7	-2,3	18,5
Net Debt (EUR m)	115	20,5	3,0	346,9	-2,5	51,0
EV, enterprise value (EUR m)	115	26,9	4,6	484,7	0,0	67,5
Entry year	115	2007	2008	2015	2002	2,7
Exit year	115	2013	2013	2017	2006	0,0
Holding period (years)	115	5,5	5,0	12,0	0,0	2,6
Profitability						
EBITDA/Sales (margin)	115	-17296,2	0,0	1,7	-1164908,8	113748,3
EBITDA/ Total assets	115	-0,1	0,0	0,5	-2,9	0,4
EV/EBITDA (multiple)	115	-67,6	-1,2	387,6	-6770,0	632,9
Leverage						
Net debt/ Equity	115	25,1	1,9	1317,6	-161,8	173,3
Net debt/ EV	115	0,6	0,7	2,0	-5,1	0,7
Employment						
Sales/ Employee (EUR th)	115	127405,4	72888,5	1696858,8	0,3	213367,9
Personnel costs/ Sales	115	3236,7	0,5	205229,9	-22982,0	21231,5
Working capital						
Net working Capital/ Sales	115	206008,9	0,7	20408837,1	0,1	1903220,2
Full Sample (at Exit)						
Sales (EUR m)	115	41,3	6,6	711,0	0,0	105,3
Total assets (EUR m)	115	33,6	8,0	383,1	0,1	66,7
EBITDA (EUR m)	115	0,3	0,0	33,7	-46,0	8,2
Book Equity (EUR m)	115	8,8	1,1	152,8	-129,7	29,2
Net Debt (EUR m)	115	31,1	8,3	469,7	-0,2	66,5
EV, enterprise value (EUR m)	115	40,0	9,8	622,5	0,0	84,5
Entry year	115	2007	2008	2015	2002	2,7
Exit year	115	2013	2013	2017	2006	2,6
Holding period (years)	115	5,5	5,0	12,0	0,0	2,6
Profitability						
EBITDA/Sales (margin)	115	-7243,2	0,0	2,9	-766362,0	71365,7
EBITDA/ Total assets	115	-0,1	0,0	0,8	-5,7	0,6
EV/EBITDA (multiple)	115	17,4	1,6	1888,5	-689,8	243,5
Leverage						
Net debt/ Equity	115	4,2	1,9	97,0	-75,2	17,2
Net debt/ EV	115	61342,4	0,9	7054156,2	-0,7	654937,0
Employment						
Sales/ Employee (EUR th)	115	193495,5	125363,7	1812952,0	-1269,7	261931,9
Personnel costs/ Sales	115	1817,0	0,4	208878,5	-0,3	19393,1
Working capital						
Net working Capital/ Sales	115	2049,4	0,4	235066,7	-1158,6	21824,8

Table 5. Descriptive statistics of the sample

The table above shows the raw descriptive statistics for the study. Statistics for the full sample at entry are presented above the exit figures of the sample. Mean sales at entry point are 18.7 million euros while at exit phase they are at 41.3 million euros. This indicates strong growth in sales figures of the target company. Furthermore, there is also increase in median sales as well. Median sales increased from 2.1 million to 6.6 millions, which supports H1 and indicate that private equity firms are able to increase sales of the target companies. Also the total assets of target

companies increase during the holding period. Thus, the mean total assets increased from 24.7 million to 33.6 million and median of total assets increased from 5.6 million to 8 million euros. When looking at mean EBITDA figure of the entry and exit samples, the EBITDA for the entry is negative (-0.1 million) while at exit the figure is positive (0.3 million). Net debt of the target companies increased from 20.5 million to 31.5 million. Furthermore, the median net debt increased from 3 million to 8.3 millions. Descriptive statistics also indicate that private equity firms have impact on enterprise value of the target companies. Thus, the mean enterprise value (EV) increased from 26.9 million to 40 million euros. Also, the median enterprise value (EV) more than doubled during the holding period (from 4.6 million to 9.8 million). Average length of the holding period was 5.5 years and median 5 years respectively. As mentioned earlier, private equity companies aim to increase the operating performance of the target and therefore PE companies might run either reductions to the personnel or personnel costs of the target company. Furthermore, this can be seen also in results of this study as personnel costs compared to sales decreases by 46%, which can be seen as a remarkable amount. In contrast, the sample shows that working capital compared to sales during the private equity ownership. Net working capital compared to sales decreased by 42,8% during the holding period of the target company.

6.1 Value creation in PE-backed portfolio companies

	EV	Sales Growth	EBITDA/ Sales	EBITDA/ Total Assets	EV/ EBITDA	Net Debt/ Equity	Sales/ Employee
Mean	0,20	606982,30	1029368	3,56	44,82	9,04	10190,54
Median	0,07	2,38	0,15	0,47	0,30	0,53	1,79
Maximum	2,63	50505435	118000000	312,08	5485,80	1021,05	572485,5
Minimum	-4,66	0	-3902,5	-52,01	-331,04	-210,07	-0,01
Std. Dev.	1,27	4816341	11039102	34,04	513,06	98,77	59021,37
Skewness	-0,51	9,86	10,58	7,26	10,64	9,40	8,04
Kurtosis	4,03	102,06	113,01	63,27	113,87	97,77	73,99
Observations	115	115	115	115	115	115	115

Table 6. Raw median changes in operating performance

Table 6. presents the median changes in target company's operating performance and figures. Table shows that private equity firms are able increase the enterprise value (EV) of target companies. Furthermore, the mean increase in enterprise value of the target company was 20% and median increase 7%. Thus the standard deviation for change in enterprise value of the target company was 1,27. Means of delta sales growth, change of EBITDA compared to sales, change of EBITDA to total assets and change of sales per employee are affected by occasions where the sales has been zero at entry point and positive at exit. Therefore, these results are not statistically significant, while median figures indicate better results of private equity ownership. Median change in sales growth was 236%. Furthermore, this indicates that private equity firm by controlling the target company is able to increase sales growth of the investee company. This finding supports previous academic literature when considering hypothesis of private equity firm's ability to increase performance of the target company by increasing sales and turnover of the company. Median changes in EBITDA-margin were increases by about 15% and thus indicate that operating performance of target companies is enhanced during the holding period. Similar results also apply to median change to EV/EBITDA- ratio. Furthermore, private equity firms are able to increase the median EV/EBITDA-ratio by about 30%. Mean change in leverage level of the target increased by about 900%, which is not statistically significant though. Median leverage level of the target company increases by 53% during the holding period. Median increase in sales for one employee was also significant and thus increased by 179%.

Full sample	
EV Growth	
Delta Log EV	0,22 (115;73)***
Operational profiability	
Delta Log Sales	0,38 (115;86)***
Delta EBITDA/Sales	0,15 (115;71)
Delta EV/EBITDA	0,004 (115;72)

Significance levels are based on Wilcoxon signed-rank test. ***, ** and * denotes levels that are significantly different from zero at 10%, 5% and 1% levels, respectively

Table 7. Median operational improvements of the LBOs

First hypothesis of the study was that there is a positive relationship between private equity ownership and the operating performance of the target company during the holding period of the sponsor. Table 6 presents median operational improvements of the LBOs backed and exited by Finnish private equity firms. Furthermore, the results indicate that private equity firms have been able to increase the growth of the target companies and operational profitability of the investee companies. Thus the median leverage buyout transaction is therefore net positive when considering growth and operation profitability of the target company. Delta median enterprise value of the target company increased by 22% and was statistically significant at 10% significance level. Results are positive for changes in enterprise value despite that sample covers times of financial crisis and global recession. Furthermore this highlights the power of private equity sponsors. The sample also includes recovery period, which might have had affects on these results. Private equity firms are also able to increase median logarithmic sales of the target company by 38 % during the holding period. In contrast to positive results with changes in enterprise value and sales, changes with EBITDA- margin and multiple were not statistically significant.

7. CONCLUSIONS

Purpose of this study was to investigate key determinants of leveraged buyout investments (LBOs) and possible improvements in portfolio company's operational performance. The study investigates whether private equity firms have been able to create large returns by using LBOs and what are the effects of these transactions for the acquired company. The thesis concentrates on the latest evidence from LBOs, while literature and studies from previous decades cannot be sided. In this thesis, the evidence of leveraged buyout value creation has been reviewed by using earlier research, literature and empirical findings. Due to a lack of studies contributed on Finnish LBO transactions considering value creation and operational performance, the study uses theory from European and U.S. buyouts. Improvements in operational performance and value creation in funds have been investigated by using earlier studies and by conducting empirical study about the effects of leveraged buyout investments to portfolio company's operational performance and value creation to portfolio investors.

Third chapter of this thesis investigated key drivers of value creation. Private equity firm's aim is to improve the operational performance and thereby improve the overall value of the portfolio company. On the basis of previous literature, it can be concluded that value creation in buyouts is due to *financial engineering, governance engineering and operational engineering*.

Contrarily to the result regarding to key value drivers, improvements in portfolio company's operational performance are mixed. It seems that private equity firm's ability to enhance operational performance of the portfolio company, is dependent on the situation in the debt markets. Improvements in operating income and cash flow compared to sales figure explains increased value of the portfolio company during the first leveraged buyout boom in the 1980s. However, improvements in operating margin and cash flow have become more conservative. Guo et al. (2011) points that LBO deals between 1990 and 2006 were much more conservatively priced and contained less leverage than deals made in the 1980s, which explains smaller improvement in portfolio company's operational performance (Guo et al. 2011: 514).

It seems that leverage, in more recent studies, is explaining returns and value creation less than in earlier studies, while operational improvements are considered more important. Therefore, it can be concluded that operational engineering and governance engineering are considered more important than financial engineering in recent years, while the situation in the debt markets must be noticed. Contrarily there is also evidence that LBOs do not necessarily improve portfolio company's operational performance. These findings might suggest that there might be differences between European and U.S. LBOs. Overall it can be concluded that private equity firm's are often able to improve portfolio company's performance, while sometimes improvements are remain smaller partly due to situation in the debt markets.

Findings regarding to value creation of private equity funds are mixed. Previous studies and empirical findings provide controversial results from performance of the private equity fund investments compared to public investments. Findings suggest that, private equity fund is often able to create similar returns to investors than public counterparts. One explanation for these mixed results could be the fee structure of the private equity fund. There is large gap between gross-of-fees and net-of-fees returns. Before taking the fees into account, large amount of private equity funds seem to outperform the public indices. After fees private equity funds seem to underperform against the public equity markets returns. These findings suggest that after taking fees into account private equity fund is able to generate about similar returns than public equity markets and in some cases even lower. These findings also suggest that two main factors explaining private equity fund returns are the *performance persistence effect* and *money chasing deals-phenomena*.

As mentioned in previous academic literature, the more research is required about private transactions. Furthermore, purpose of this thesis is to investigate leverage buyout transactions and more detailed acquisitions that have been supported by Finnish private equity companies between a period of 2002 and 2017. The study uses dataset that has been gathered from financial statements of the investee companies from the archive of the National Bureau and registration of Finland (NBPR). Furthermore, the assistance of NBPR was critical for the study as they offered a permission to use their archive and VIRRE-service. The dataset of study

includes 115 target companies. Also, the Finnish Venture Capital Association also helped in this study and offered valuable help to data gathering. List of target companies was obtained from web sites and personnel of the Finnish private equity companies. Furthermore, the purpose of the study is to present new results and evidence about how private equity companies are able affect on the performance and value of the investee companies with leverage buyout transactions. Thus, currently there are quite a few studies that concentrate on the transactions of Finnish private equity companies. Therefore the academic theory is collected mostly from Europe and United States.

Empirical results of this study are line with previous academic literature and support hypothesis that private equity firms have positive affect on the enterprise value of the target company during the holding period. Furthermore, the median change in enterprise value is used to as it is least affected by large differences in the sample. Descriptive statistics show that median enterprise values of the target company increased from 4.6 million to 9.6 million euros (116%). Furthermore, the raw median change in enterprise value was 7% respectively. These results indeed indicate that Finnish private equity firms have been able enhance the enterprise value (EV) of the investee companies and therefore H1 is supported.

Hypothesis 2 (H2) of the study was whether leveraged buyout transactions with higher sales growth during the holding period yield a higher enterprise value. Thus results indicate that there is a strong correlation between growth in sales and enterprise value of the target company. Therefore, increase in sales can be seen as a critical value driver of leverage buyout transactions. Relationship between sales growth and enterprise value is statistically significant at 10% significance level respectively. There is a strong relationship between sales growth and increase in enterprise value of the target company, but when considering other value drivers, there were no significant effect on the enterprise value growth of the target company. Furthermore, the EBITDA compared to sales (EBITDA margin) and enterprise value compared to EBITDA (EBITDA multiple), did not have significant effect on the enterprise value of the target company. As a conclusion, it can be said that that second hypothesis only partly confirmed.

As a conclusion it is clear that there is demand for more scientific papers and research about Finnish private equity transactions in order to verify results of the study. In sum, the data sample contains leverage buyout transactions from quite different time periods as the time period covers period of international financial crisis and recession. Furthermore, the lack of availability data, which is natural when taking account the nature of the private equity field, can be seen as a difficult when investigating Finnish leverage buyout transactions. Furthermore, whether the data in the field of Finnish private equity and leverage buyout transactions will ever be available for large extent is unlikely as the size of Finnish private equity field relatively small and contains few players. Furthermore, there is also need for further research about the long-term impacts of the private equity ownership, and research on how has operational performance of the Finnish target companies developed after the holding period.

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APPENDICES

Appendix 1. List of target companies and private equity firms included in the study

Target Company	Private Equity Firm	Entry	Exit
Savcor Group Ltd Oy	Capman Oyj	2002	2007
StaffPoint Oy	Capman Oyj	2002	2008
Suomen Tenava päiväkodit Oy	Helmet Capital	2002	2010
Tieturi	Capman Oyj	2002	2013
Toolfac Oy	Canelco capital	2004	2007
JPP-Soft Oy	Midinvest management	2004	2009
Oy Linseed Protein Finland Ltd	Midinvest management	2004	2010
Upstream Engineering Oy	Suomen Teollisuussijoitus Oy	2004	2010
DelSiTech Oy	Suomen Teollisuussijoitus Oy	2004	2010
Linseed Protein Finland Ltd	Suomen Teollisuussijoitus Oy	2004	2010
Ellibs Oy	Suomen Teollisuussijoitus Oy	2004	2011
Tokmanni Oy	Capman Oyj	2004	2012
Soneco Oy	Suomen Teollisuussijoitus Oy	2004	2012
Aidon Oy	Midinvest management	2004	2013
Neoxen Systems	Suomen Teollisuussijoitus Oy	2004	2014
Pisla Oy	Midinvest management	2004	2015
Plusdial Ab	Suomen Teollisuussijoitus Oy	2004	2016
Axel Technologies Oy	Suomen Teollisuussijoitus Oy	2004	2016
Gammapro Oy	Midinvest management	2005	2009
Codewise Oy	Midinvest management	2005	2009
Viconsys Oy	Suomen Teollisuussijoitus Oy	2005	2010
Profimill Oy	Suomen Teollisuussijoitus Oy	2005	2010
Suomen Teollisuusosa Oy	Suomen Teollisuussijoitus Oy	2005	2010
Tikli Group Oy	Helmet Capital	2005	2012
KitWorks.fi Oy	Suomen Teollisuussijoitus Oy	2005	2012
Nordic Koivu Oy	Suomen Teollisuussijoitus Oy	2005	2015
Kenno Tech Oy	Suomen Teollisuussijoitus Oy	2005	2016
ASAN Security Technologies Oy	Suomen Teollisuussijoitus Oy	2005	2016
suomen terveystutkimus	Korona invest	2006	2006
SopValm Oy	Midinvest management	2006	2008
Winestate Oy	Helmet Capital	2006	2010
Kareline Oy	Suomen Teollisuussijoitus Oy	2006	2010
Mohinet Oy	Suomen Teollisuussijoitus Oy	2006	2010
Valimo Wireless Oy	Suomen Teollisuussijoitus Oy	2006	2010
OneMed Group	Capman Oyj	2006	2011
Lilli Group Oy	Suomen Teollisuussijoitus Oy	2006	2011
coxa	Korona invest	2006	2011
Idesco	Sentica	2006	2012
FinnSonic	Sentica	2006	2013
Odoroff Oy	Suomen Teollisuussijoitus Oy	2006	2013
Aspida Oy	Suomen Teollisuussijoitus Oy	2006	2013
respecta	Korona invest	2006	2013
The Switch Engineering Oy	Suomen Teollisuussijoitus Oy	2006	2014
Endomines AB	Suomen Teollisuussijoitus Oy	2006	2015
Ekahau, Inc.	Suomen Teollisuussijoitus Oy	2006	2016
Vaadin Oy	Suomen Teollisuussijoitus Oy	2006	2016
Proactum Oy	Midinvest management	2007	2009
Firecon Oy	Helmet Capital	2007	2010
Tampulping Oy	Midinvest management	2007	2011
Realia Group Oy	Suomen Teollisuussijoitus Oy	2007	2011
Nidecon Technologies Oy	Suomen Teollisuussijoitus Oy	2007	2011
hoitokoti paivakumpu	Korona invest	2007	2011
Kaluste-Projektit Oy	Midinvest management	2007	2013
Noleva Group Oy	Capman Oyj	2007	2013
Forchem	MB rahastot	2007	2013
Virtual Air Guitar Company Oy	Suomen Teollisuussijoitus Oy	2007	2015
Nexstim Oyj	Suomen Teollisuussijoitus Oy	2007	2016
Farmos Oy	Suomen Teollisuussijoitus Oy	2008	2010

Target Company	Private Equity Firm	Entry	Exit
Ahortech Oy	Midinvest management	2008	2011
Lacell Oy	Midinvest management	2008	2011
Corbel	Sentica	2008	2011
Miratel	Sentica	2008	2011
Scanclimber Oy	Suomen Teollisuussijoitus Oy	2008	2011
SafeGo Oy	Helmet Capital	2008	2012
Mikeva	Intera Partners	2008	2012
Produal Oy	Midinvest management	2008	2012
Nice Entertainment Oy	Capman Oyj	2008	2013
9Lives	Sentica	2008	2013
Dewaco	Sentica	2008	2013
9Lives Oy	Suomen Teollisuussijoitus Oy	2008	2013
Imbera Electronics Inc.	Suomen Teollisuussijoitus Oy	2008	2013
vetrea	Korona invest	2008	2013
med group	Korona invest	2008	2014
Consti Yhtiöt	Intera Partners	2008	2015
Darekon	Sentica	2008	2015
Polar Spring Oy	Suomen Teollisuussijoitus Oy	2008	2015
Holiday Club Resorts Oy	Suomen Teollisuussijoitus Oy	2008	2015
Conformiq Inc	Suomen Teollisuussijoitus Oy	2008	2016
Eniram Oy	Suomen Teollisuussijoitus Oy	2008	2016
Renewa	Vaaka partners	2008	2016
Arme	Sentica	2008	2017
jokilaakson terveys	Korona invest	2009	2009
Confidex Oy	Suomen Teollisuussijoitus Oy	2009	2011
Biotie Therapies Oyj	Suomen Teollisuussijoitus Oy	2009	2012
Academica Oy	Suomen Teollisuussijoitus Oy	2009	2012
European Batteries Oy	Suomen Teollisuussijoitus Oy	2009	2013
Orthex	Intera Partners	2009	2015
Machinery Group Oy	Suomen Teollisuussijoitus Oy	2009	2015
Pihlajalinna	Sentica	2009	2016
Componenta Oyj	Suomen Teollisuussijoitus Oy	2009	2016
Pekkaniska Oy	Suomen Teollisuussijoitus Oy	2010	2011
Delete Finland Oy	Intera Partners	2010	2013
EMC Talotekniikka Oy	Suomen Teollisuussijoitus Oy	2010	2013
avire	Korona invest	2010	2013
Incap Oyj	Suomen Teollisuussijoitus Oy	2010	2014
Musti ja Mirri	Vaaka partners	2010	2014
Glaston Oyj Abp	Suomen Teollisuussijoitus Oy	2010	2015
Suominen Oyj	Suomen Teollisuussijoitus Oy	2010	2015
Mitron Group Oy	Suomen Teollisuussijoitus Oy	2010	2015
Esperi Care Oy	Capman Oyj	2010	2016
Wise Group Finland Oy	Helmet Capital	2010	2016
Arjessa	Sentica	2010	2016
Beneq Oy	Suomen Teollisuussijoitus Oy	2010	2016
Finnprotein Oy	Suomen Teollisuussijoitus Oy	2011	2014
Puuilo	Sentica	2011	2015
Panostaja Oyj	Suomen Teollisuussijoitus Oy	2011	2016
Kotipizza Group	Sentica	2011	2017
ThermiSol Oy	Suomen Teollisuussijoitus Oy	2011	2017
Animagi	Intera Partners	2012	2015
Produal	Vaaka partners	2012	2015
Soikea Solutions Oy	Midinvest management	2013	2016
Paytrail Oyj	Midinvest management	2014	2015
Meyer Turku Oy	Suomen Teollisuussijoitus Oy	2014	2015
Suomen Lämpöikkuna Oy	Capman Oyj	2014	2016
VBH-Invest Ab	Helmet Capital	2015	2016