Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Economics and Management
Dept. of Industrial Economics and Technology Management

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What do Norwegian private equity firms say they do?

Master's thesis in Master of Technology Management
Supervisor: Einar Belsom
July 2021

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Abstract

I study a sample of national Norwegian PE firms representing a total of over 50 mrd nok in assets under management. The study explores the less explored specific action and practices taken by private equity (PE) firms in various disciplines such as valuation, operational engineering, governance engineering, capital structures, and value creation. The data is based on semi-structured interviews with four PE professionals and a large survey with seven respondents. The results are discussed in relation to relevant papers. In particular, the results are compared to US PE firms.

The sample of Norwegian PE firms is less risk-taking and more focused on operational engineering than the US PE firms. In addition, the PE investors have more focus on revenue growth rather than reducing cost.

Valuation methods such as discounted cash flow (DCF) and net present value methods are often not used by Norwegian PE investors. Instead, they rely more on internal rates of return (IRR) and multiples of invested capital (MOIC) for their investment evaluations, which is in contrast with academic finance theory. Further, few Norwegian PE investors use capital asset price models (CAPM) to determine the cost of capital. The sample of Norwegian PE firms consider different risk factors in their investments on an ad-hoc basis and doesn't include the risk factors in a more traditional asset pricing model. However, they consider the risk factors and the total risk and thereafter adjust their return target.

Most of the exits to Norwegian firms are secondary buyouts to financial investors in comparison to strategic sales and IPOs, which is more common for US PE firms. The variation of deal sourcing strategies and specialization varies widely, either does the PE firm has sourcing programs or not at all. The same is seen with the specialization and organization of the PE firm. Either the PE firm is generalist, or the firm has organization and dedicated roles to specific roles. However, most respondents are generalists.

Acknowledgment

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The work presented in the thesis is the result of a two-year executive master program MTM, which was conducted at the Department of Industrial Economics and Technology Management at NTNU, The Norwegian School of Economics (NHH), Bergen, and a full-time semester at MIT Sloan School of Management, USA. The program has been quite rewarding and challenging at the same time.

Many have supported me in this journey. I wish to thank my supervisor for guiding me, constructive advice, and helping me study the Norwegian PE industry through valuable discussions.

I would also thank my respondents who took the time for answering my survey and interviews. Thanks for the interest and your time for my study. I hope the results will give you new insights.

And, finally, Noëmi, I want to thank you for your unconditional support and patience during the past years. Thank you for being there for me.

Fredrik Storflor Moen
Gløshaugen
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Contents

Nomenclature

AUM Asset under management

CAPM Capital asset pricing model

CEO Chief executive officer

CF Cash flow

CFO Chief executive officer

DCF Discounted cash-flow

EBITDA Earnings before interest, depreciation and amortization

ESG Environmental, social and corporate governance

EV Enterprise value

FCF Free cash flow

GP General partner

IRR Internal rate of return

LBO Leveraged buyout

LP Limited partner

MOIC Multiple of invested capital

NVCA Norwegian venture capital and private equity association

P/B Price to book ratio

PE Private equity

PME Public market equivalent

TVPI Total value to paid-in capital multiples

VC Venture capital

WACC Weighted average cost of capital

1 Introduction

PE is an asset class provided outside the public markets. A considerable amount is invested in the private equity market by private equity funds. A fund is a form of 'investment club' where Limited Partners (LP) invest. The fund is then operated by a PE-management firm. Funds are mainly designed to generate returns from the sale of investments rather than income from dividends. The idea of a fund is to buy equity in a business and actively manage these businesses and then, after typically in 3-7 years, realize the value created by selling or listing the company on the public market. Capital gains are the main driver of the return of PE investments.

LPs in a PE fund are typically individuals, corporate pension funds, insurance companies, family offices, fund-of-funds, sovereign wealth funds, endowments, PE-fund managers, and foundations that seek the return of their investments. The seeds of US private equity go back to the industrial revolution. J. Pierpont Morgan purchased Carnegie Steel Co. back in 1901. This is considered one of the first large buyouts. Later, more active PE firms such as Rockefeller, Warburgs, Vanderbilts family offices did multiple deals after the second world war. However, in the '80s and '90s and the early '00s is considered the era of PE due to the high returns compared to the public market **?**. However, the peak of both value and deal count historically was in 2006 and 2007 Evander & MacArthur (2016). Recent research finds that persistence has declined after 2000 on returns net of fees Harris et al. (2014).

PE-assets were during the '80s until 2005 considered a limited asset class for many LPs. During this time, many endowments, such as Yale and Harvard, one of the world's largest endowments, had great exposure to this asset class, and the returns were also tremendous. After 2000 the industry matured more. The competition on deals rose, relating to the higher purchasing price. For example, more auctions on firms between PE firms relating to a potentially lower return. In the last five years, the industry reputation has been changed more by academic research has shown scrutiny due to excessive fees and not outperforming publicly traded stocks on a risk-adjusted basis. However, this view of the PE performance is not aligned across researchers. There is still a large dispersion among PE funds and performance. However, the dispersion is shrinking due to a more mature industry as a whole Phalippou (2020).

The Norwegian PE firms have a total of 53 mrd capital available for investments in the years to come. Norwegian PE firms employ 67 100 in their portfolio business. Since 2001 the return has been on average 15% with a total of 69 mrd nok in return of invested capital from 2001 to 2019 Johnsen. P. Forsberg (2021). Access to PE asset class is restricted for most people according to Securities Trading Act § 10-6, which has its requirements to be seen as a professional investor. Therefore for most people, the PE asset class is limited.

Most academic research has increasingly focused on the effects of private equity. What has been

less explored are the specific analyses and actions taken by PE professionals. The study performed by Gompers et al. (2016) focuses on what US PE-firms companies say they do based on a survey with 79 private equity respondents performed in 2016. This thesis is reviewing the specific analyses and actions taken by PE fund managers similar to the study Gompers et al. (2016). The paper Gompers et al. (2016) is in the Journal of Financial Economics, a level 2 journal with an impact factor of 5.04. Paul Gompers and Steven N. Kaplan are highly recognized in the academic community within PE research. The researchers Kaplan and Gompers represent a more optimistic view of PE returns compared to various studies by Ludovic Phalippou and Oliver Gottschalg, which will be discussed in chapter 2.

In this thesis, Norwegian PE firms have been studied, 20 PE professionals have been sent a survey, and four have been interviewed. The total capital the respondents had under management is more than 50 mrd NOK. The thesis provides detailed insights across disciplines such as evaluations, compensation, performance, sourcing of deals, capital structure, corporate governance, financial engineering, and operational engineering.

Various studies have focused on different selected topics for Norwegian PE firms. However, few studies have in detail analyzed what Norwegian PE firms say they do across all disciplines until today. Therefore, this study tries to contribute to understanding how the Norwegian PE firms operate and what they say they do. As a basis for exploring this topic, the overall research question for this thesis is: What do private equity firms in Norway say they do? Furthermore, how do their practices compare with other PE-firm from other countries?

The research question is divided into two paths: Reviewing the specific analyses and actions taken by PE-firm and managers, key focus on what actions Norwegian PE fund managers do compared to US PE managers in relation to recent literature.

A survey and interviews based on a sample of seven PE firms in Norway have been conducted to address the research question. The PE firms were all firms investing mainly in Norwegian companies. Family offices and PE firms with less than 70 % of assets invested in Norway or other investment firms investing in other assets classes than PE are excluded in the study. The research conducted has been thoroughly investigated to focus on how Norwegian PE-firm operates or differs from US PE-firm or any other interesting findings. The results will be presented and discussed in this thesis.

For the remaining part of the thesis, the thesis has the following structure. Chapter 2 will present current literature and theory and review for establishing a common ground for further discussions and analysis. Chapter 3 present the methodology for the survey and the interviews used in this thesis. Due to the detailed level on various topics in this thesis and the survey findings and structure. The results and discussion are in the same chapter. The same structure has been used in similar papers on this topic. The thesis structure deviates from the traditional structure, but the structure in this thesis better suits the purpose of presenting insights into what Norwegian PE firms say they do. The results and discussion is presented in chapter 4. The conclusion and its implications are presented in chapter 5.

2 Theory and literature

In this section, the theory and relating literature will be discussed. This thesis investigates what Norwegian PE firms say they do.

The first part will, in general, explain the PE asset class, differences between PE and the public market. Then recent literature will be presented and discussed topics such as performance, persistence, and risk before the topics such as financial-, engineering- and governance engineering.

2.0.1 PE-firms introduction

PE investments are investments held in private companies. The trade is directly between investors. Typical investments are made through funds established by the PE firm management and organized as a limited partnership. Assets owners such as LPs invest in the fund operated by the PE firm management company. The partners operating in a PE-firms are called the general partner (GP). The fund is considered illiquid during the firm's life cycle and invests in illiquid assets such as privately held companies (called portfolio companies post-transaction). The GPs raise capital from the LPs called committed capital, whom the LPs must pay upon a predetermined date and the fund's start date (called vintage year). The fund's investment period can vary, but usually is 1-3 years, which is the investment period for the PE fund where the LPs must commit their capital. A typical structure for PE firms is drawn in figure 1.

PE professionals have five principal roles to fulfill in a PE firm: 1) Fundraising, 2) Sourcing of deals, 3) Negotiate, structure, and make investments, 4) Actively manage investments, and 5) realize the returns Gilligan & Wright (2014). This thesis will go into detail and try to find the different key levers a PE firm uses.

2.0.2 Private equity versus public equity

In the thesis, public equity will often be used as an absolute performance measure, and therefore it is important to summarize the differences between private and public equity. The most obvious difference is that PE is illiquid, and public equity is considered liquid for investments if ownership share is not too large in public companies. PE businesses are sacrificing liquidity to solve information asymmetries. A table for comparison of public and private equity is summarized in table 2.0.2 McElhiney (2011). Private equity has large transaction fees, and stock is traded over the counter, making them illiquid. The contracts between the LPs and GPs are complex and not as transparent as the public equity. Most PE firms funds stated lifetime is 10-12 years, but many funds are extended further, as not all investments are sold.

To compare PE asset class performance, the S&P 500 is often used, a stock market index that measures the 500 largest companies in market capitalization listed on the stock exchanges in the United States and is the most common indices in most benchmark studies for PE-funds. The index

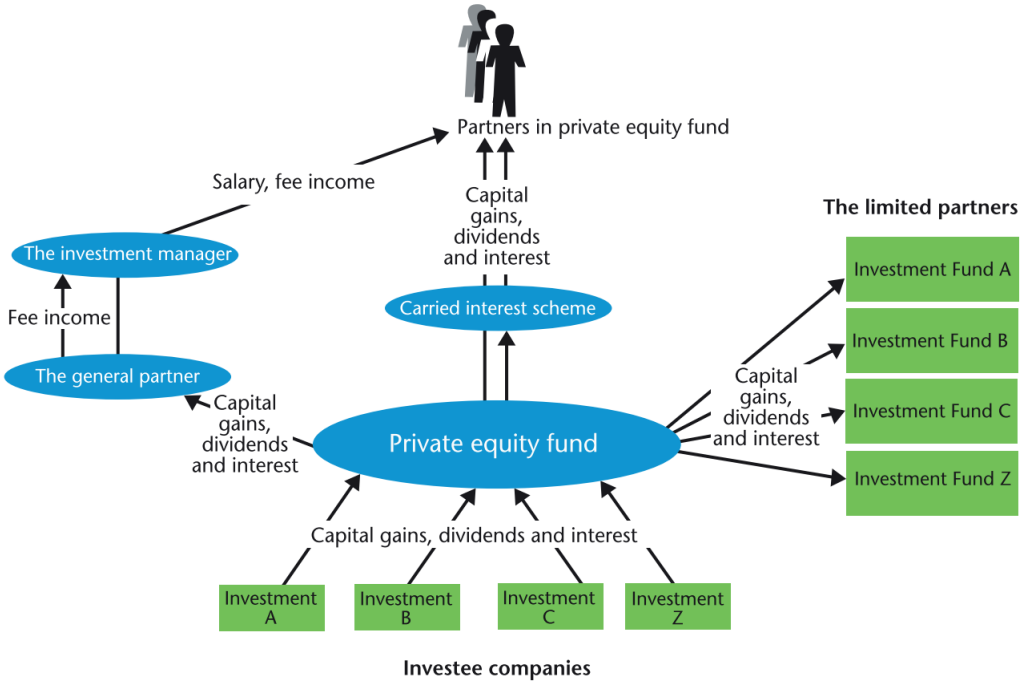

Figure 1: Structure of typical private equity fund Gilligan & Wright (2014)

is capitalization-weighted. In most literature reviewing absolute performance, the S&P 500 index is used as the most common and accessible benchmark.

2.0.3 Types of private equity

There are several types of PE firms. Some PE firms have a variety of specializations in niche segments, company phases, and geography. In this thesis, respondents represent either growth equity or LBO, which is capital to fuel further growth or investments financed with debt. Growth equity capital could be used to expand to new markets, global expansion, horizontal or vertical integration, to mention some causes. Other growth options could be follow-up acquisitions. The types of equity in the survey are grouped as follows: venture capital (VC), growth equity, distressed buyout, private investment in public equity deals (PIPES), LBO, and others. In academic research and typical associations such as the National Venture capital association (USA), Invest Europe, and Norwegian venture capital & Private Equity Association (NVCA) have different definitions of the distinction between PE and VC. By the American national associations, venture capitalists invest in companies in their initial phases of life or that are seeking for sources to expand and develop.

Private equity firms invest in companies that have at least completed their first/fast growth process Caselli & Negri (2018). In comparison, the European definition proposes that PE and VC are separate clusters based on the firm's life cycle. VC provides capital for start-ups and early-stage

	Public equity	Private equity
Market	Centralized and liquid	Over the counter and illiquid
Transaction cost	Small	Large
Valuation	Easy and objective in real-time	Difficult, subjective and available infrequently
Horizon	Immediate	Long term around 10-12 years
Contracts	Standard	Complex

Table 1: Difference between public equity and private equity

companies, whereas PE firms are involved in deals with the business that find themselves in their mature age of life cycle Gilligan & Wright (2014), and Invest Europe (2019). In this thesis, the European definition is used, coinciding with the NVCA definition of specific PE and VE firms in Norway. In the survey, the respondents are asked what investments best describe the investment firm. PE firms that invest in distress buyout or PIPEs are not included in this thesis since none of the respondents is characterized by this type of PE investment. PIPES and distress buyout funds are also out of scope for the key levers studied in this thesis. Based on the information from publicly available information from the PE firms of which the survey is sent, all are considered PE firms and not VC.

2.1 Financial engineering

Financial engineering is the first more general topic that will be in-depth covered in the survey. A PE investor aims to maximize return to its LPs as part of the value creation to maximize return.

In the body of research for corporate finance, the following papers Myers (1977), Myers (1984) and Baker & Wurgler (2002), seek to address how capital structures are set by firms covering essential aspects such as trade-off theory, pecking order, and the firms' ability of timing mispricing of debt or equity in markets. These topics are taught at most corporate finance courses in academia today. Key levers and practices for understanding key financial levers employed by PE firms are analyzed in the thesis. An important study for comparison of financial policy is the following paper Graham & Harvey (2001), the paper studies how CFOs in large Fortune 500 public corporation set their financial policy. PE firms and large public companies have different financial constraints, but the study highlights important factors for determining financial policy. Later in this chapter, asset pricing models and risk considerations will be presented and discussed more in detail.

2.2 Governance engineering

Governance engineering is another central area in corporate finance. Papers such as Jensen & Meckling (1976) were the first to address the agency conflicts between the inside and outside shareholders. Governance engineering involves creating a better alignment of incentives between managers and shareholders, providing better oversight to limit corporate jets and empire-building Gompers et al. (2003). Further similar studies have been performed in the Norwegian listed firms Boehren

& Odegaard (2001). However, as the study found, this academic field's theoretical foundation is weak, and empirical evidence is quite narrow and mixed. Existing research has been focused heavily on large US corporations. Norwegian listed firms are, on average, much smaller than US-listed corporations. Important differences between US and Norwegian listed firm is following: They are exposed to civil law rather than common law. Hostile takeovers are very rare. The firms are closely rather than widely held.

Performance-related pay is much less common, and corporate boards are owner-driven rather than manager-dominated Boehren & Odegaard (2001). Some of the findings in the study were atypical for the other literature and questioned the fundamental agency hypothesis established by Jensen & Meckling (1976) and Berle & Means (2017) managers whom powerful owners do not closely monitor will not fulfill their fiduciary duty. Powerful owners are beneficial because they discipline management towards maximizing market values Boehren & Odegaard (2001). However, the effects from literature are not straightforward, considering Norwegian markets, which have some differences in both culture and dynamics.

2.3 Operational engineering

PE firms market to their LPs their ability to create value in existing businesses. The empirical evidence post transactions for LBOs are largely positive Kaplan & Strömberg (2008). However, many studies performed in the US lack good data on PE firms operational engineering key levers and cause and effect analysis. Studies in Europe show good persistence inability to create value by PE firms. However, the increase in operating margins is modest in most studies post-1980s. Due to high leverage in many LBOs, the capital expenditures (CAPEX) found in some studies suggests future cash flow may be limited due to current cash flow repayment of debt. More recent studies such as Kaplan & Strömberg (2008) show that most academic research is subsequent in confirming PE investments are associated with increase operating margins.

However, few studies have found the key levers the PE firms use to create more value. One study addresses that a key lever found is that PE-owned companies gain productivity gains that arise mainly from an accelerated exit of less productive establishment and greater entry of more productive ones Davis John C Haltiwanger Kyle Handley Ron S Jarmin Josh Lerner Javier Miranda et al. (2013). However, this study is only based on companies before 2005. A more recent study shows that PE-owned firms are typically well managed. They have significantly better management practices than almost all other ownership groups such as family-run, founder-owned, or government-owned firms. Strong management practice and good corporate governance are reasonable to assume, given the role the GPs have, which is managing other LPs money compared to other ownership groups. Great corporate governance practices may also lead to operational engineering. However, the study lacked perspectives that PE firms do not always buy companies with key bet on management abilities to increase value in the firm. Follow-up acquisitions and entry and exit timing may be a key lever to gain returns for PE firms, which are financial key levers.

2.4 PE-firms risk, performance, and persistence

PE professionals had tremendous growth in compensation in the US, with over 230 billion USD paid in performance fees over the last ten years. The industry has grown, but the compensation has failed on average to beat the returns from S&P 500 tracker fund Phalippou (2020). The recent paper which questions the PE firms performance has caught the interest for further study Norwegian PE firms practices. This section will review and discuss the litterateur and the current performance, risk, and persistence status. Performance is very complex to relate to specific key levers the PE firms employ on their investments. This thesis will address the disciplines and what PE firms say they do with their investments. Reviewing PE firms performance, risk, and persistence will shed further light on Norwegian PE firms key levers in their investments. Risk is an important aspect covered in the survey concerning performance, and different risk factors and models are presented in this section. This section will discuss some important parameters for evaluating PE performance and recent literature discussing risk, performance parameters PE firms use, and persistence.

2.4.1 Capital asset pricing model (CAPM)

An important model for describing risk and return for an asset is CAPM. The model is taught at most finance courses at business schools and used in the industry. Traditional models such as CAPM describe a risk model and expected return for an asset based on historical values. The equation for calculating the expected return of an asset given its risk is as follows and given in equation 2.1

$$ER_i = R_f + \beta_i(ER_m - R_f) \tag{2.1}$$

where

ER_i = expected return of investment
R_f = risk-free rate
β_i = beta of the investment/systematic risk
$(ER_m - R_f)$ = market risk premium

The β measures how a firm's stock return moves in relation to the market's return. CAPM could be useful to evaluate risk premium for PE assets, but many PE funds have difficulties valuing asset value until the complete fund is liquidated. Therefore estimating an β is complicated and is very uncertain. CAPM calculates the asset risk premiums, which depend only on the asset β, and the factor that matters is the market portfolio. Many empirical studies have since the 1960s showed that there is not only one factor that matters (McElhiney 2011), but the principle holds that underlying asset factors determine the asset risk premiums in which investors are compensated. The CAPM model defines bad times as times with low market returns. Other models include multiple factors that define *bad times* based on multiple factors.

In the discussion about risk, it is important to understand the difference between idiosyncratic risk and systematic risk. Idiosyncratic risk affects only one security or a particular group of assets, and the risk is not associated with the larger macroeconomic forces such as market risk. Risk such as investment strategy, corporate culture, financial policies, and operating strategy for a certain

company are typical examples of idiosyncratic risk. Systematic risk is also often know as '*market risk undiversifiable risk* or *volatility*. Systematic risk incorporates factors such as inflation, interest rates, recession and wars, and other major changes. To manage systematic risk, investors should ensure that their portfolios are diversified among different assets and asset classes.

An extension to the CAPM model is the Fama-French three-factor model, which expands the model by adding size risk and value risk factors to the market risk factor in CAPM. The three-factor model describes the expected return by the following factors: 1) Market risk, 2) Size premium (small minus big (SMB)). The outperformance of small-cap companies relative to large companies. 3) High minus low (HML), which represents the spread between companies with a high book value/ market value (often called value companies in literature) and companies with low book value to market value. Similar to the two other factors, the β can be found by linear regression. In equation 2.2 the Fama-French three-factor model is given which is as follows:

$$r = R_f + \beta_i(R_m - R_f) + \beta_s \cdot SMB + \beta_v \cdot HML + \alpha \tag{2.2}$$

where

r	is the expected rate of return
R_f	is the risk-free rate
R_m	is the return of the market portfolio
β	is the factors coefficient from regression
$(R_m - R_f)$	= market risk premium
SMB	is the historical excess return of small-cap companies over large-cap companies
HML	is the historical excess return of value stocks over companies with low book to price value

Many new factors have been extended in the literature to include momentum, profitability, and investment factors. However, such models do not include factors evaluating liquidity. Most models, such as factor models, are based on regression analysis of historical data points. For evaluating a PE fund risk and premium, such models are not suited due to a lack of decent interim valuation of assets in a PE fund (Franzoni et al. 2012). The PE investments to be made predominantly in value companies. As defined in the Fama-French model, value companies have a high book value ratio to market value.

2.4.2 Internal rate of return (IRR)

PE firms widely use IRR, but as stated in the study Phalippou (2020) the IRR has some shortcomings as follows: The most frequently used performance measure IRR is uninformative and can be highly misleading; it typically exaggerates true performance. IRR is often used as an investment evaluation method for PE investment professionals for a potential investment. However, as a measure for performance for the PE fund, it is inaccurate due to two reasons. First, in measuring performance from an LP perspective, the gross IRR should not be the interest. Compensation to PE firms represents a considerable part of the total capital before distribution to LPs. Therefore net-of- fees IRR is a better estimate if IRR is used. However, the well-known problem is that IRR assumes that cash flows can

be reinvested at the same IRR. Some buyout firms have incentives to pay early dividends, which shifts outflux earlier in the IRR computation. This inflates IRR but may destroy value Phalippou & Gottschalg (2009). Some GP's also mislead IRR calculations by pools funds within the same vintage year instead of computing each fund separately Phalippou & Gottschalg (2009).

An interesting study account for risks such as illiquidity, compensation fees (both management fees and carried interest), leverage, and the pricing of the resulting risky debts seen from the perspective of the LPs is included in the model developed in the paper Sommers (2016). The model shows that the IRR between 13% and 17% for LPs is break-even considering a β of 0,5 for the portfolio companies. If the β is 1.0, the break-even IRR is between 17% and 19%. As seen in figure 2 the IRR as a performance indicator is presented for a sample of PE funds in the period 1986 to 2008, which shows the correlation between the different performance parameters. IRR is further discussed in the section 4.2.1.

2.4.3 Multiples of capital

The total value of paid-in capital (TVPI) is often used as a measure of performance. The TVPI consists of the total amount of capital distributed to LPs net of fees, divided by the total committed capital. TVPI are less open to manipulation than IRR's, but just as meaningless McElhiney (2011). If the multiple is greater than one, then the LPs receive a positive return on their investment. However, a TVPI higher than one does not always relate to a positive return when considering risk and public equity return. Multiples of money do not include factors such as time value of money, duration of investment, and risk. The study Phalippou (2020) has estimated a break-even multiple to be between 3-6 considering risk. TVPI is an intuitive measure to understand and calculate but does not include important effects such as time and risk. Multiples of capital have many names, and some uses MoM (multiple of money) or MOIC (multiple of invested capital).

2.4.4 Absolute performance measures

Public Market Equivalent (PME) is better suited for absolute performance measure than IRR and multiples since PME calculate performance relative to a benchmark often compared to S&P 500 index. The PME measures the return effects of investing in a benchmark index versus a PE fund. It represents the market-adjusted equivalent to the traditional TVPI. The PME incorporates the performance contribution of a public market index by compounding each fund's cash flow, both capital calls and distributions based on an index.

A comparison between all performance measurements is shown in figure 2. The average multiple is two for buyouts. However, the PME is 1.3. As compared in figure 2.4.2 the PME needs to be between 1.2 and 1.7 if the portfolio companies have β of 0.5, and PME between 1.8 and 2.1 if β is 1 based on old historic values before 2008.

2.5 Performance

In this section, PE firms performance will be discussed, and various important and recent literature on this topic will be presented. Due to a lack of market values such as public equities of PE invest-

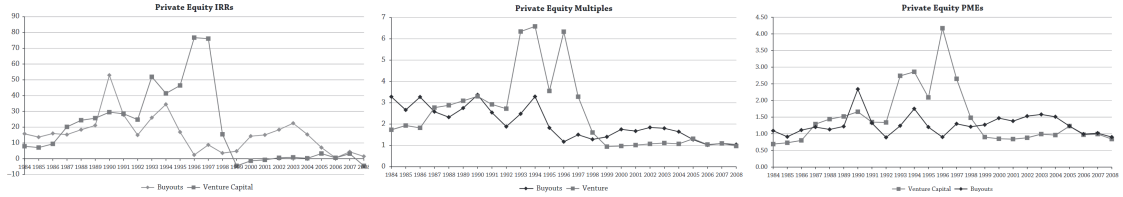

Figure 2: Performance measurements PE McElhiney (2011).

ments, the main performance measures used in the industry are usually IRR, TVPI multiples. All these measurements are calculated with periodic valuations of portfolio companies. These measurements are not a measure of returns to LPs and can often be a misleading measure of performance Phalippou & Gottschalg (2009). Some are even misleading and manipulated Phalippou (2020), Phalippou (2011) and Robinson & Sensoy (2013). However, the existing literature reviewing performance is not aligned in this case. The variation on absolute performance in studies could be due to a lack of insights and accurate, detailed data from the PE firms fee structure and verified distributed capital flows between GPs and LPs, which GPs often do not share. In recent years, data from PE funds performance is more accessible through data such as the Burgis database described later in this section. However, large LP's as the study DaRin & Phalippou (2014) is based on, have shown more insights in this area with data from 300 PE-funds inflow and outflow of capital. However still, it is much more to be investigated to measure performance with PME accurately.

Some studies have indicated misleading reporting on performance. In the long term, the misleading performance will often be adjusted to actual performance due to PE firms future fundraising. PE firms that report overstated performance are punished by a limited supply of capital on the next fundraising. Often top-performing PE firms safeguard by reporting conservative results not to jeopardize their high relative performance rank Brown et al. (2019). Often bad luck term is used in periods for conservative results. These long-term reputation concerns appear to be dominated by the firm's short-term survival for under-performing PE firms to raise the next fund. Therefore most PE firms are believed not to report misleading performance. However, how performance is presented and which parameters could potentially lead to different impressions of PE-funds performance.

The average PE fund does not turn positive until eight years of the fund's life, and the average time until fund capital is invested, is six years Kaplan & Strömberg (2008). Therefore, interim reporting on PE-fund performance is highly uncertain and difficult until the very end of the PE fund. Once the cost of capital is adjusted, it is only at the very end of fund life that excess returns are realized. Therefore, fund performance requires using precisely dated cash flows over funds life rather than relying on arbitrary assumptions. Interim IRR is not very informative but highly used by GP's in funds Phalippou & Gottschalg (2009).

Measuring risk and returns are difficult to analyze due to returns are not reported or easily accessible. Overall, the PE performance for both PE and VC has been highly cyclical Harris et al.

(2014), a potential explanation of the cyclicality can be due to public market indexes variation and therefore not favorable timing for IPO's for example. Most PE-exits are secondary buyouts, which are less cyclical to public marked returns or interest rates.

In the literature, the most difficult part is data collection and interpretation of the PE firms performance. Few papers have been published presenting LPs view on PE fund except papers such as (Ljungqvist Matthew Richardson 2003) and (DaRin & Phalippou 2014), which is focusing on actual cash flows from PE funds to large LPs in order to calculate absolute performance.

Many studies have tried to measure risk for PE funds. However, it is quite complex. Since the nature of a PE fund is illiquid and regular valuations or trading do not occur as public equities. Therefore applying traditional portfolio theory is difficult. Some studies have tried to assign comparable company or industry risk measures. However, it is complex and case-by-case sensitive for each investment to aggregate a risk adjustment on the fund level. The study Ljungqvist Matthew Richardson (2003) tried to measure risk by assigning a β of the portfolio company and then aggregate and estimate fund risk. In addition, PE funds are often not well-diversified. The average fund invest close to 40% of their capital in a single industry Ljungqvist Matthew Richardson (2003). The paper Ljungqvist Matthew Richardson (2003) assign each portfolio company held by fund to a 48 industry group chosen by Fama and French Fama & French (1997), and used industry statistics to find risk profile to each portfolio company. This approach of assigning β is considered the more traditional approach, such as public companies often use for internal investment evaluations. The study uses unique data from one of the largest LP investing in the US from 1981 to 2001.

The data set in the study Ljungqvist Matthew Richardson (2003) contains exact in- and outflows of capital from the different funds. The study estimated the β for PE-funds to be greater than one and show that on a risk-adjusted basis, the returns of a PE fund are on the order of 23.8% relative to the present value of the invested capital to the fund. The study suggests that the premium is compensation for the illiquid investment for a 10-year holding period, not compensation for systematic risk. As later will be discussed of most PE owned businesses today, the PE portfolio businesses have a potential plan for improving the businesses revenue or profit by utilizing key operational engineering levers. Assign an industry β for the company and then calculate a risk-adjusted return may have some drawback since may not include important factors such as aggressive growth strategies and reduced capital cost for follow-on acquisitions or investments in the businesses. The study Ljungqvist Matthew Richardson (2003) is also based on data from before 2000, where financial engineering had more focus than operational engineering. However, the indication of premium due to illiquid investment is important, but maybe not as large as suggested.

For LPs, the illiquidity of capital for PE fund investment causes concerns in managing capital. As a result, the distribution of PE investments return is uncertain both in time and amount. Other assets such as venture capital, real estate, and natural resources face similar issues with a lock-in of capital and in future projections uncertainty.

The study Driessen et al. (2012) is more recent and has studied a new method for estimating risk and return of non-traded assets from cash flows. The data set used was based on 958 PE funds from 1980 to 2003, which is similar to the study Ljungqvist Matthew Richardson (2003), but it is more

recent. The study shows that the CAPM-β is low for buyout funds and no abnormal performance. VC have a large β and significantly negative α. Larger funds have higher returns due to higher risk and exposure and not higher α. For buyout funds, the market β is 0.33 net-of-fees, and before fees, it is 0.56. Buyout funds appear to have lower risk than public equity and cost of capital around 8% per year from 5% + 0.33*8%. According to the Fama-French three-factor model presented in 2.4.1 the alpha is even lower and close to zero. The main assumptions for compensation for PE firms are based on the standard 2-20% model. The study found that buyout firms outperform, but not VC. The study suggests that there is too much money chasing too few opportunities, which causes the negative alpha for VC, that the price paid by VC funds is too high. This result is quite interesting as early as before 2000. The study also found smaller returns for PE-fund than the paper Ljungqvist Matthew Richardson (2003), which is mainly be due to the generalized method of the moment is used to calculate β.

Estimations of risks in the study Buchner (2015) show that the exposure to systematic risk is notably higher than previously estimated and widely assumed, with a β coefficients ranging from 2.5 to 3.1. A corresponding alpha between 4.8% and 5.1% per year is in contrast with prior studies with a β ranging from 0.7 to 1.3, suggesting that the market risk of buyout fund is higher than the risk of the public market. For comparison of the two studies, the study Driessen et al. (2012) found that β is 1.31 and alpha is -4.8%. The study Buchner & Stucke (2014) found the β to be 2.67-2.8 and alpha -0.7 to -1%. To estimate the systematic risk, the observable cash flows are used. The carried interest provisions reduce the exposure to systematic risk and find that this effect offsets management fees. Estimations also suggest that buyout deals have generated gross α of around 5% per year, relative to the total returns of the S&P 500, which is higher than Phalippou (2020). A novel model for risk model for private equity has been developed in Buchner (2015), which accounts for three risks. (i) Market Risk: The risk of losses in the market prices of the portfolio companies held by a fund exposes investors to market risk; (ii) Liquidity Risk: The illiquidity of private equity partnership interests exposes investors to asset liquidity risk associated with selling positions in the secondary markets at potentially large and ex-ante uncertain discounts on a fund's net- asset-value; (iii) Funding (or Cash Flow) Risk: The unpredictable timing and magnitude of fund cash flows pose funding and cash flow risks to investors Buchner (2015).

The study also suggests that the investors do not receive compensation for the illiquidity of their investments, which is in contrast to the study Ljungqvist Matthew Richardson (2003). The study Buchner & Stucke (2014) found outperformance of PE-funds and suggest the performance is due to PE-manager skill to advise the management, exploiting marked inefficient, receiving credit, and tax savings due to high leverage. These results show that the broader part of value creation in financial engineering rather than operational engineering, which will be discussed further in the section 4.4.3.

From a return perspective, Ludovic Phalippou Phalippou (2020) studies show that the return is not better than S&P 500. The study uses both Burgis, Preqin, and Cambridge associates databases. The return is 3% lower than S&P 500 index. Researchers such as Matthew Richardsson Ljungqvist Ljungqvist Matthew Richardson (2003), Steven Neil Kaplan, Tim Jenkinson, and Robbert Har-

risHarris et al. (2014) all show performance which is around 3% above the marked index by various methods and the use of different databases in their research for recent research in the last decade. There are different views on PE-firm performance in academic research. Many researchers argue that PE performance is higher than the public market index, and others argue otherwise. However, the studies compared uses different periods, and the quality of the data is difficult to verify. However, PE firms should not have had any incentives to report optimistic or opposite returns.

The study Ljungqvist Matthew Richardson (2003) data are based mainly on LP's investing in over 300 PE funds, and the data is reported from the LP, not the GPs. The data shows exact cash flows and times for the different funds. However, the study was performed in 2003. It is outdated since performance and PE firms practices have changed. Many of the studies use data up to the year 2000 except Phalippou (2020) and Harris et al. (2015), which use data up to 2014. Ludovic Phalippou is among the most recent researchers that shows the negative or same performance as the market index. Other earlier studies by Ludovic Phalippou have shown underperformance, but the other researcher has shown different and updated views in more recent publications. Since the different studies use different databases and data, most of the differences are not on how performance is calculated but more on the data and how it is interpreted.

Databases such as Venture Economics (VE) and VentureOne are used in Ljungqvist Matthew Richardson (2003) and Kaplan & Schoar (2005). The Cambridge Associates database is used by Phalippou (2020). VE and VentureOne are good databases for finding out how much a PE fund invests in companies, but not ideal for performance. VE uses IRR at an aggregate level, and fund-level data is not available. The newest and most reliable source of PE performance is the Burgiss database. Prequin is a commercial database containing various data from PE funds, hedge funds, and private companies based on the freedom information act in the US. However, the data is reported from GPs valuations and reported numbers are not validated, such as the Burgiss database. Compared to the other databases, the Burgiss database is based on LPs reports and not GPs as the other databases. Also, the Burgiss database shows data on a fund level and the time of the cash flows. Burgiss database has recently been available, and yet not many publications are based on this database. Most of the last year's papers have been about data quality and how the data are interpreted and used in different models for calculating PME.

From 1980 to 1997, average LBO fund returns net of fees are more or less the same as the return for the S&P 500 Kaplan & Schoar (2005). Thus, VC outperforms, but buyout firms do not. The study Harris et al. (2014) shows an opposite view of return based on Burgiss data.

Many earlier studies, such as Kaplan & Strömberg (2008) have the following shortcomings Ljungqvist Matthew Richardson (2003) 1) The data are available only in aggregate rather than fund by the fund. 2) Data are self-reported subject to biases. 3) Based on unrealized and realized investments that introduce noise and biases due to subjective accounting treatment.

LPs may have a biased view of performance because performance is generally reported gross-of-fees. It is difficult for LPs to benchmark this asset class with other asset classes since fund reports are often reported in multiples and IRR. Based on discussions with LPs early in this thesis. These LPs said that they are satisfied if past performance shows that they doubled their money. However, how

long it took to obtain a multiple must be considered by investors since the investor faces continuous inflows and outflows.

Good companies are limited in the market for transactions. Maybe many PE firms have reached their maximum exclusive local/regional deal flow, along with optimum management size without loss of quality. Many high-performing PE firms in the US are oversubscribed. The best performing funds represent a quartile of all the PE funds. A hypothesis can be that LPs may want to establish commercial relationships with PE firms for future financing rounds for their funds and not mainly to seek abnormal returns. LPs may want to have the right to participate in future better performing rounds and therefore stick in early in lower-performing funds. Results show that few early funds perform well. As many PE funds, ticket size, and *invite-only* limitations may limit investor's exposure to the high-performing PE firms. This has been seen for small endowments that lack substantial AUM to also invest in PE asset class. For these endowments to invest in PE assets, they need to diversify PE funds investment at maybe five or more funds, which multiply the capital needed substantially and limit their exposure to PE asset class.

For PE firms that perform well they may also do not want to increase funds size due to limits with scalability both in deal flow and in management. The study Diller & Kaserer (2009) shows a correlation between a PE fund's ability to draw capital and its return. Some PE firms in Norway have had issues regarding scalability in the last decade, increasing fund size without achieving scalability in management and increasing ticket sizes. This correlates that GP's skill has a significant impact on return. The study Sensoy et al. (2014) shows no correlation that LPs such as endowments, which had a great return in the technology boom in the '90s, have after the 2000's not been able to choose or access better performing PE funds. Also, Harris et al. (2013) finds little evidence on persistence on the performance of PE funds post 2000. Maybe competence and industry have become more mature? Then from the LP perspective, picking winning or losing PE funds becomes more difficult. For VC funds Harris et al. (2015) highlight that LP selection and skills and fund access are much more critical in VC than in buyout. The study Franzoni et al. (2012) shows that return from high-performing funds is not strongly correlated to stock market returns, which is in contrast to many studies showing and correlation with the public market.

As seen above, many studies have been analyzing PE performance. Most studies use S&P 500 or similar indexes as the benchmark. The study Harris et al. (2014) shows a deviation among the studies performed in which the return is 3% above S&P 500 annually. The paper Phalippou & Gottschalg (2009) used a benchmark technique when benchmarking with matched industry/size and not only S&P 500 or similar. The study shows that PE funds underperforming by 3% lower per year than S&P 500. Adjusting for risk decreases performance by about 3 %, bringing the alpha net of fees to 6 % per year. The study Harris et al. (2014) shows that PE funds exceed the public market by 3% per year. The most recent study Phalippou (2020) from 2020, which shows the performance since 2006 is the same as public equity indices. Assigning each portfolio company with an industry group factor using Fama and French segmentation and comparing the fund with industry market return could be used to get data and comparison at a portfolio level as some studies discussed in this section have done. However, the illiquidity and lack of capital control should give a higher

return than the market index. Most PE funds have a considerably long lock-in period, and when comparing this with the many studies, the premium should be higher.

To sum up most of the existing literature. Calculating PE funds performance issue is using correct and verified data net-of-fees. However, adjusting to risk and illiquidity and using capital asset pricing models to calculate a premium for PE funds is difficult. As presented in this section, various methods and perspectives are used. It is important to consider the different risk factors and have them in mind when presented or calculating hurdle rates and return targets.

2.5.1 Persistence of PE-firms

Sources of value creation across all disciplines are studied in this thesis. Important in this view on performance and value creation is to discuss the persistence for PE firms. The study Kaplan & Schoar (2005) shows that performance is related to size, experience, and importantly past performance. The study shows that inexperienced fund has a lower performance. The study found that persistence is strongly related to individual PE partnerships. Running a PE fund requires skill, and learning may play an important role, as studies have show influence the performance Kaplan & Schoar (2005). However, since this study is based on data before the year 2000. It is highly uncertain to extrapolate these results to 2021. It appears from studies before 2000, a higher share of the value creation was from financial engineering than operational engineering. More recent research shows that persistence, learning, and returns are not as significant as before the years 2000 funds Harris et al. (2013). There are differences in performance, but the compensation structure for PE firms is fairly uniform in the industry.

2.5.2 Liquidity premium for PE fund

Illiquidity risk premiums compensate investors for the illiquidity of the asset. For individuals, illiquid asset represents 90% of their total wealth, which is mostly tied up in their house McElhiney (2011). The illiquid asset markets are large. In 2012, NASDAQ and NYSE's market capitalization was around $ 17 trillion, and the estimated US residential real estate market is $ 16 trillion. The traditional public market with liquid stocks and bonds is smaller than wealth invested in illiquid assets. Therefore investors must consider illiquidity in their portfolios. The ratio of exposure in illiquid asset classes for pension funds and endowments has increased in the last decade McElhiney (2011). For example, Harvard Management Company (HMC) held 55% of its fund in hedge funds, PE, and real estate. During the financial crisis in 2008, HMC experienced liquidity issues and needed cash for funding its universities department with a large portion of capital invested in long-term assets.

As an LP invests in a PE fund, the amount invested will have a lock-in period until the complete fund is liquidated and all stocks in portfolio companies are sold. A typical fund lifetime is around 10-12 years Phalippou (2020). If an LP exit the fund before the end, the LP would get a reduction in return. Given the illiquid capital invested in the fund, the LPs return from the fund consists of a part that is premium due to illiquid capital invested in the fund. Depending on which study is used the return net-of-fees compared to S&P 500 is around 0% to 3% Phalippou (2020), Ljungqvist Matthew Richardson (2003), Brown et al. (2020), Harris et al. (2014) and Harris et al. (2015).

Investing in public stocks is considered to be highly liquid. There is some limitation if investors purchase or sell large holdings of shares exceeding limits regulated by the local authorities that may affect marketability. However, they are liquid compared to S&P 500 stocks.

Most PE fund investors are long-term investors. These investors may have strict investment mandates and diversification protocols to follow, leading to a demand to re-balance before one of their PE funds investments is fully realized. Therefore it is expected that a part of the expected premium return compared to public listed companies should include a liquidity discount. Not only does the illiquid capital cause concern for the LPs. Projected cash flow of return is also highly uncertain, both the amount of return net-of-fees and when the invested capital is returned. Studies have been performed to find ways to project future asset values and cash flow of funds, but it is highly uncertain Takahashi & Alexander (2002).

To compare liquidity discounts on PE assets. Studies of IPO liquidity discount can be used. Private companies going public usually have a discount on their shares before going public. The discount given is often called a liquidity discount. Studies have been performed comparing the private stocks versus the valuation value once a firm goes public. The discount of the stocks may often compensate for the uncertainty of a firm public's successful listing. This uncertainty affects pre-IPO price Brown (2006). Therefore, one would expect the post-IPO prices to be much higher than pre-IPO to remove the uncertainty with the public listing of the firm. Of the 363 public listings, the discount is given five months before listing shows a mean/median discount in the mid-40% rangeBrown (2006). The discount of the stocks is much more complex than only giving discounts due to the uncertainty of listing. Top executives may receive extra compensation before the IPO and low pre-IPO prices as a form of compensation. The company can also choose its stockholders, which may be related to bias in the research. Therefore it is difficult to verify an objective company valuation for calculating the discount.

Studies have been performed on pre-IPO and restricted stock discounts showing a large discount Kleiman (1999), and Brown (2006), as stated above, these studies have flaws that the discount also include other factors of which liquidity factor is one of many. A discount could reflect compensation, and the private placement discount may be an unreliable parameter for determining a liquidity discount. Studies have also been performed to use more objective measurements such as valuation multiples, DCF valuations and compared these results with comparable companies publicly listed. For earnings, multiple Kleiman (1999) found a significant statistical discount of 20% for EBITDA multiples. Important to mention is that the study on liquidity discount on IPO has been based on data before the year 2000. Since then, market practices have been changed as public equity has been more and more accessible through digital services for the broader part of the population.

Studies have been performed to analyze whether liquidity is a market-wide state variable important for asset pricing Pastor & Stambaugh (2003). The study found a cross-sectional sensitivity of return to fluctuations in liquidity. Stocks that are more sensitive to aggregate liquidity have substantially higher expected returns, even after considering other exposures such as market return, value,

size, and momentum factors. A Carhart four-factor model is used, which is an extension of equation 2.2 by adding a momentum factor, whereas the momentum factor is defined as the tendency for the stock price to continue rising if it is going up and continuing declining if it is going down Wikipedia contributors (2020). The Carhart model used on the data finds a significant β on liquidity risk factor of 0.64, on the market factor 1.3, and the book to market value factor 1, but not on the size factor Pastor & Stambaugh (2003). The exposure to these factors brings the alpha of this asset class to zero Franzoni et al. (2012). The same study found that the unconditional liquidity risk premium is about 3% annually. Compared to recent studies, the excess return in some studies for the asset class private equity is around 3 %, as given above and lower for some studies. The performance return of PE asset class higher than the market index such as S&P 500 may be explained by different compensation factors, whereas liquidity risk is one important factor of the total risk premium. In figure 3 different asset classes are presented with a relative measure of illiquidity.

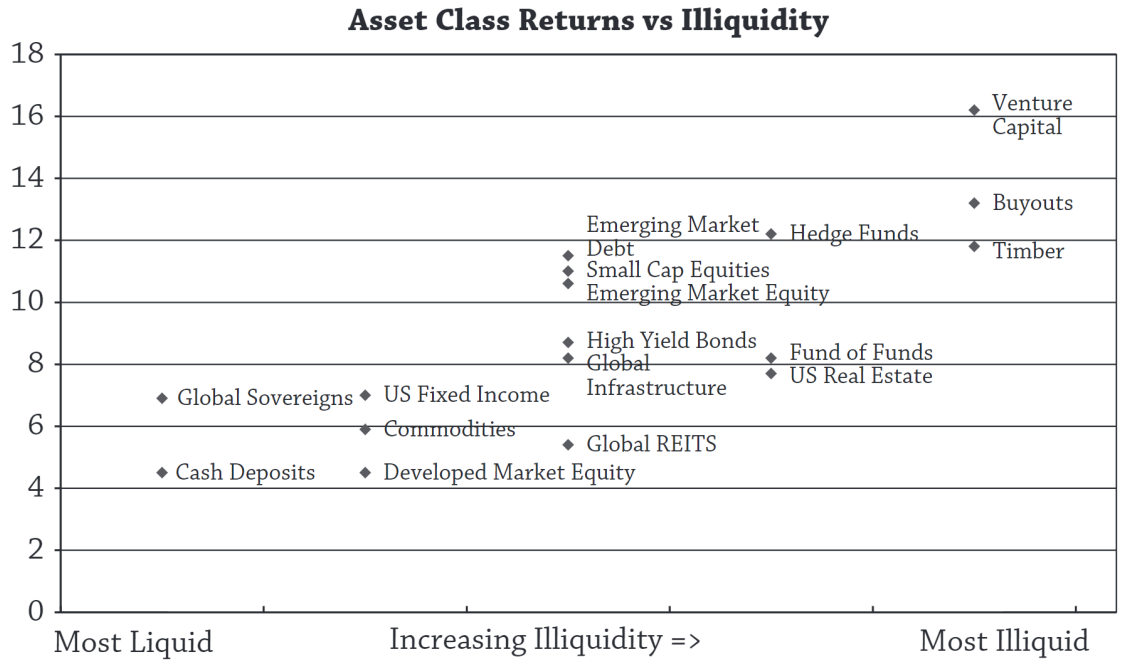

Figure 3: Asset class returns vs illiquidity from Ilmanen et al. (2020)

The evidence for increased return as asset classes become more illiquid is mixed in the literature when considering biases McElhiney (2011). Across asset classes, there does not seem to be a significant illiquid risk premium, but with an asset class, there are large illiquidity risk premiums McElhiney (2011).

The unconditional liquidity risk premium is about 3% annual, and the total risk premium is about 18% for PE Franzoni et al. (2012). However, many other studies found it hard to empirically

isolated the liquidity premium from other asset premiums. The returns of PE are also significantly related to the tightening in credit standards Franzoni et al. (2012). The same study has shown that PE investments are exposed to the same illiquidity risk factors as public equity.

2.5.3 LPs considerations in PE-assets

The study Franzoni et al. (2012) has looked into liquidity risk and diversification benefits of PE assets. The study shows that the unconditional liquidity risk premium is about 3% annually in a four-factor model. The inclusion of liquidity risk premium reduces alpha to zero. PE investment still has risk properties that should lower attractiveness than the stock market S&P 500. This may suggest that LPs are driven more by diversifying their assets into PE funds instead of holding a liquid asset.

Given the highly varying and challenging performance indicators from PE funds performance, it must be difficult for LPs to choose funds. Of all investors, 27% Phalippou (2011) believe the performance relative to other funds is the most important performance factor. In less than 8% of the cases, the PE investors believe that investors view performance relative to the public market as the most important benchmark Phalippou (2011). Mispricing of the asset class from investors may be one explanation due to a lack of skill. However, since the literature varies from mostly -3% to +3% average annual return compared to S&P 500 return for PE funds, it must be challenging from an investor's perspective to understand if a PE fund is an attractive investment. Some investors have a biased view of performance because only the performance gross of fees is reported in prospectuses used to raise funds. Benefits such as establishing commercial relationships and rights to the new fund may explain the low performance. Also, since many PE investors are pension funds and banks, they may invest to stimulate the local economy.

3 Method

In this section, the method used for this thesis will be presented. First, the underlying rationale of the choice of methods for the research question used in this thesis will be described. Then the litterateur relevant for the methods used will give support to the rationale of choice of method. Next, a thorough description of the survey, structured interviews, data collection, and post-processing of the data is presented. Last, the validity of the method will be evaluated.

3.1 Research design

3.1.1 Research approach

This thesis addresses differences between the US and Norwegian PE firms and what Norwegian PE firms say they do. Two common approaches are usually used to conduct research: deductive or inductive approach. The deductive theory is the most common view of the relationship between theory and research. Based on what is known about a domain and theoretical consideration within it, the researcher deduces a hypothesis that must be subjected to empirical scrutiny (Bryman & Bell 2011). The opposite direction of the deductive approach is the inductive approach. In the inductive approach, findings/observations are connected to theory. The inductive approach tries to build hypotheses based on findings and observations. For this thesis, an inductive approach was chosen. The basis for the approach was to build a new theory on practices in the Norwegian PE industry without being biased by the researcher's assumptions and expectations from building the hypothesis first, which is a weakness in the deductive approach. However, in some parts of this thesis, the process is not very linear, where one step follows the other in a logical sense.

Firstly the survey was constructed based on the inductive approach. However, some presumptions and expectations arise from the literature study narrowing the questions asked to the PE professionals. The limitations of asking open questions in the survey will be later addressed in section 3.1.2. A few deductive presumptions were made. However, the broader part of the survey is based on an inductive approach that was open and did not limit any findings and observations. For the structured interview with PE professionals, some hypotheses arise based on the survey findings, which were tested. The broad part of the interview had an inductive approach to acquire knowledge with the aim of building a hypothesis. The inductive approach was most favorable in the lack of theory or findings from litterateur on Norwegian PE firm's practices. As current research on Norwegian PE-firm practices is scarce, the inductive approach is most appropriate for this thesis. For a study to evaluate certain topics of PE practices, a deductive approach would be favorable for evaluating hypotheses based on existing literature. However, since this thesis is more general and covers various topics, and lacks few studies covering this topic in Norwegian PE firms, the inductive approach is favorable.

3.1.2 Self-completion questionnaires as a research method

Questionnaires completed by respondents themselves are one of the main instruments gathering data using a social design and structured interviews (Bryman & Bell 2011). A survey's advantages are the following: cheaper to administer, quicker to administer, absence of interviewer effects, no interview variability, and convenience for respondents. This method was chosen for this study as the aim was to explore and understand how Norwegian PE firms operate in general. Various studies have been conducted on detailed topics in the literature, but few have been performed on a more overall level, linking different industry practices. Therefore, a questionnaire was used to explore Norwegian PE firms operating practices in a more broad sense. Due to lack of time and resources, a structured interview as the main approach for inductive research was not used to capture more findings and observations than a survey.

3.1.3 Sampling of potential respondents

In Norway, the sample size is very limited due to few PE firms. Depending on Norwegian PE firms definition, the sample size is between 20-25 firms know by the author with large dependency on the definition of where the line between VC and PE is drawn. The Norwegian Venture & Private Equity Association members and reports (Economics 2019) were used along with insights and relations in the industry for defining the survey sample. The sample was defined as PE firms, which operate and invest in companies mainly in Norway. Some of PE-firms have made a few investments in Nordic countries. However, these investments were only a few and did not represent a substantial portion of the assets under management or the PE fund with parts of management located outside Norway. Based on available information on both investments performed and investment criteria, a thorough investigation was performed on each PE firm before the survey was sent to each respondent personally. The investigation studied the geographical footprint, types of investment, and types of investors. All the firms with more than 30% of their asset under management invested outside Norway are excluded from the survey. For defining the geographical investment region by the firm. PE firms such as Ferd and EQT are excluded, and a few others due to large international presence and since some PE firms are family office.

3.1.4 Survey description

The topics covered in the survey had the aim of covering strands in the literature. The survey was constructed to evaluate whether PE firms used different corporate finance theories and how the theories are applied. In the literature, various theories have been developed on corporate finance subjects. The survey has constructed a few questions to evaluate if the theories academics promote for PE firms conform to PE firm practices. The corporate finance topics are separated from the other subjects for a few questions covering this topic where a deductive approach is used. For the rest of the survey, an inductive approach is employed. The survey aims to be as broad as possible. The survey is constructed with the possibility to group PE firms to key indicators for each question and compare differences with PE firms with high or performance, and size of AUM.

When using a survey, there are some limitations that need to be addressed as follows (Bryman

& Bell 2011).

- Most closed questions with a few open-ended
- Do not know who answered
- Low response rate
- Selecting a sample
- Defining significant factors
- Issues of reliability and validity

3.1.5 Semi-structured interview

A semi-structured interview with an inductive approach was used as a secondary data collection method. A few questions asked at the end of the interview were based on the results from the survey results had a deductive approach. The rest had an inductive approach. Interviews are verbal interchanges where one person, the interviewer, attempts to elicit information from another person. There are three types of interviews: structured, unstructured, and semi-structured. However, semi-structured interviews are probably still one of the most commonly used qualitative methods in business research (Bryman & Bell 2011).

Semi-structured interviews allow for an open response from participants rather than a 'yes or no' type of answer. Structured interviews follow a predefined list of questions, and interviews are similar and almost performed in the same way and asking questions in the same order. Semi-structured interviews have a predetermined order but still flexibility to ensure that issues addressed by the informant are covered. The results from the survey set some of the structure. The semi-structured interview is, in this thesis, a supplement to the survey as a means for triangulation. Semi-structured interviews are used to investigate complex behaviors, opinions, emotions, and effects and collect a diversity of experience Bryman & Bell (2011). Since the interview topics are very broad, an interview could get more insights from PE professionals. In the interview, if a PE professional has detail knowledge of a certain area, the interviewer will ask many detailed questions on this topic to gain more insights, which may have been too difficult to implement in the survey where all respondents had to answer. Especially deal sourcing, deal sources, compensation, and absolute performance parameters are difficult to go into details in a survey. Therefore great flexibility is wanted in the interview to discuss particular topics the interviewee has in-depth competence within. During the interviews, active probing was used to go further in-depth on particular interesting topics or comments where the answers were not satisfying. The researcher finds interesting angles or perspectives that the researcher wants to follow up. By using a semi-structured as a secondary research method some of the weakness of a survey was mitigated such as: potentially collect additional data, less risk of missing data, higher response rate, deeper probing to elaborate answers, and asking open questions Bryman & Bell (2011).

A PE-firm fund life is often 8-12 years, and for many parts, the interview had a retrospective part. Some of the data would be difficult even for the PE firm to extract on the PE-firm practices during the fund's investment phase and then many years later compare the fund's performance based on the practices during the investment phase. The nature of the PE-fund lifetime and situation does

not provide all the exact data from the practices in the investment phase. However, it may shed some light and give important information on decisions or events during this phase. However, this approach may have some drawbacks. As seen in chapter 2 the industry has matured a lot in the last decade, and an important drawback may be that the PE-professional describes the past through the lenses of the present Silverman (2011). Secondary sources such as literature in this thesis may limit such a drawback. Also, some PE professionals have changed jobs and have been promoted during the fund's lifetime, which can cause some skewed results and findings.

The interviews lasted from 45 to 60 minutes, and all four interviews were performed digitally. In addition to the interviews, all relevant public information regarding each respondent's PE firm was used as a secondary data source. Typically annual reports for the PE firm, public annual account, and public available equity holding were thoroughly investigated and used as a secondary data source.

3.1.6 Interview guide

Interviews were held after the results of the survey were available. Therefore a great emphasis of the interview guide was initially based on the results of the survey. Relevant examples of interview guides from Bryman & Bell (2011) were used as a guide for developing an interview guide along with supporting literature. Ideally, the interview guide should have been the same throughout all interviews. However, some questions were altered as more insights were gain from the survey results that could be used for further verification or discussion with the interviewees. As new experiences were gained for holding interviews, the guide was also altered. The structure and topics were kept the same for all interviewees.

The interview guide was divided into four parts. The first part is an introduction and the goal of the research and interview. Since all had read and participated in the survey, this part was less focused than normally needed. Part two of the interview was about the background of the interviewee and the PE firm. The third part is the main part of the interview conducted with questions divided into subsections within each PE firm disciplines categories. The last part was mainly feedback and debrief.

Much work was given into writing questions to give more concrete answers and topics to which the interviewees could relate to.

3.1.7 Approaching respondents and interviewees

The data from the survey was collected by using NTNU's survey services Nettskjema. Nettskjema is a tool for designing and conduction online surveys and is operated by the University Information Technology Center at UiO. The survey is specifically designed to meet Norwegian privacy requirements. All respondents and interviewees were contacted by email. The email was constructed specifically for each PE professional. If possible, an existing relation was used through the professional researcher network. The email clearly stated the purpose of the thesis and the goal. The anonymity of the survey and interview results was thoroughly explained, and how Nettskjema ensured this, and how the interview results were handled.

3.1.8 Data analysis

All the data from the survey was stored and handled by Nettskjema according to the Norwegian Privacy requirements. However, no privacy data was collected from interviewees. All data were extracted from Nettskjema and processed by using own programmed Matlab code/algorithms for sorting data. With the aim to structured, the data to best possible perform data analysis. One hundred fifty-one different variables with up to twelve different answers on some of the variables were post-processed from the data extracted from the Nettskjema survey.

3.2 Methodology discussions

In this section, the methodology used for the thesis is discussed along with limitations and trade offs of the different methods.

The method chosen was believed to serve the purpose of the thesis. Some trade-offs were used to serve the purpose with deviation on some parts. The use of the deductive approach for business research better serves the purpose. A quantitative approach could have been used to more extent, but due to time and resources, a survey had to be constructed within one month to keep the strict timeline of the thesis. A more in-depth survey design could have potentially gained more quantitative substance to the study and more time defining questions and relevant topics. Therefore a survey and semi-structured interview were used to best possible serve the purpose with the limitations given.

However, as earlier highlighted, a quantitative approach using a survey has its limitation in that the researcher only answers the specific questions asked. A quantitative research method is more common to use as the research topic is more mature (Aspelund 2020). Hence, as stated in the chapter 2 Norwegian PE industry is still not as mature as the US PE industry, and academic research on the Norwegian PE industry is scarce. Thus, as for the time and resources in designing the survey, both the body of research and time available was too scarce to use this as the only research method. The GPs define PE-firm practices in the PE firm, which is not many people when adding all professionals for typical PE firms in Norway. Therefore, the person behind and how the leader interacts between all stakeholders and the implication is important. A semi-structured interview can go more in-depth on this topic.

While designing the survey and performing the interviews, it is important to strive always to be objective. A risk, especially in an interview, is when the researcher asks leading questions or focuses on important matters during the interview. Also, there is a risk of the interviewee being biased to answering a question to please the interviewer or answering questions. The interviewees don't have the data or answer to please the interviewer or do not want to show a lack of insights. These risks have been evaluated before interviews with the goal of minimizing these risks. A great risk of this thesis is the validity of the results when performing only a few interviews and few respondents on the survey. A risk in collecting the data is the risk of looking for expected patterns and the generalisability of these observations. Using both survey and semi-structured interview as research methods, these risks were mitigated by relying on multiple sources of information.

4 Discussion

In this section, the important results and observations are discussed, analyzed, and compared to similar research of PE firms. The outline of this chapter will follow the same structure as the survey. In some tables, results from similar results are compared. In especial, the study Gompers et al. (2016) is used and given the name US PE firms. The study is performed on similar topics for US PE firms in 2016. The study Graham & Harvey (2001) is also used in some results tables and given the name Fortune 500. This study is performed on public listed Fortune 500 companies in 2001. For many of the questions in the survey, a rating is used. To more easily compare the different ratings, some results from Gompers et al. (2016) and Graham & Harvey (2001) are scaled to have the same rating scale as this thesis results. The complete survey is attached in the appendix A.

In the table 2 the main areas of interest and relevant papers for the survey are presented before each subject area are presented and discussed in detail.

In total, 14 PE firms were contacted, and 20 PE professionals were sent the survey. A respondent rate of 35% is not high. However, when considering the total number of national Norwegian PE firms, when the European and Scandinavian firms are excluded, the response rate compared to the total Norwegian PE firms is considered to be moderate. The study (Gompers et al. 2016) had around a response rate of 50 %, out of 106 investors who were sent survey links. A similar study such as (Graham & Harvey 2001) obtained a response rate of 8.9% sending a survey to Fortune 500 CFO's, however this study used mail and fax for sending surveys. Another similar PE survey sent to limited partners obtained a response rate of 13.8% (DaRin & Phalippou 2014). A more recent study, as the activity analysis of Norwegian PE firms, had 25 respondents of a total of 58.

Due to the nature of a selective study of a small number of potential data points, it is important to triangulate the results using different data sources. The total number of data points is seven for the survey, and for the interviews, the total number is four. However, one of the respondents didn't participate in the survey, but considering the interview this would give a total of eight data points. Since the interview was semi-structured and followed by the interview guide, the typical survey questions were not asked in detail.

4.1 PE-firm characteristics

In this section, the main characteristics of the PE-firm respondents are presented and discussed based on the survey results and interviews.

4.1.1 Asset under management

As seen in various studies, PE-fund sizes have increased over time. For example, a typical US buyout fund in the 1980s had an average size of $ 390 million and increased to $ 782 in the 1990s, and later 1.4 billion in the 2000s. The bottom quartile of funds in the 2000s in the US was $ 284

Key areas of interest	Relevant papers
Financial-, governance and operational engineering	What do private equity firm say they do?Gompers et al. (2016)
Compensation	Do private equity fund managers earn their fees? Robinson & Sensoy (2013) Private equity portfolio company fees Phalippou et al. (2018)
Performance evaluation	What do private equity firm say they do? Private equity performance: Returns, persistence, and capital flows, Kaplan & Schoar (2005) Private Equity Portfolio Companies: A First Look at Burgiss Holdings Data Brown et al. (2020) An Inconvenient Fact: Private Equity Returns & The Billionaire Factory Phalippou (2020)
Deal Sourcing	What do private equity firm say they do?Gompers et al. (2016) Where are the deals? Private equity and venture capital fund's best practices in sourcing new investments Teten & Farmer (2010)
Valuation methods	What do private equity firm say they do? The theory and practice of corporate finance evidence from the field Graham & Harvey (2001) Best practices in applying multiples for valuation purposes Plenborg & Pimentel (2016)

Table 2: Key areas of interest and relevant papers

million Harris et al. (2014). Similar trends can be seen in Norway with increasing PE-fund sizes. However, for some PE-funds in Norway, their fund sizes have increased subsequently along with great performance. According to some of the respondents in interviews, some PE firms have had a large growth in PE-fund sizes last decade in Norway without being able to have consistent fund return to LPs. A PE fund needs certain assets under management to be operated efficiently. Each fund needs to be diversified in enough investments. Most of the Norwegian PE firms in this survey have their first vintage year early in the 2000s. In the VC industry, one to three investments in each fund represent 80% of the total fund return Bussgang (2010). However, it is most likely that a PE fund is less dependent on a single 'unicorn' investment than VC since the risk is lower for PE investments than VC investments. PE firms differ from VC portfolio theory. However, PE funds are often not well-diversified for most PE firms. As the average number of investments made each year is two to three on average for all PE firms in the survey, the large differences in assets under management could be due to the different sizes of investments made in each business due to the businesses' phases and sizes. Small PE firms may have a ticket size ranging from 50 - 500 MNOK, and larger firms have ticket sizes larger than one mrd NOK. Most of the PE firms with large ticket

sizes invest internationally, and therefore they are excluded in this survey. In particular, one PE investor targets smaller companies with a lower enterprise value, but the other investors have more or less equal ticket sizes for their investments. Due to the ticket size on each investment and the need for capital for follow-up acquisitions or follow-up investments in businesses, the size of asset under management on at least one mrd NOK is needed to invest efficiently, with diversified investments. Typically for some early-stage PE-funds, they will reserve available capital for follow-up rounds of financing for investment within each portfolio business.

	Mean
under 1 mrd	0
1 - 5 mrd	0.7
5 - 10 mrd	0
10 -20 mrd	0.3
over 20 mrd	0
Number of respondents	7

Table 3: Asset under management

As seen in the table 3 the sample of Norwegian PE firms represented in this survey is either small or large in size of assets under management defined by the given ranges. The survey asked specifically about total assets under management and not just the most recent fund. As later will be discussed, there is significant uncertainty in estimating assets under management because the portfolio's interim enterprise values are difficult to estimate. Of the respondents, 71% of the firms have assets under management between 1-5 mrd nok. Due to the difference in AUM between the respondents. It is expected to be differences in practices, which will be later discussed. When restricting to only Norwegian-based PE firms, AUM is most likely to be lower than for Nordic or more internationally PE firms. Due to more international deal flow, the PE firms are often larger and have expanded more globally than more national Norwegian PE firms. As given in the report Johnsen. P. Forsberg (2021), Norwegian buyout funds have available 12 mrd nok in venture investments and 41 mrd nok in buyout funds in the coming years. This report also includes family offices which are excluded in this thesis. The report does not include total assets under management by PE firms. The most recent funds have 41 mrd available capital, and the respondents in this thesis have from 25 to 65 mrd of assets under management. It shows that the sample of Norwegian PE firms is representative for this thesis.

4.1.2 Types of investments for PE firms

The respondent's types of investments and national presence are given in table 4. A specific question was asked to verify if the firms invest or operate outside Norway in the survey. A few respondents have operations outside Norway. However, due to thorough investigation before sending the survey to specific PE firms respondents, most PE firms participating in this survey are primarily based and invest in Norwegian companies in Norway, based on the public information from The Brønnøysund Register Centre and public accounts. However, most of the sample of Norwegian PE firms have

	Mean
VC	0
Growth Equity	0.3
Distress	0
PIPES	0
LBO	0.7
Office and operating only in Norway	0.3
Invest or have offices outside Norway	0.7
Number of respondents	7

Table 4: Types of investments

made one or more investments outside Norway, but still small compared to the total AUM. As the asset under management and the fund size increase, it is reasonable to assume that the PE firm most likely will have a larger international presence. The reason behind isolating to more national PE firms with less international presence is due to be able to isolate the findings to see any differences between more pure Norwegian PE firms in comparison with others such as the US and Europe.

As for the type of investment that best describes the PE firm, public information was used to screen the PE firm before the survey was sent to each PE firm. According to the definition given of different types of investment firms in section 2.0.3, none of the respondent's firms is considered a VC investor or other than growth and LBO investor based on available public information. The large share of the respondents by 70% stated they invest or have offices outside Norway is large. However, a thorough investigation of each PE firm shows that these PE firms are still considered national since their main operation and assets are managed in Norway.

4.1.3 Respondents role in PE

The respondent's roles in the PE firms are presented in the table 5. Most of the respondents are MD or partners in private equity firms. Managers have been asked to participate instead of partners because there is a professional connection between these managers and the author of the thesis. Using this relation, it is possible to achieve a higher response rate than 'cold calling'. Partners are preferred due to their more insights in all disciplines, especially compensation, LP communication, and performance. Therefore it may be reasonable to assume the survey PE-professionals are well informed, and their interview and survey results are valid. For the interviews, the same respondents except for one partner that did not participate in the survey were used. In total, four interviews with partners/MD were held.

	Number of respondents
Partner or director	5
Manager	2
CFO	0
Other	0

Table 5: PE-professionals respondents

4.2 Financial engineering

In this section, different practices within financial engineering will be discussed. This section will go into detail about how the PE-investors practice different financial engineering disciplines.

Financial engineering is defined the same in this thesis as in the following studies Kaplan & Strömberg (2008), and Kaplan (1989). Financial engineering is first what the PE firms pay careful attention to management incentives, give management large equity upside and stock prices, and align PE fund and management incentives. The management also shares the downside along with the upside with the firm's investors. The portfolio company is private, and therefore the stocks/options are illiquid, which reduces short-term incentives to boost performance. Another important financial engineering subject is leverage. Leverage reduces agency cost and puts pressure on the management to not waste money due to recurring interest and principal payments from debt, which reduces the *Free cash flow* problem Jensen (1986).

4.2.1 Deal evaluation metrics

Recent papers such as Gompers et al. (2016) and Buchner (2016) questioned the asset pricing models used by PE firms. Most finance theory suggests forecasting future cash flows and then discounting the cash flow using an asset pricing model such as the three-factor model, CAPM, Fama, and French or similar models. The findings in the table 6 from a sample of Norwegian PE firms show that PE professionals are not applying these theories in their valuation methods. Studies such as Buchner (2016) promote these methods for better evaluation of the investments. The sample of Norwegian PE firms represented by investment professionals in this survey states that they calculate FCF to equity in their models but do not use discounting factors on the cash flow. DCF models are often highly dependent on the terminal value and its growing perpetuity assumptions, which may be difficult to estimate for a growth company. Furthermore, a DCF model looks at company valuation in isolation and does not look at the competitors' relative valuation compared to a comparable method.

	Mean
Gross IRR	6.7
MOIC	7.7
DCF with adjusted present value	1.9
WACC based DCF	2.3
Comparable company EBITDA multiples	6.6
FCF to equity	5.3
Other	5.8
Number of respondents	7

Table 6: Deal evaluation metrics with rating from 1 to 8

A comparable method using EBITDA multiples and calculating MOIC is rated as an effective method for Norwegian PE firms. MOIC is a straightforward parameter to understand and communicate, but not a very precise parameter. As earlier mention, the lifetime of a fund and individual

investment vary greatly. MOIC does not include time. If the MOIC is presented and compared with a MOIC based on a CAGR of 25% or other targeted IRR by the PE firm, MOIC could add more perspective due to time. Of the respondents, an MD stated that he explicitly presented MOIC for his PE-firm portfolio and included the time compared with a base case of 25% annual return. An important issue with interpreting MOIC is the lack of knowing the underlying leverage. A multiple of four is less impressive if the PE fund is levered four times than if there is no leverage in the PE fund. The study Vayanos & Wang (2012) estimated that break-even MOIC multiples range from 3 to 6, taking into account illiquidity, risk, compensation, and leverage for PE-funds. MOIC is a simple overall metric for performance, but as an LP a proper analysis which includes subject such as risk and time is more meaningful.

The yearly IRR target mean is 23% in the survey as presented in section 4.2.6. Three to four years difference in liquidating a fund would significantly impact the calculated MOIC. Most PE professionals use FCF to equity model on each portfolio company. They include leverage, entry, and exit multiple on a 5-year horizon for each investment but do not adjust return criteria for leverage. Later the IRR and MOIC are calculated based on the FCF to equity during five years and entry and exit enterprise value. Different scenarios simulate different forecasts of EBITDA or other key financial indicators and different entry/exit multiples. The most used deal evaluation metric used is MOIC, both in this survey and in the US PE study Gompers et al. (2016). It includes both FCF to equity simulations and typical multiples such as EBITDA multiples. To calculate IRR or MOIC, both comparable multiples and FCF to equity calculations have to be made. However, out of these numbers, the MOIC and then gross IRR is used as deal evaluation parameters. In retrospect, the question should be formulated differently and preferably ask the preferred parameter to evaluate a potential investment. As with many prior studies, an important aspect was to see if Norwegian PE firms use more traditional finance theory using DCF methods. As expected, DCF is not much used, but it is also is rated higher than US PE-firm practices when compared with Gompers et al. (2016).

Some studies have even argued that PE-firm's practices are not correlated with the finance theory taught at universities. The study Gompers et al. (2016) showed that out of 767 individuals identified in PE firms in the US, 57% have an MBA, and out of those with an MBA, 38% are from Harvard Business School. The findings in the study Gompers et al. (2016) is in contrast to the university practices. Finance theory taught at universities is not the same as the practices for PE firms, and PE firms mostly do not discount future cash-flows and use asset pricing models such as those taught at finance courses.

Many of the respondents stated that LBO describes their investments best. Using IRR to calculate return on leveraged equity contrasts with finance theory taught at universities where returns are risk-adjusted. Comparing the IRR of different investments without adjusting for leverage and other risk factors does not reflect the proper risk on each investment. The study of the CFO's financial practices in Fortune 500 companies is in contrasts with the results of Norwegian PE firm's practices and the US PE firms. The study Graham & Harvey (2001) found that CFOs put great emphasis on CAPM to determine their cost of capital. However still, IRR is the most preferred evaluation technique by all CFOs in the paper Graham & Harvey (2001). One particular LBO PE firm uses

the following methods ranked after ratings for the most used method for valuing and investment as follows: MOIC, Gross IRR, comparable EBITDA, FCF to equity, whereas DCF methods were not used at all. For the study, Graham & Harvey (2001), which focused on Fortune 500 companies, there are established capital asset pricing models in the firms. Most companies have a long track record, and financial history in the study Graham & Harvey (2001), which reduces the uncertainty in estimating a discount rate and terminal value, which may be an issue for PE firms to determine. Using leverage and not using an asset pricing model is in contrast with the finance theory. The same PE firm also stated that the LPs measured their performance on MoM or cash-on-cash. Since most respondents also use a high level of leverage, the associated risk of leverage should be included on a risk-adjusted basis. This is also discussed in the chapter 2, where the most relevant studies are presented in this field. From interviews, few respondents said they report leverage or adjust parameters due to leverage.

Using multiple approaches to determine exit value for an investment, PE firms show that they are skeptical of the CAPM-based approach. This is in contract with finance theory, where terminal and the exit value are calculated with typically Gordon's formula and where values sometimes are verified by comparing with multiple approaches last. The limited holding periods for a PE firm, which in table 7 is given as five years. It is reasonable to suggest that the framework is more tied to the investment fund structure and may limit DCF approaches.

Some studies have developed novel methods for valuing PE returns by using risk-adjusted asset pricing models such as (Franzoni et al. 2012), Buchner (2016) and Buchner (2015). Since most PE firms already have to forecast the cash flows for the businesses, it is not clear why they are not using an asset pricing model to seek to measure risk. Maybe efforts are more used to be more precise in predicting cash flows than to determine discounting rates or capital cost in order to value a company by using asset pricing models. Maybe PE firms professionals find multiples or other comparable business parameters less uncertain than discounting rate and growing perpetuity. MOIC and cash on cash multiples are favored both as a deal evaluation metric and one of the two most common benchmarking parameters by LPs.

One PE firm stated that they don't consider adjustments to the IRR or any consideration on cost of equity or WACC. Their return target is 25%, and their analysis is based on if the investment can generate these returns based on reasonable assumptions. This statement suggests that they do not risk-adjust their investment other than their target on 25% return, which included a premium for risk for typical business they invest in. In each investment analysis for this respondent, they don't adjust their return target due to risk. If the risk is high, they should adjust the return target, other than what is already included in their premium in their return target from before. Still, most of the sample of Norwegian PE firms show that they consider risk on an ad-hoc basis.

4.2.2 Terminal value calculation and comparable company selection

As seen in table 8 the sample of Norwegian PE firms favor comparable companies and transactions before discounted cash flows. As the study of Gompers et al. (2016), fewer than 30% of the PE firms use a DCF method for calculating terminal value. Comparable company multiples and transactions

are the most favored terminal value estimation. Only two respondents of 8 (one of the respondents stated this in an interview that didn't answer the survey) stated that DCF based method is preferred over comparable transactions and companies. As earlier mentioned, most PE firms are not well diversified. It is reasonable to assume that PE firms have extensive knowledge of comparable transactions and companies for many of the investment opportunities they consider. Therefore it may be less uncertainty in finding comparable terminal value parameters instead of growing perpetuity and discounting factors for the cash flow. In combination, as given in table 7 most PE firms only forecast in a five-year horizon, which may impose great uncertainty in estimating the growing perpetuity factor. Often the company growth in revenue and profit is forecasted to be large during the PE-firm holding period. However, the forecast is highly uncertain after the holding period and often not even forecasted beyond five years.

	Mean	Median	Number of respondents
Years of forecasting	5	5	7

Table 7: Years of forecast

PE firms have key investment bets on their investments, which often may be assumed to have higher importance than assessing risk discounting rates. For example, for most PE-professionals, EV/EBITDA multiples are common metrics for estimating terminal value, but different industries have different multiples, such as software as a service (SaaS) companies often use annual recurring revenue (ARR) multiples.

	Mean
Comparable companies	0.4
Comparable transaction	0.4
DCF based growth perpetuity	0.1
Other	0
Number of respondents	7

Table 8: Terminal value calculations

4.2.3 Comparable company selection

As seen in table 8 comparable values are most favorable for terminal value calculation, which is in line with similar studied and deal evaluation methods given in section 4.2.1. However, the terminal value methods can vary over time, as found in the following study Vismara et al. (2015), which studied peer selection of underwriters before and after an IPO. The study found, on average, three out of seven comparable firms are changed as peers before and post IPO. For PE portfolio companies, it may be similar that different PE firms use different weighting on different selection criteria. This may reflect that comparable selection may vary substantially by the same PE firm over time. In choosing comparable company selection, industry criteria were the most important factor in finding a comparable company match.

	Mean	Gomp
Industry	7.2	7.8
Company risk	6	3.9
Company size	5.4	6.8
Growth	6.4	5.9
Margin	6.3	5.3
Capital intensity	6.3	4.2
Geography	5.3	4.6
Other	2.9	0.4
Number of respondents	7	67

Table 9: Comparable company selection with rating from 1 to 8

More interesting Norwegian PE firms use more risk measures that are more used in academia than US PE firms. However, the company size was not as important as the other selection criteria. Especially in Norway, the size variation of company sizes is smaller than in the company sizes in the US. According to studies in the US, size and industry may be the most important parameters in estimating entry and exit multiples. However, Norwegian PE firms find all other selection criteria more important than geography and size. Another reason why geography is given more focus in the USA than Norway is that niche industries may be more segmented in geography than in Norway in the US. As seen, areas such as Detroit, San Fransisco bay area, New York have their niche industries and ecosystems favorable for specific industries. Since the US PE firms in the study Gompers et al. (2016) where more global funds than Norwegian PE-fund, geography is reasonable to assume has higher importance in the US. In the study, Evander & MacArthur (2016) the sizes of most companies Norwegian PE firms buys are more uniform in size. This may relate to the US PE firm's emphasis on other selection criteria parameters than Norwegian PE firms. Growth as selection criteria is considered more important for Norwegian PE firms. Maybe the US PE firms emphasize more on companies with the potential for great growth, but Norwegian PE firms want to see more proof of track record on growth to reduce risk on value creation. As given in finance theory, Gordon's formula on growing perpetuity significantly influences a large part of a firm's EV and often is the largest contribution to the EV. Growth also significantly influences all the other methods used in the deal evaluation and is expected to influence investor's value widely. Therefore, it is imperative to find comparable companies with similar growth rates. As seen in table 9 other company selection criteria have been rated highest value for two respondents, and the rest of respondents have rated other criteria as not applicable. For specific PE-funds with a high degree of specialization in the industry segment, such as Saas-companies, a certain parameter such as ARR is a key comparable selection parameter, as one respondent stated during an interview.

The software services such as Pitchbook, Bloomberg, Thomas One, Orbis, and CapitalIQ uses industry classification as the governing parameter for findings peers, and then EV and revenue as standard. This software also allows for specific selection criteria by users, which is considered most used than default selection criteria. For manual ways to determine industry classification, a more in-

depth analysis of which product or services are offered by the valued company may be used. Later in determining important size, measures such as market cap, revenue, assets, employees, or other factors may be used, often depending on the industry. Of the PE firms chosen in this study, most PE firms that invest in Norwegian companies have been interested. Of all the criteria, geography is seen as the less important, but still, on a scale from 1 to 8. The rated average is 5.3 and very close to company size criteria in rating.

As seen later in section 4.4.3, both Norwegian and US PE firms emphasize on the revenue and demand factors before reducing cost, which relates to more importance on top growth than growth on profit. Margin as selection criteria is consistent with the findings from operational engineering results. Other selection factors could be capital structure and net debt, ownership, age, technology, and IPR.

Few respondents rated company risk and capital intensity as important selection criteria. Company risk is often related to return. For the US PE firms, company risk is considered the least important criterion. Capital intensity can create a barrier of entry for new companies. For estimating FCF to equity, great focus is given on CAPEX and net working capital to understand the capital intensity. Also, capital for follow-up acquisition is important, which is discussed later.

4.2.4 IRR determinants

PE-investor indicates that firm riskiness is the most important determinant of their return target for investment. It is interesting to see that even though PE firms do not explicitly state that they use the CAPM approach, the results in table 10 results show otherwise. The respondents rate firm riskiness 4 out of 5 as a determinant to adjust their IRR target. The firm riskiness is not defined explicitly in the survey and divided into risk factors such as systematic or unsystematic risk, which is also referred to as idiosyncratic risk. The study Phalippou & Zollo (2006) tested the hypothesis that idiosyncratic risk should be priced for PE-funds and did not find any strong support for this hypothesis. The study Gompers et al. (2016) suggests that more than half of the PE investors who do not make such an adjustment to IRR explicitly do not take a CAPM-based approach. Leverage is also an important factor for adjusting the return target, which Norwegian PE firms rate as more important than the US PE firms, but it is difficult to generalize due to a very small sample of respondents.

	Mean	US PE firms
Firm riskiness	4.6	4.3
Leverage	3.6	2.4
Historical return to LPs	3.4	1.5
Other	2.9	0.5
Number of respondents	7	67

Table 10: Determinants to the IRR with rating from 1 to 5

The mean on a scale of one to five is 3.6 for adjustment due to leverage on return target. LPs' historical return expectations are also considered important but not as important as the other two adjustment factors. Some respondents rated other determinants as important to adjustments of the

IRR targets as very important. However, from interviews, few of the respondents had examples of what such other factors could be. Such factors could be more macroeconomic risk factors such as cyclical market risk and others, which are more defined in the next section.

Of all investors in the study Phalippou (2011), 27% in the study believe the performance relative to other funds is the most important performance factor. This shows that few are interested in PME performance indicators.

4.2.5 Adjustment to IRR or cash flow (CF)

The different risk is divided into firm-specific risk and macroeconomic risk, whereas the macroeconomic risk is the following: risk of inflation, interest rate, GDP, commodity, and currency. The firm-specific risk is respectively: illiquidity, momentum, P/B, size, and distress. Overall, the macroeconomic factors influence most of the adjustments to the return to the CF or IRR. The less important factors are the risk of inflation, interest rate risk, and P/B. Adjustment to the IRR and CF is complex. PE-funds always want to buy low and sell high and have the lowest interest rates. Timing is important for realizing this potential for both entry and exit. One respondent answered not applicable and don't know for many of the different factors for adjustment to IRR due to the short time available for the survey. Later in the interview, this respondent was followed up. The reason for these answers was that they do not adjust IRR to these risk factors but more generally have a few scenarios they simulated in general where growth and different risk factors on the business model are simulated. Many of the factors this PE-professional respondent used can be isolated and further defined in detail. However, due shortage of time, the PE-respondents didn't have time to do this evaluation in the interview or the survey.

PE firms typically set their hurdle rate above 20%, and focus on analyzing and estimating the company's cash flows. As seen earlier, they are skeptical of using CAPM models that measure risk. The results in table 11 show that they consider different risk factors but do not use a CAPM model or other factor models when considering the total risk of the investment. As one of the respondents stated, the PE firms have a return target, and each investment needs to make sure the investment hits their return target in their investment analysis. In their analysis, they consider risk and the scenarios if their key investments bets are wrong and the implication this has on their 5-year IRR. However, they don't adjust or increase their investment return target due to different risk factors, as given in the table 11. The same respondent stated that the PE fund return target could vary over time, but the PE firm doesn't adjust its return target due to different risk factors. However, the results in table 11 shows that the Norwegian Sample of PE firms considers various risk factors but doesn't include these risk factors into a capital asset model as traditional academic finance courses teach.

As mention earlier in 2, the total risk premium is calculated to be 18 % in the study Franzoni et al. (2012) to compensate for the total risks associated with an investment in PE. Of the total risk, the liquidity is calculated in the same study to be 3% per year. Few other studies have separated the different risk factors in the given factors as given above. The study Graham & Harvey (2001) found that 73 % of CFOs always adjust their CF or discount rate for market risk (β). Interesting

is the findings that growth firms are more sensitive to currency risk than non-growth found in the same study. This is because most of the PE portfolio businesses are growth companies. The results from the study Gompers et al. (2016) and Graham & Harvey (2001) are given in the table 11, and presented as US PE firms and Fortune 500, respectively. These results are the percentage of the CFOs or PE firms who adjust their IRR target to the different factors. The two different studies have different respondents from Fortune 500 companies and PE firms. The high number of adjustments to commodity risk is interesting in this thesis findings. According to the report Johnsen. P. Forsberg (2021) last year, the Norwegian PE-firm's main sector that PE firms invested in 2020 was technology companies, which at first sight is believed not to be correlated to commodity price risk. However, as the prices increase, consumers may rein in spending, influencing the service economy and then tech companies.

	Mean	US PE firms	Fortune 500
Risk of inflation	3.4	0.18	0.37
Interest rate risk	3.4	0.26	0.48
GDP or business cycle risk	6.4	0.55	0.43
Comodity risk	6.5	0.29	0.33
Currency risk	4.6	0.2	0.44
Distress risk	4.9	0.13	0.18
Size	5.2	0.29	0.34
Price/Book risk	3.4	0.08	0.13
Momentum	5	0.12	0.11
Illiquidity	5	0.2	-
Other	1	0	-
Number of respondents	7	65	392

Table 11: Adjustment to the IRR with rating from 1 to 8

Returns on public stock markets strongly influence PE-fund performance Phalippou & Zollo (2006). It is expected that IPO's and exits are strongly related to public market returns. Macroeconomic conditions are found particularly important at the time investments are made Phalippou & Zollo (2006). PE fund performance increases significantly with the average GDP growth rate and decreases with the average level of interest rates, especially corporate bond yields. The study Phalippou & Zollo (2006) shows that PE-fund performance is pro-cyclical and covaries with both the business cycle risk and public stock market risk. As the results show, business cycle risk is the second most important factor for adjusting the hurdle rates. The survey had the option to answer do not know for each factor. One respondent represents all of the answers for do not know for each category except one response for momentum. The study Gompers et al. (2016) suggests that PE-investors may be skeptical of asset pricing models that seek to measure risk and suggest that far more of the PE-investors energy is focused on the estimation of CF. Even though PE firms say they don't use a CAPM-based approach, it appears that due to all the risk factors, they consider using this approach in some sense and using an ad-hoc factor framework similar to CAPM. PE-investors have indicated that they consider both systematic and non-systematic risk in adjustment to their re-

turn. However, it may be reasonable for the ad-hoc framework that return estimation on the same investment would vary between different PE firms.

In the study Graham & Harvey (2001), they found a great dependency on company size, which increased the importance of exchange risk. As larger companies often are more exposed to currency risk. Also, with greater leverage in the same study, business cycle risk dependency increased, which is reasonable and most likely. The same trend should be seen for the LBO portfolio businesses. Illiquidity and other factors were not included in the study Graham & Harvey (2001), and therefore these rows are empty.

4.2.6 PE funds performance

	Mean	Median	Number of respondents
Gross IRR target	23	25	7

Table 12: Gross IRR PE fund target

The PE funds performance is discussed and reviewed based on various studies in detail in the section 2.5. Assessing PE funds performance on a risk-adjusted basis or compare with public equivalent market indexes is complex and difficult. The body of research shows a large variation in PE funds performance, whereas the trend is that the performance has decreased after 2000 for most PE funds compared to before the year 2000. As the body of research has tried to calculate different risk factors and adjustments to estimate the risk premium for different PE funds, the different methods and approaches vary, as discussed in section 2.5. To evaluate PE funds performance without detailed risk adjustments, the PME method by using exact cash in- and outflow to LPs gives performance indicators for LPs that may better help assess the performance and compare it with a typical benchmark as public market indices.

The gross IRR target for the sample of Norwegian PE firms is quite uniform, and the results are presented in table 12 with a mean of around 23% and a median of 25 %, which is interesting when considering fees. One respondent targets 15% IRR, and also the same PE-firm market to LPs 15-20% return. If one firm is excluded from the survey, the gross IRR target would be 25%. The gross IRR target varies mostly from 20-30%, with most being equal to 25%. For comparison, the average annual return for stock-market indices all had return around 10% for the period 2006 to 2019, which is representative for this thesis PE funds, except for MSCI World and Russell 2000 Phalippou (2020). Adjusting to annual net-of-fees return from the gross IRR target given in table 12 would be difficult with the data from the survey. However, as given in the paper Phalippou (2020) the US PE firms in this study had similar compensation as the sample of Norwegian PE firms, and the gross IRR target is also lower for the sample of Norwegian PE firms than the study Gompers et al. (2016). This may suggest that the net-of-fees return compared to the most common US market indexes since 2006 is lower or the same. In the same period, the OBX market index has been lower than most US market indices, suggesting that the Norwegian PE firms have produced the same or lower net-of-fees return as the market index. In the figure 4 the Norwegian PE firms value creation

is presented for almost the same period as Phalippou (2020). The average gross annual return is 15%. In the figure 4 large Nordic PE firms are also included. The literature and the perspectives on historic PE funds performance are given in the section 2.5. Most of the literature uses S&P 500 for comparison of performance.

The study Phalippou (2020) found that net MoM implies 11% in annual return, which matches public equities. For comparison, the Norwegian PE funds performance was 15% according to (Johnsen. P. Forsberg 2021) and the OBX return has been 12,5% for the same period. Without the respondents' net of fees return, it is not possible to calculate PME or similar performance indicators. All respondents have given their compensation fees structures which are quite standard compared to other studies in the US and Europe. In order to calculate the exact performance time of capital outflow and inflow is needed. Without this data, it is not possible to conclude on the performance of the sample of Norwegian PE funds, but given both the annual return on 15% in they report Johnsen. P. Forsberg (2021) and the gross IRR of 23 % from the survey. The impact on performance net of fees the fee structure has as presented in the study Phalippou (2011). It may be possible to suggest that the performance is lower or equal to the public market index for the sample of Norwegian PE firms, when the value creation is 15% per year, and the OBX market return in the same period is 12.5%. As given in the study Phalippou (2011) the impact on performance the fee structure has is reasonable to assume to be greater than 2.5% per year for typical PE funds.

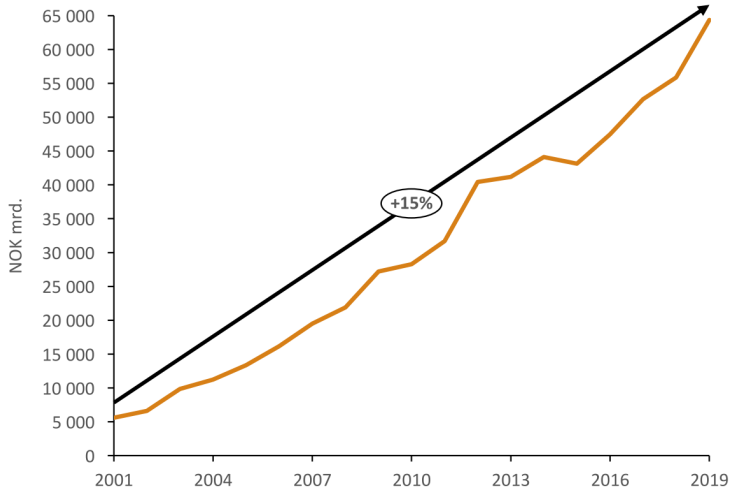

Figure 4: Norwegian PE firms value creation from 2001 to 2019 Johnsen. P. Forsberg (2021)

The marketed IRR to LPs from the Norwegian PE firms are presented in table 13. The PE-professionals could also be conservative to its LPs with marketing and lower their marketed return. Some studies have shown that global investments PE firms tend to target higher IRR's Gompers et al. (2016), but in this survey, only Norwegian PE firms with investments in Norway have been in focus. As seen in the report Johnsen. P. Forsberg (2021) the average yearly return from 2001 to

	Mean
15 - 20%	0.1
20 - 25 %	0.6
25 - 30 %	0.3
30 - 35%	0
35 - 40 %	0
> 40 %	0
Number of respondents	7

Table 13: PE firms markeded IRR to LPs

2019 was 15% from business in the portfolio of Norwegian PE firms. This is lower than their gross target, and the report included all PE firms in Norway and both the Nordic and European PE firms, which is expected to have a higher IRR target.

	Mean
Net IRR	0.43
Gross IRR	0
Net IRR versus Norwegian main market index	0
Net IRR versus international market index	0
Net multiple or cash-on-cash	0.57
IRR from other PE-firms	0
Number of respondents	7

Table 14: Benchmark for parameters LPs

The results presented in table 14 show a consistency of the practices of how the sample of Norwegian PE firm's LPs benchmark PE funds. The results show more or less the same weighting on net IRR (net multiple or cash-on-cash) by all respondents as benchmark parameters for LPs. In retrospect, the survey should have given a rating on each factor instead of picking one factor. Therefore, it is difficult to argue whether LP's use market indexes in their benchmarking with the current data. Only 8% of a total of 63 US PE firms indicate that their LP's view performance relative to their performance based on S&P 500 as important Gompers et al. (2016). From an LP point of view, relative performance between different asset classes using the same parameter would be important in determining asset allocation and measuring the best-performing PE fund or assets. For hedge funds and stock-market investment, great focus is given to relative performance and to α. Surprisingly, none of the respondents answered that they use a market index. Given the recent publications and trends of the low net of fees PE-funds performance before 2005 from academic research, databases, and articles in financial newspapers, it would be reasonable to expect otherwise. The results on what PE firms say their LP's benchmark is consistent with both DaRin & Phalippou (2014) and Gompers et al. (2016) which also show that net IRR and net multiple is the most used parameter.

As seen in similar studies by Gompers et al. (2016), few LPs measure PE firms measure performance on absolute performance by using parameters such as PME. Most of the literature that

measures PE funds performance uses PME or similar parameters, emphasizing premium between the public market and PE fund. Few or none of the interviews or respondents have indicated that they use PME parameters for PE firms GP's and LPs. As earlier discussed, MOIC and IRR are the preferred deal evaluation in section 6, but it is also the most preferred benchmark parameter for LPs. Many of the limitations with using IRR and multiple on invested capital is further discussed in section 4.2.1.

4.2.7 Capital structure

In capital structure theory, one important theory is the trade-off theory. It says that firms have an optimal debt to equity ratio, which they determine by trading the benefits of cost with the debt Scott (1976). In the traditional trade-off models by Modigliani & Miller (1963) the benefit of debt is the tax advantage of interest deductibility. Asymmetric information and agency cost can also be included in the framework and the financial distress cost.

	Mean	Median	US PE firms mean	US PE firms median
Debt to capital	0.43	0.4	0.55	0.6
Debt to EBITDA ratio	3.5	3	3.9	4

Table 15: Capital structure for PE portofolio business

The capital structure for the sample of Norwegian PE firms and the study Gompers et al. (2016) is presented in table 15. There is not a large dispersion in the results. Norwegian PE firms are quite consistent on an industry level for their capital policy. However, among the respondents, the US PE firms capital structure has a higher level of leverage. Debt to capital and debt to EBITDA means were 0,55 and 3.9, respectively. However, due to the few respondents, it has limits to generalize this hypothesis. However, the respondents represent a quite substantial share of Norwegian PE firms. Some may say that these numbers may be low in the sense of an LBO transaction, especially in the US, where the degree of leverage has been very large in recent years. A similar study on capital structure in the study Acharya et al. (2013) shows that the debt to EBITDA ratio from 1991 to 1999 was 4.1 at entry and three at exit based on 354 PE firms. The reduction of the ratio is partly due to improvements in coverage ratio and mainly due to improvements in equity value over the holding period Groh & Gottschalg (2011).

In a historical sense, the ratios are low for US PE firms. Today the interest rates are very low, and the public market return is growing rapidly. The study Graham & Harvey (2001) found that large dividend-paying corporations depend more on trade-off theory and use large debt for tax incentives. Businesses not owned by PE firms have different financial dynamics than other not PE businesses. A PE-owned firm has a different dynamic in financing. PE firms are structured to invest in businesses. A PE fund as a business owner decreases the cost of capital compared to large corporations that do not have similar owners. Raising capital is assumed to be more difficult and costly for not PE-owned businesses. Raising capital for other businesses is more dependent on stock prices/public market and business cycle than the PE-owned firms. Therefore the study Graham & Harvey (2001) found that financial flexibility is the most important factor in determining debt policy for companies not

owned by PE firms. Financial flexibility was not included in the survey questions, but it is assumed to be more important for larger corporations and businesses not owned by PE firms. Whereas PE owned businesses have easier access to investments through PE funds and lower cost of capital, as discussed later in this section. Many PE firms have a debt policy for their portfolio. Some PE firms even have employees specializing in debt financing dedicated to financing their portfolio businesses.

	Mean	US PE firms
Use debt to force operational improvments	2	2
Use as much debt as market allows	3	3.3
Current interest rate and ability to pay debt	4.6	4.8
Leverage level in the industry	2.6	4.8
Optimize tradeoff between tax and risk of default	3	3.4
Other factors	4.3	1.8
Do not use leverage in transactions	3.8	0
Number of respondents	7	64

Table 16: Factors important for capital structure with rating from 1 to 5

The factors for determining the capital structure for the sample of Norwegian PE firms are presented in the table 16. The factor to use debt to force operational improvements is considered 1.69 % important of all factors for determining a capital structure for CFO's in the study Graham & Harvey (2001). This is quite low compared to both this thesis results and the study Gompers et al. (2016), where 39% of the respondents consider this factor is important in their capital structure. However, due to PE-owned firms' ability to easily inject capital into their portfolio, companies' dependency on leverage level in the same industry is less important. Market timing and interest rate are the most important factors for determining the debt level. Pecking order is still valid for PE firms as for non-owned business as found in both Gompers et al. (2016), Graham & Harvey (2001) and for Norwegian-owned PE firms. PE-investor always wants to fund business with internal funds first, debt financing, and equity financing. However, an important difference between PE-owned and not PE-owned companies is that some PE-owned firms could be so high levered that FCF can be insufficient due to LBO financing. Great internal investments are declined due to insufficient capital due to large debt payments.

As seen, the US PE firms are more willing to take higher risks due to financing. As seen above in table 15 the US PE firms have higher leverage, and in table 16 trade-off, interest rate, and market terms are more important factors for determining capital structure.

The study Groh & Gottschalg (2011) found that the average buyout cost of capital is 9.07% for 133 US PE firms from 1984 to 2004 by using a mimicking approach. The cost of capital is significantly below by 3.29% of what would have been earned on average if the investors had invested in the time matching S&P 500 index. This shows that the risk for LBO's is substantially different from the public market benchmark index. Usually, LBO's happen in less risky industries Groh & Gottschalg (2011). During the holding period, the risk is reduced by debt payments, and LPs themselves are not leveraged in their transactions. The fund liability is limited to its equity

exposure, and debt is placed in the portfolio company, which increases the risk lenders take.

From interviews, the respondents were asked what typical other factors could be. Few respondents had any other suggestions for what these factors could be, and only three out of 7 have rated this other factor. For example, another factor could be investment policy in the fund. As seen in the results, the same respondents that stated they do not use leverage in their transactions also answered other factors.

4.3 Governance engineering

This section discusses how PE firms practices on corporate governance are discussed and how PE firms as business owners control their portfolio companies. Topics such as board composition, the board size, management incentives, and equity ownership among the different shareholders are discussed. The PE firms practices for replacing and oversight of executive management in their portfolio companies are first discussed.

For PE firms and especially LBO PE firms, they control the board and are more actively involved in governance than a public company Kaplan & Strömberg (2008), often the boards of private equity portfolio companies are smaller and meet more frequently than public companies Cornelli & Karakas (2013). As for venture investors, the PE firms do not take majority positions in the company, but they have board positions.

4.3.1 CEO and executive management replacement

Few of the PE firms recruit their executive management before investing in a business, as presented in table 18. However, it is quite varying the share of the post-transaction replacement of executive management. On average, the PE firm recruits in total of all closed deals around 86% of their own, one or more of the C-level management post-transaction. On average, 40% of all closed deals, the CEOs are replaced post-transaction as presented in table 17. One PE investor stated in an interview that before investing in the cases where the CEO will be replaced, it is often very obvious in the diligence face by both parties. The same respondent also stated that sometimes the CEO's replacement during the holding period occurs naturally due to a change of direction of the business and new demand for competence. According to one respondent's comment in the survey, these processes often go smoothly for both the business owners and the CEO.

PE investor does not hesitate to replace poorly performing CEOs Acharya et al. (2013), after a transaction one-third of the CEO's are replaced within 100 first days and two-thirds are replaced at some point over a four-year period Acharya et al. (2013). The data this study is based on are deals in the period 1995 to 2005.

	Mean	Median
Percentage of closed deals where CEO is replaced	40	20
Number of respondents	7	7

Table 17: Replacement of CEO

A similar and more comprehensive study Farran (2015) is based on 100 PE buyouts between

1999 and 2009 found that 81% of the CEOs were changed. The differences between these results are not clear. However, the study Farran (2015) has a different PE-investor group. The study includes European and Nordic PE investors, which are excluded in this thesis with the goal to focus on national PE firms practices. A high number of recruitment of C-level managers is consistent with typical active PE-firm investors. This is one of a few questions that may indicate that PE firms are actively involved in their investments in the survey. Only 14% of the closed deals recruit their own C-level management before a transaction. It is not straightforward in comparing the US and Norwegian PE-firm practices on the replacement of executive management. In Norway, executive management and CEO have the same job security laws applied as employees, but many may have parachutes or similar contracts to compensate for more swift replacement. As seen in the USA, the job security and regulations are less strict than the Norwegian rules, indicating that practices and threshold for a replacement for C-level managers are different.

	Yes	No
Recruitment of own C-level mangement before investing	0.14	0.86
Recruitment of own C-level mangement post transaction	0.86	0.14
Number of respondents	7	7

Table 18: Recruitment of management

This may lead to that most PE firms invest in well-managed companies. However, it is not easy to know if PE firms wait until post-transaction to replace their own management to be seen as friendly during the due diligence phase. Key management is crucial to execute the transaction and often well compensated, as stated in Harvard Business School (2012). Still, 14% of recruitment of C-level management suggest that still a smaller part of executive management is replaced before transaction. In some cases, some of the founders may want to retire or change job after the transaction, which may represent some of the recruitment made before the transaction.

4.3.2 Equity structure in PE invested businesses

The equity structure for the sample of Norwegian PE firms and a sample of US PE firms from the study Gompers et al. (2016) is presented in table 19. As predicted, management incentives are different between the US and Norwegian-owned PE firms. US PE firms have lower equity ownership due to the increased equity share for CEOs and others. As other studies such as Kaplan (1989), Kaplan & Strömberg (2008) and Acharya et al. (2013) finds that management incentives is important for US PE firms. A similar study has been performed for public companies and their CEO's ownership share. The ownership share for CEOs on average from 1992 to 2007 was 3.6%, and most of this ownership was part of their compensation with the intent to align their incentives with the shareholders. For Norwegian CEOs in PE-owned companies, their ownership is lower than US public listed CEOs, which is interesting. This shows that management incentives for Norwegian CEOs of PE-owned businesses are less important than US public market CEOs. This may suggest that Norwegian PE firms see agency conflicts as less important. However, almost four times larger CEO ownership share between Norwegian and US firms is a large difference. The number of respondents

is low, but the businesses the sample of Norwegian PE firms have invested in for each respondent are larger. However, the other key management ownership between US and Norwegian firms does not differ that much.

	Mean	Median	US PE firms mean	US PE firms median
PE share	69.3	70	79	85
CEO share	2.4	2	8	12
Key employee share	7.3	7	9	0
Other share external	22	20	3.5	0
Number of respondents	7	7	64	64

Table 19: Equity ownership in PE portfolio businesses

The other factor which is quite interesting is the difference in group other equity shares for non-PE-investor and non-employees. This group consists of former owners, board members, and other key external people important to the firm. However, the large difference between the US and Norwegian firm equity share for this group was quite large. A limitation of the survey tool is that the sum of all parts of equity ownership didn't always add up to 100% for the respondent's answers, and it was not possible to build a function for correcting this in the survey tool. However, the deviations are not large. The largest deviation is 4,5%, and the rest of the respondents have are +/- 1% on average. A large part of other equity owners may lead to a different interpretation of the groups, which may have lead to the deviation and misinterpretation of the definitions of the shareholder's group. Even though it may be reasonable that PE investors don't buyout all other shareowners, but the remaining shareowners may be founders who have stepped down and even other venture or PE firms. Secondary transactions, as discussed in the section 4.4.5, where stands for 43% of the 1023 transactions in Europe, were secondary transactions from PE- to PE-investor.

4.3.3 Board size and composition

	Mean	Median
Board of directors size	5.4	5
Number of respondents	7	7

Table 20: Board of directors size

The board of directors size for the business the sample of Norwegian PE firms invest in is presented in table 20. As for the study, Gompers et al. (2016) 90% of PE-investors prefer board size between five and seven directors for US PE portfolio businesses. There is a correlation between EV and the size of the board, as shown in the study Cornelli & Karakas (2008). The same study found that opportunity cost is relevant and that PE firms focus on deals that are expected to require more time and effort. The same study, which mainly focused on LBO's in the UK from 1998 to 2003, found that the board's average size was between four and six post-transaction, and before the transaction, the board size on average was between six and eight.

The sample of Norwegian PE firms and the sample of US PE firms Gompers et al. (2016) directors of board composition is presented in table 21, shows that board composition is very similar to both the Norwegian and US PE portfolio companies. However, the study Cornelli & Karakas (2008) used CapitalIQ as a source of information. Due to limits in the software, it is not easy to distinguish between the outside inside directors. Therefore, it is difficult to compare directly. However, the US and the Norwegian differences in size and composition do not differ much.

	Mean	Median	US PE firms mean
Board of directors size	5.4	5	-
Inside directors	2	0	1.6
PE directors	2.1	2	2.8
Outside directors	2.3	2	1.8
Number of respondents	7	0	64

Table 21: Board composition in PE portfolio businesses

The study Farran (2015) found that many GP's do not prioritize the board meetings as long as everything is going according to plan, and findings suggest that the formal board meetings are being neglected. Interaction between GP's and management is conducted outside board meetings. The study Farran (2015) analyzes Norwegian portfolio companies (76) acquired by PE funds between 1999-2009 and found that the average board size is 5.5 and PE-investor represents 1.7 board seats on average, which is in line with the findings in this survey considered the related uncertainties.

4.4 Operational engineering and value creation

This section discusses the different strategies and ways PE investors create value for their investment and how they add value to their portfolio businesses. Operational engineering refers to the industry and operating expertise that the private equity firm applies to add value to the portfolio companies. Some PE firms may be organized into industries. As many as 40 % of the investment is deployed in a single industry Ljungqvist Matthew Richardson (2003). PE firms also hire advisors and professionals with operating backgrounds and industry focus to contribute to creating value. Operational experience is used to identify investment opportunities and implementing operational plans that cover elements such as cost-cutting, opportunities, and product improvements, strategic changes or repositioning, acquisition opportunities, and management changes Gadiesh & MacArthur (2008).

Proprietary deals and deal funnel

Proprietary deals are often deals where a buyer lets a specific buyer have a first chance to buy the company before others. Proprietary deals are often presented to specific buyers with a strategic fit or similar to the seller. Such deals are often closed more quickly than a standard auction and may be more cost-effective. However, this selling process may not necessarily align with the seller's objective of maximizing return for the seller. The results of proprietary deals considered proprietary

from the sample of Norwegian PE firms are presented in the table 22. Without sufficient numbers of respondents to support the hypothesis, but as seen for the largest PE firms, when considering AUM. There is a clear trend that these respondents consider a substantially higher amount of their closed deals as proprietary than PE firms with smaller AUM. The trend was also checked if there were any similar trends when filtering for buyout and growth PE firms without any clear trend in the results.

	Mean	Median
Percentage of closed deals considered proprietary	28.6	25
Number of respondents	7	7

Table 22: Proprietary deals

Of the closed deals as presented by the sample of Norwegian PE firm in the table 22, the respondents consider 28% of the closed deals are proprietary. However, there is a great variation between 5% to 70%. Therefore the results are highly uncertain. In comparison to Gompers et al. (2016), the deals considered proprietary, mean was 48%, and the PE firms in the same study had a larger AUM than Norwegian PE firms. Therefore US PE firms may find proprietary deals as value creation, but this indication is highly uncertain due to insufficient data for this survey. Some PE firms have won the auction by the seller with not the highest bid in some auction processes, as told by multiple PE firms in interviews. As given in section 4.3.2 the Norwegian PE firms hold a large equity share to other external shareholders, which often is the sellers. Therefore, PE investors and the existing shareholders must connect in a professional relationship when considering proprietary deals. Sale to not the highest bidder, as some respondents mention, may reflect the importance of such relationships. When comparing the share of proprietary deals with the result of a rating of different sourcing sources where investment bankers are rated highest is in line with the findings.

The study Teten & Farmer (2010) found that PE and VC firms that have an origination program of substantial scale and are focused outside of the most competitive markets are almost all top-quartile performers across sectors, stage, and vintage years. A similar study Young (2007) found from the 100 largest PE exits in North America and Europe that three-fourths of the larges PE investments in 2006 resulted from proactive deal origination strategies. The sourcing efforts include company or sector tracking, building relationships with management, and introducing established contacts. In the same study, only 11% of the deals resulted from PE firms participation in a normal sale process. The sourcing strategies found from the PE firms with the best origination programs found that the median investor had to review 80 companies in private companies to close one deal. This shows that the sourcing of deals has a low success rate and often requires most time of an investment firm of the different processes they have. The same study showed that the median VC and PE firm needed 3.1 FTE team members to close one deal per year.

The study Teten & Farmer (2010) constructed a median annual pipeline size necessary to close one deal based on interviews with 100 PE investors. The median annual deal flow was following: 80 opportunities review, 20 meetings with management, four negotiations, three due diligence, and one investment made, which is also given in the table 23, but the results multiple is multiplied

to have an equivalent number of deals closed. Their findings differ from the Norwegian PE firms practices, which quite uniformly for all the respondents had very similar step functions. The negotiations or suggested term sheet phase was similarly defined in both studies. The study Teten & Farmer (2010) median was 16 and for Gompers et al. (2016) median was 12 % of all opportunities considered. This is not far from what Norwegian PE firms practice in this thesis, which is 7% of all opportunities considered. As for the study, Teten & Farmer (2010) the deal funnel is also defined per investment professional, which states that an investment professional can review 25 opportunities and close 0.3 deals per year. This is consistent with the findings later in section 4.5.1 firm organization.

	Mean	Median	Sample of US PE firms [1]
All investment opportunites considered	171	200	240
Due dilligence	22	20	20
Negotiations or suggest terms sheet	12	10	12
Sign LOI	8	5	9
Closed deals	3	3	3

Table 23: Deal funnel [1] Teten & Farmer (2010)

The results as presented in the table 23 could be scaled by the number of PE-professionals in each company, AUM, or type of investment. Due to the low number of respondents and even lower when filtering results based on the size of AUM and type of investments, the results and trends are very uncertain. This suggests that PE firms with large AUM and buyout investors consider more investment opportunities and all other phases of the deal funnel. They close almost the same amount of deals per year compared to smaller PE firms in size of AUM and PE firms characterized as growth equity investors. PE firms with large AUM may be reasonable to assume have more PE professionals. This is because they earn more in management fees. That may suggest that, as seen when filtering the deal funnel that they have more resources to evaluate more potential investments, but almost the same amount of deals is closed per year per PE firm. More LOI is signed, more due diligence and negotiations are done, but the number of closed deals is almost the same, with a slightly lower mean for both growth equity PE firms and PE firms with lower AUM. The larger the deals are, the more common is auction processes and where there is more competition of deals, but the trend that investors with large AUM see more of their deals as proprietary was interesting. Due to the low number of respondents, it is difficult to verify this hypothesis. Of the respondents, these findings could be represented by selecting PE firms with origination programs.

As both, the study Gompers et al. (2016) and Teten & Farmer (2010) claim that PE investor's ability to find deals is an important contribution of value creation. As for the study Teten & Farmer (2010), found a strong correlation between sourcing strategy and top-tier performance. This relates to that PE firms devote considerable resources to sourcing deals. The study Gompers et al. (2016) found that larger and older PE firms pass a greater fraction of their deals to the next sourcing phase, which could be due to a higher initial quality of prospect investment opportunities. As mention in

the introduction of this section PE market is smaller in Norway, and potential targets, which may relate to that it is easier to get an overview of the potential targets for a PE firm.

4.4.1 Sourcing of deals

The sourcing of deals is an important part of PE firms evaluating investment opportunities and having a steady flow of investment opportunities. Norwegian stock and private equity market are small compared to the US. Consequently, the number of attractive investment opportunities also are reduced when comparing to the US. The small market may lead to different deal sourcing, but as seen, similar practices are employed as in the US, which will be later discussed in this section.

The study Teten & Farmer (2010), found that the most important process of PE firms is deal sourcing and the use of the internal deal-sourcing source to locate possible deals in the professional relationship by the employees network. The PE firms respondents rated in the same study that this is the 45% most important source of potential deals. However, in the study, Gompers et al. (2016) the same executive network mean is 8.6 % of the closed deals, which is much lower than Teten & Farmer (2010).

	Mean
Proactive own deals	5.6
Investement bank-generated	6.1
Approaching companies	4.1
Other PE-firms	2.6
Dealbrokers	5.4
Own nettwork deals	6
PE-firm LPs	2.4
Conferences or similar	3
Other sources	1.3
Number of respondents	7

Table 24: Sourcing of PE deals with rating from 1 to 8

It is assumed that large deals are often sold in an auction process, and PE firms that invest mainly in large deals may have fewer proprietary deals due to auctions. The sample of Norwegian PE firms and the different ratings based on each group of sourcing of investment opportunities is presented in the table 24. The Norwegian PE firms investment bankers and paid intermediaries are the most important deal sources, alongside with own proactive deals. However, compared to US PE firms, Norwegian PE firms rank second sourcing of deals from their LPs. For US PE firms, sourcing of deals from LPs relates to 1.7% of the closed deals. The study Teten & Farmer (2010) also stated that very few funds saw their LPs as a source of deal flow. Thus, many Norwegian PE firms have a very concentrated LP group compared to many US PE firms. Unfortunately, this is not studied in detail other than some simple search on publicly available information of fund owners.

A concentrated LP group could lead to closer collaboration/relationship between GP's and LPs. However, as seen in table 24 the PE firms own LPs deal flow is rated on average to 2.4 on a scale from 1 to 8. This could also lead to LPs being more active investors in sourcing deals to the GP's. In

the US, 33% of deals are sourced from investment bankers, and 35 % is proactive deals Gompers et al. (2016). However, the own network deals are much higher in Norway than in the USA. In this thesis, own network deals are rated as 6, but in the study, Gompers et al. (2016), only 8.6 % of closed deals are from their own executive network. As mention above, Norwegian PE potential targets and industry are much smaller, which may relate to this higher rating than in the US.

For most deals, an investment banker is used, not only as a sourcing deal. Even if the seller has a preferred buyer, the seller will hire an investment banker to maximize the selling price. Therefore, the investment banker will most likely be involved in the deal anyway. Based on the interviews and this survey, it is difficult to see any trends of high performers and sourcing programs. Based on the interviews, one PE firm had a substantial origination program compared to the others, but to see any specific relation to performance was not possible to isolate and see a clear connection.

4.4.2 Deal selection factors

	Mean Norwegian PE firms	US PE firms
Ability to create added value	7.9	4.8
Business model or competitive advantage	7.3	6.1
Strategic fit with fund	5.9	3.1
Industry or market	6.4	4.3
Management team	6.3	5.1
Valuation	6.3	4.7
ESG efforts	5.4	-
Number of respondents	7	65

Table 25: Deal selection factors with rating from 1 to 8

As seen in the results in table 25, the variation between Norwegian PE-investors and their value creation strategy does not differ much due to similar rating on deal selection criteria. However, there are differences between US and Norwegian PE firms compared with the study Gompers et al. (2016). The larger focus on creating added value and the business model suggests that of the Norwegian PE firms, respondents take a more active approach and see the importance of the strategy and business model as more important, and a more focus on operational engineering than the US PE firms. The results are difficult to compare even with the scaling of the rating. As seen, the sample of Norwegian PE firms rate all deal selection factors higher than the US PE firms. Interesting is that Norwegian PE firms see relative if ranked in order the management teams as less important. In correlation, Norwegian PE firms compensate CEOs considerably lower than US PE firms. The lowest-ranked selection criteria are ESG efforts. However, two of the respondents ranked ESG as the most important criteria. This suggests that ESG efforts and criteria are still immature in the PE business even though many states on their homepage and annual reports that they put great emphasis on ESG. In the future, it is expected that ESG would be more important overall.

Both the study Acharya et al. (2013) and Achleitner et al. (2010) find that operation improvements within PE-portfolio companies and EBITDA changes multiples are one of the most important

values creation factors. The study Achleitner et al. (2010) indicated that two-thirds of the value creation is from operational improvements and changes in EBITDA multiples and the other parts are due to leverage Achleitner et al. (2010). Strategic fit for a fund for both US and Norwegian PE firms suggests that the PE business is still not specialized in industries or other groupings, especially the US PE firms.

4.4.3 Sources of value creation

	Mean pre-investment	Mean post-investment
Reduce cost	3.1	3.6
Improve IT or information systemes	3.9	4.1
Introduce shared service	2.1	2.4
Increase revenue or improve demand	7.6	7.6
Redefine current business model	5.3	6.1
Change CEO, CFO or other C-level director	3.1	4.6
Improve corporate governance	6.1	6.3
Improve incentives	5	5.6
Follow-on acquisitions	6.9	6.9
Strategic investor	4.2	2.8
Facilitate high value exit	5.7	6
Buy at attractive price	5.2	NA
Other	1	0
Number of respondents	7	7

Table 26: Pre and post-investment sources of value with rating from 1 to 8

In a transaction, there are various key investment bets and drivers. Each deal is also unique, which leads to a large number of potential sources of value creation. The PE-investors were asked to rank from 1 to 8 the sources of value creation pre-investment and post-investment. The results are presented in table 26 for the sample of Norwegian PE firms pre- and post-investment sources of value. The results from the study based on US PE firms Gompers et al. (2016) is presented in the table 27. For both this thesis and Gompers et al. (2016), increased revenue is the most important of all sources for value creation. In 70% of the deals, increasing revenue is mentioned as important for US PE-investors Gompers et al. (2016). However, for smaller PE firms, these factors are more important than for large PE-investors Gompers et al. (2016). This is because it may be reasonable to assume smaller businesses can more easily increase revenues than large businesses.

Follow-on acquisitions are also considered the second most important source of value for Norwegian PE investors. This may suggest that a "Buy and build" strategy is a source of value for many Norwegian PE firms, and ranked second based on the rating. Successful acquisitions and extracting synergies in a merger is considered to be an important skill for PE firms. Due to a large deal flow, a PE firm will have an extensive track record of deals and acquisitions for the portfolio businesses and experience in successful merging processes which create values and extract synergies. PE professionals are considered skilled in acquisitions and successful merging of companies, suggesting that

	Mean pre-investment US PE firms	Mean post-investment US PE firms
Reduce cost	2.8	3.8
Improve IT or information systemes	2.1	2.7
Introduce shared service	1.2	1.8
Increase revenue or improve demand	5.6	5.6
Redefine current business model	2.7	3.2
Change CEO, CFO or other C-level director	2.4	3.8
Improve corporate governance	3.8	4.2
Improve incentives	4.9	5.2
Follow-on acquisitions	4.1	3.8
Strategic investor	1.2	1.1
Facilitate high value exit	4	4.7
Buy at attractive price	3.7	NA
Other	0.8	0.6
Number of respondents	74	74

Table 27: Pre and post-investment source of value in US PE Firms with rating from 1 to 8

follow-on acquisitions are an important value source. For US PE-investors follow-on acquisitions, is important in more than 50% of their deals. Reducing cost is by US PE-investors important in only 36% of their deals, and for Norwegian PE-investors, it is one of the lowest-rated sources of value.

For both Norwegian and US PE investors, the sources for increasing demand/revenue are more important than reducing cost. Earlier, reducing cost and agency cost in PE deals was of great importance in the 80's Jensen (1986), which may lead to business today is more efficient on cost reductions and less corporate waste than in the past. Today key employees and management are also given management incentive options/stocks, which should lead to good cost control, and therefore less important than earlier. As seen in table 26 and 27 improved incentives is of greater importance than reduce cost. Improved incentives and stock options should reduce corporate waste. Interesting to see is that incentives are of more importance post-transaction.

Redefine the current business model is for Norwegian PE firms very important and even more important post transaction; however, US PE firms redefine business model is of very little importance. An interesting difference is a large difference in strategic investors as a source of value. Maybe Norwegian PE firms have more focus on early involvement for a strategic investor than US PE firms. PE investors want to be seen as friendly for the target management team as discussed in section 4.3.1. With the increased focus on corporate governance post transaction, key executives' replacement is more focused post-investment and seen as a value creation source.

The focus of facilitating high-value exits is more important post-investment, which is reasonable as a potential exit is closer. However, the rating on follow-on acquisitions is unchanged between pre-and post-investment. For US PE investors, facilitate high-value exit is also more important, but follow-on acquisitions are less important. For all the sources of value creation, the trends are the same for both US and Norwegian PE investors. This is quite interesting, considering the US PE-

investors have ten times higher data points.

From PE-investor to PE-investor, their focus on value creation is different. Some PE firms GP's have a more industrial background and focus more on operation engineering than financial engineering sources of value. The study Acharya et al. (2013) found evidence from professional background and source of value creation across disciplines such as financial-, governance and operational engineering and most important differences inside the PE houses in these background as evidence for superior performance for western Europe PE firms. Overall, the Norwegian PE investors indicated that their expected sources of value are a combination of all disciplines such as operational, financial, and governance engineering.

The study Acharya et al. (2013) found that leverage as a source of value as boosting the return on equity account for approximately one-third of the overall value created, for the sample of 206 European buyouts from 1991-2005. The other two-third of value creation is attributed to operational and market effects. It is not easy to compare these findings with this thesis and recent US PE firms. PE industry has matured, and as seen in Phalippou (2020) returns for PE-investors have been reduced quite substantially since the '90s. Therefore, the sources of value creation have been changed, also. Norwegian PE firms are not all LBO firms, and as presented in the capital structure section 4.2.7, there is a difference in capital structure between US and Norwegian PE firms. Where not all Norwegian PE firms use leverage in their transactions. Therefore financing varies as a source of value creation for all Norwegian PE firms. For other sources of value creation, five respondents have rated others as not applicable, and one respondent has rated other sources at five, which gives a mean of 0,7 pre-investment. Post-investment five respondents have rated not applicable, suggesting they see few other sources of value creation pre- or post-investment.

Defining sources of value for PE investors is quite complex, and different studies have different aspects. Overall, the literature shows that before the 90's the value creation was more focused on financial engineering when the industry was more immature, and fewer PE firms were competing for deals, and since 90's the PE industry trend toward substantial operation value. This thesis demonstrates that value creation increases in operations and is highly complex across the disciplines for successful value creation implementation. However, as most literature shows, there is difficulty performing a reliable analysis for benchmarking the different methods and levels for value creation for PE investments. In addition, the literature findings for many large studies have quite a substantial time gap back in time, making it difficult to compare different value creation sources today, given the industry's large changes in the last two decades.

4.4.4 Value creators

In the table 28, the sample of Norwegian PE investors value creators, which is active in identifying the sources of value is presented. As suspected, the PE deal team is the main contributor for identifying both pre-and post-investment sources of value. As seen for both US and Norwegian PE firms, all other contributors are less important in contributing to value creation post-investment. It appears that Norwegian PE investors use relatively more outside management consultants before transactions than post-transaction. This is reasonable in due diligence phases, where consultants

	Mean Pre-investment	Mean post-investment
Deal team PE-firm	5	4.4
Advisors or partners	3.6	2.7
Outside mangement consultants	3.7	2
Other	2	3.5
Number of respondents	7	7

Table 28: Pre- and post value creators with rating from 1 to 5

often perform financial due diligence and commercial due diligence. The deal team of PE professionals later follow the potential plan and strategy made in the diligence phase. As most Norwegian PE firms investigated, many of them have a small organization, suggesting more use of outside consultants and partners. One of the respondents have answered that they don't use consultants both before and after and investment, and also not other contributors as listed in the table 28. This may suggest that this PE firm is very hands-on. Also, the rest of the respondents stated that others outside the grouping given are not applicable for contributing sources of value. However, post-investment other contributors of value creation are more active.

Based on interview results, it appears that most of the respondents may have misinterpreted the grouping. All the respondents who participated in an interview stated few other contributors than the grouping used. Of the four respondents who participated in the interview, they did not have any other examples or ideas about who that could be. Due to GDPR regulation, all results were anonymous, and therefore, it was not possible to ask specific questions based on the specific results from the respondents. Suggesting that the share of the other grouping should be smaller.

	Mean pre-investment US PE firms	Mean post-investment US PE firms
Deal team PE-firm	98,7	93,3
Advisors or partners	45,3	51,1
Outside mangement consultants	36,8	27,1
Other	7,2	8,6
Number of respondents	74	74

Table 29: Pre and post value creators percentage of each deals that each specified group actively participated in identifying pre-deal value for US PE firms

The results for the percentage pre- and post-value creators as a percentage of each deal that the specified group actively participated in identifying value is given in the table 29 and based on the study Gompers et al. (2016). Management consultants are more used in the investment phase than post-investment, and advisors are more used post investments. The sample of US PE firms is also more active in finding the sources of value than finding sources of value post-transaction. Similar trends could be found for the Norwegian PE firms, except that Norwegian PE firms use fewer advisors or partners post-investment. However, due to limited data points, such a suggestion is highly uncertain.

4.4.5 Exit

The last subject on value creation and operational engineering for PE firms in this thesis is divestment, also called exits. The PE investors were asked to rank from 1 to 8 the historical exits of their portfolio. The results for the sample of Norwegian PE firms exits are presented in table 30. The investors place the same weight on strategic sales and financial sales as an exit. IPO's is less common and represent only half of the strategic or financial sale. For comparison, the study Gompers et al. (2016) indicates that of their sample of US PE firms, their exit to a financial buyer is almost 30% and 50% to a strategic buyer and less than 20% of their exit through IPO's.

	Mean
IPO	3
Strategic sale	6
Financial sale	6.4
Other	3
Number of respondents	7

Table 30: Types of exit with rating from 1 to 8

There are some differences as expected due to the different sizes of the Norwegian PE firms of their exits' composition as suspected. Different PE firms may have different specializations on company phases, and in some cases, some firms may sell the portfolio company through a secondary buyout before an IPO. Exit through IPO's is very cyclical and dependent on the public market returns. It is expected that the size of PE-portfolio companies is also effected the IPO's share. As seen in the study Gompers et al. (2016), large US PE investors in size of AUM have a higher share of IPO's as an exit, and top tier US PE investors have a lower share of IPO's as exits but a higher sale to strategic buyers. The study Schmidt et al. (2010) found that only exceptional firms are taken public, which makes sense given the low rating of the IPO as a way of exit for Norwegian PE firms. However, given the market condition today with Euronext's growth number of IPO's and returns, it is expected this year that more PE investments are exited through IPO's. In Norway, 2020 and 2021 have been a high number of IPOs. Viking Venture, for example, has had four IPOs the last year, which shows that exits through IPOs are very cyclical and depending on market condition, which will be further discussed in next section 4.4.6. A study performed in 2010 for the US and European PE-investors found strong support for the signaling effect, implying that PE-investors tend to quickly write off investments that turn out to be non-performing of holding these investments in the portfolio as 'dead investments'. Financial sales as an exit for Norwegian PE firms is much higher than the US PE firms, where 30% of the exits is financial sales, and for the sample of Norwegian PE firms financial sale is highest ranked. In the US strategic sales has almost twice the fraction as financial sale, but in Norway, these exits are almost the same.

A study Jenkinson & Sousa (2015) performed in 2015 analyzing 1022 European PE-exits found that for over 43% of the exits. The exits were secondary buyouts between PE funds, and that secondary buyout depends on conditions of debts. When debt is cheap and PE investors have a lot

of committed capital to deploy, there is evidence that secondary buyouts increases. This finding is interesting that PE-investors provide liquidity to each other, and secondary deals occur when they cannot provide a good primary exit source. Many of their respondents' secondary exits are primary to large international PE firms for many Norwegian PE firms. This may suggest that most of the secondary buyouts for Norwegian PE firms are not to other Norwegian PE firms but international PE firms.

This thesis and the study Jenkinson & Sousa (2015) suggest that Europe and Norway may have a larger fraction of secondary buyouts than the sample of US PE firms. Both the US sample PE firms and the European PE firms are based on data from the same time and similar market conditions. For the sample of Norwegian PE firms in this thesis, the current market conditions are different.

4.4.6 Timing of exits

	Mean
Achived operational plan	6.4
Capital market conditions	5.9
Competitive considerations	4
Achived return criteria	6.4
Pressure to liquidate fund from LPs	3.1
Management recommendation	4.3
Other	3
Numberer of respondents	7

Table 31: Timing of exit with rating form 1 to 8

Timing of exit is an important decision for PE firms for achieving the highest possible return. The factors that determine the timing of an exit are presented in the table 31. The survey asked the PE-respondents for the factors that determine when to exit an investment. Both the achieved operational plan and achieved return criteria are considered equal and most important. The second most important factor is the capital market conditions, which would preferably facilitate a high exit multiple. As seen in the literature, a short holding period often relates to the highest performance in most cases. Therefore, it seems reasonable that most PE firms exit when they achieved the operational plan and their return criteria. However, maintaining the growth gradient over a long time could be challenging. The US PE-investors see hitting return criteria as less important than Norwegian PE-investors and focus more on management opinion and competitive consideration.

As seen when comparing with the timing of exits for a US sample of PE firms Gompers et al. (2016). The competitive and management recommendation is more important for the timing of exit for a sample of Norwegian PE firms than US PE firms. Both Norwegian and US PE investors see LP pressure as the least important factor. For the US PE investors, they place the same weight on fundamentals and market conditions timing. The requirement to hit return criteria could show an agency problem between the PE investors and LPs. LPs can't adjust their investment performance for risk, and PE-investors maintain nominal return thresholds Gompers et al. (2016). For the sample

of Norwegian PE firms in this thesis, hitting the return target is one of the most important factors for determining exits. This may suggest that Norwegian PE firms are less risk-taking, that when they can secure the returns, they have marketed to the LPs they sell. In contrast, the sample of US PE firms would be willing to take more risk to seek potentially greater return when capital market conditions may be better and further realizing the operational plan potential above their return target.

4.5 PE-firm organisation

The last topic to be discussed in this chapter is how PE firms are organized. Earlier important topics have been discussed on how PE firms employ these strategies in their invested business. In this section, the PE firm and how they are structured to employ the strategies they say they do is discussed.

4.5.1 PE-firm organization structure

In this section, the PE-firm organization by different factors is analyzed, and the results are presented of the sample of Norwegian PE firms is presented in the table 32. The respondents were asked to choose one of the factors that their firm is organized. Many of the PE firms in Norway's first funds vintage year are after 2000, and they have grown both in size of AUM and in the number of employees. As seen, around half of the PE firms are organized by industry or organized as generalists. Similar results are found in the study Gompers et al. (2016) for US PE firms. Quite interesting, these are the only factors that determine PE firm organization structure from the sample of Norwegian PE firms in this thesis. As found from public data, most Norwegian PE firms are quite small compared to US PE firms in both size of AUM and number of employees. Larger firms that are not included in this study, such as EQT and FSN, may be organized differently due to the geographical footprint and larger AUM size. Organizing as a generalist may not be as efficient if operational engineering is seen as the important source of value creation.

	Mean	Sample US PE firms
Industry	0.57	0.54
Product or services	0	0.17
Generalist	0.43	0.37
Other criteria	0	0.11
Numberer of respondents	7	79

Table 32: PE-firm organization

To extract the most potential in fundamentals and demand-side value, organizing by industry seems to be preferred. The US PE-investor organization structures, such as criteria, products, and services, were more common. The study Gompers et al. (2016) represents a much larger AUM size, which may justify more focus on different organization structures in a larger PE firm. In the future in Norway, it is expected that the PE industry will specialize even further than today Vold (2021). This may suggest that PE firms may use more of other organization structures than generalists used

today. Today, many PE firms are generalists, but as seen with Hadean and Verdane, they specialize in niche segments such as early-phase life science and e-commerce. As industry mature more further specialization of PE firms is expected. The study Gompers et al. (2016) found that firm types and founder types correlate. If a GPs earlier background were investment banking, commercial bank, or investment management, the PE firm would most likely be classified as financial and similar if GPs have an operational background from typical consulting, general management, and operations. Then the PE firm would be more focused on operational engineering.

4.5.2 PE-firm specializations

In this section, PE firms professional profession and specialization within a sample of Norwegian PE firms are discussed. The respondents were asked to rate from 1 to 10 each professional by specialization they have in their firm, and the results are presented in table 33. Also, the possibility to answer none dedicated to this role as possible for each profession. Therefore the mean for each profession is highly uncertain since this is the mean of the respondents who had someone dedicated to this role is low. Since more than four of the respondents of a total seven stated that they don't have anyone dedicated to this role. A mean calculated based on 2-3 respondents is highly uncertain. Due to the limitation of Nettskjema software, it was not possible to set up the survey differently without rating and instead of using exact numbers effectively.

	Mean	None dedicated to this role
Specialist deal sourcing	8.5	5
Specialist operational strategy	4.3	4
Specialist transaction	8	4
External consultants	2	4
Specialist fundrasing	2.5	4
HR and talent for portfolio companies	2	5
Generalist	8.9	0
Number of respondents	7	0

Table 33: PE-firm professionals by profession with rating from 1 to 10

It appears that from previous findings in this thesis that sourcing strategy is either very important or not at all. Alternatively, of the limited sample of respondents, they see it as very important. A few respondents responded that they consider many of their deals as not proprietary and see specialists as unimportant or dedicated to this role in the PE firm. This corresponds to that most of the respondents of the Norwegian PE firms investment professionals are generalists. Similar results are found for US PE firms also. Where over 50% of the professionals were real professionals, which is seen as a generalist. Consultants, a specialist in fundraising, HR and talent professionals are not common specialist roles for the Norwegian PE firms, and most likely, their task is handled by a generalist.

As earlier mentioned, it is suspected that larger PE firms have more specialized dedicated roles in their firm. However, for the respondents in this survey, which are considered smaller PE firms glob-

ally, the results are consistent. Interesting was the low score for operational strategy specialization. Considering the thesis findings, operation engineering is one of the most important value sources. However, specialists in operating strategy are even lower represented for US PE firms. However, it is highly speculative due to the large underlying uncertainties in this survey with few data points. As mention earlier, the trend for Norwegian PE firms is a shift towards specialization. Based on the results of this survey, it is difficult to support this hypothesis due to limited data points. However, from four interviews and the Norwegian PE analysis on behalf of NVCA Johnsen. P. Forsberg (2021) they see the same trend for the future that PE firms will be more specialized.

Many recent studies show that proprietary deals become a more important source of value, with substantial origination structures in place for finding proprietary deals. However, as given in section 4.4.1 the mean of all respondents of the percentage of deals considered proprietary is 28.6%. Therefore it is interesting to see that few have someone dedicated to this role of the sample of Norwegian PE firms.

4.5.3 Operational engineering contributors

To gain more insights into the operation engineering contributors from section 4.5.2 the PE-investors are asked whom they use for operational engineering assistance. The results are presented in the table 33 for the sample of Norwegian PE firms. As seen, PE firms used advisors and partners in operational engineering assistance and using them as a bridge for the gap of few professionals specialized in operational strategy within the PE firm. This makes sense that the PE firm uses specialized advisors and partners for the unique business case the PE firm is working with to get insights and advice for operational engineering. Only one respondent stated that they do not use advisors and partners as suspected few of the PE firms LP's is used. Advisors and partners are typical to help with value creation and deal sourcing. These contributors are used in all phases and could provide value in due diligence, advising on industry-specific information, board positions post-transaction, and many other operational engineering and management issues post-transaction. In general most of these contributors advises on operational issues and less non-financial task. The respondents were given a choice to rate each contributor of value creation with a rating from 1 to 5. Also, the option to answer this group is not used for assistance in operational engineering was possible. Therefore, the mean of each group is the mean of all answers except the ones that answered not used for assistance.

	Mean	Not used for assistance
Advisors and partners	4	1
PE-firm LPs	2	3
Hired strategic managment consultant	3.3	0
Other	3.4	1
Number of respondents	7	0

Table 34: Operational engineering assistance with rating from 1 to 5

As seen from the results, most of the sample of Norwegian PE firms use advisors or partners

for operational engineering. The respondents, which answered they do not use advisors or partners for operational engineering assistance, have a specialist in operational engineering in their firm, as answered in the survey question in section 4.5.2. The use of LPs in operational engineering is either not used at all or rated two by four respondents. LPs in a PE fund are typically individuals, corporate pension funds, insurance companies, family offices, fund-of-funds, sovereign wealth funds, endowments, and PE-fund managers. Especially family offices or wealthy individuals are reasonable to assume to be more active investors in the PE firm than many of the other LP types. A few founders and executive management in PE portfolio businesses invested in the same PE firm next fund in some Norwegian PE firms. These individuals are typical active LPs but a small fraction of all the LPs. Like family offices or wealthy individuals with an industry-specific specialization that fits the PE firm is assumed to be more active. LPs such as pension funds, insurance companies, sovereign wealth funds are expected to be less active investors for the sample of Norwegian PE firms.

All PE firms use hired management consultants for advice for an operational strategy. For US PE firms; 31% of the US sample PE firms utilize management consultants for operational engineering assistance Gompers et al. (2016). The sample of Norwegian PE firms also utilizes management consultants. Tasks a typical management consultant provide are due diligence and later specific tasks or analyses post-transaction. Since each deal is unique in many ways, less focus on in-house operational strategy professionals makes sense since then Norwegian PE firms can "shop" among the best to gain operational advice in each deal and utilize other contributors for assistance. However, for deal sourcing using advisors and partners or consultants is considered more difficult since many deals are done due to personal relationships, as the study Schmidt et al. (2010) indicated.

4.5.4 Compensation

For the value creation and return of the invested capital by the LPs, the PE firms are compensated. Studies show that the US's PE firms compensation structure is not far from uniform with a low standard deviation Robinson & Sensoy (2013). The compensation structure often practices is 2% management fee, and 20 % carried interest. The 2-20% compensations are commonly known as 2% as a yearly management fee for capital under management, and 20% as carried interest when the fund is liquidated. Due to tax reasons and lack of transparency, the management fees have many ways it is distributed to GP's for particular US PE firms. The recent paper Phalippou (2020) caused concerns about private equity fees, and their returns face scrutiny. There is little transparency in the US PE industry. Regulation has forced more information to be publicly available.

A similar compensation structure is common for Norwegian PE firms as with the US PE firms. Most textbooks and literature indicated the same compensation structure as the findings in this thesis, which is 2-20%. Given that they have similar performance as given in subsection 4.2.6 it should not be any large deviation of the compensations for the different Norwegian PE firms. Increased compensation is correlated with great historical performance. As the study MJ Hudson (2019) found, 2% remains the most commonly seen as a management fee for the compensation during the investment period.

Carried interest is the share of the profit of the fund that PE-firm is compensated. Some firms

have hurdle rates for its fund, but this is not reviewed in this thesis. Some of the top-tier PE firms in the US have indicated a carried interest up to 30% and 40%.

As mentioned in the introduction, the latest academic research has scrutinized excessive fees and not outperforming publicly traded stocks on a risk-adjusted basis. The study Phalippou (2020) has indicated that returns are lower than public market returns when adjusting for fees to PE investors. When discussing compensation for PE firms, do PE firms need to deliver higher returns than public markets? This is an interesting question to ask since the Norwegian PE industry shows persistence in their return to their LPs based on the report Johnsen. P. Forsberg (2021). Shouldn't the excessive return be distributed to the PE firms? They would most likely have little incentive to operate otherwise.

Many PE firms also have hurdle rates around 8% for their carried interest per year. This is interesting as the following study estimated that the cost of capital is 18 % above the risk-free rate Franzoni et al. (2012) based on data from the database Center for Private Equity Research (CEPRES GmbH) with a private equity investment from 1975 to December 2007. The study shows that average high performance can be explained by compensating the associated risk factors, especially liquidity risk, which is one of these risk premium factors. The study MJ Hudson (2019) found that 86% of buyout funds have 8% as a hurdle rate. Comparing this with the 18% cost of capital, it is in sharp contracts. Knowing the risk associated with private equity investments hurdle rate of 8% seems low given the cost of capital and associated risk.

As seen in various studies of private placement memorandum in private equity funds, the legal compensation structures are quite complex and large variations from fund to fund and PE-firm to PE-firm. As seen, for the USA and European PE firms have different structures. More detailed structures such as how the returns are distributed by a different waterfall and the pecking order of who gets distributed returns first vary greatly. Some fund use as whole distribution model and other distribute by a deal-by-deal structure. Since the structures are quite complex, the survey was limited to carried interest and management fees. In interviews, these compensations structures were discussed. However, due to the complexity of the details and the need for in-depth analysis, this subject was not analyzed further than discussions in interviews. The Norwegian PE-funds seem more LP friendly than the more GP friendly US PE-funds. This is also in line with the more general impression that European PE-fund is more LP friendly than the US PE-funds as found in the study MJ Hudson (2019).

The complex management contract is the core of the debate of increasing scrutiny by observers and limited partners Robinson & Sensoy (2013), where critics argue that complex contracts allow GPs to earn excessive compensation and too little to provide GPs to incentives them to maximize LP returns. These contracts are not disclosed to the public, which makes it difficult to evaluate these critics. A study found that there is no evidence that low GP ownership underperforms, and buyout funds with high carried interest outperform, which is mostly driven by a handful of PE-fund in the following study Robinson & Sensoy (2013). As stated by Frode Strand-Nilsen, founder and managing partner FSN Capital, the private equity firms are up to exam every time a fund is liquidated Vold (2021). As he stated, if the PE fund return is low, the PE firm managers need

to find a new job. After having excessive returns for a PE fund, the PE firm has more power to increase its compensation, but if the marketed returns are not met, the PE firm will have difficulty raising the next fund on the same terms. In this way, performance and compensation are regulated by themselves on the next fundraising, but as seen in the boom financing period, the bargaining power is shifted to GPs Robinson & Sensoy (2013). The same study found no evidence that PE-funds with high compensation underperform when compared on a net-of-fees basis.

	Mean
< 15 %	0
15 - 20 %	0.7
20 - 25 %	0.3
25 - 30 %	0
> 30 %	0
Number of respondents	7

Table 35: Carried interest

	Mean
< 1 %	0
1 - 1.5 %	0.14
1.5 - 2 %	0.57
2 - 2.5 %	0.29
2.5 - 3 %	0
> 3%	0
Number of respondents	7

Table 36: Management fee

The results for the sample of Norwegian PE firms carried interest and management fees is presented in table 35 and 36. The sample for Norwegian PE firms has similar compensation structures and fees like most other PE firms with a 2-20% structure. The gross IRR target mean is 23% and median is 25% for the sample of Norwegian PE firms as given in section 4.2.6. The compensation for the sample of Norwegian PE firms is in line with the return they distribute to their LPs. Further, the GPs equity share in the PE fund is discussed in the next section 4.5.5. However, the equity share and compensation are two different and separate compensations and should not be correlated when discussing compensation. The fee structure compensates the PE firms by its day to day operation in managing investments. The return from invested capital from investors in PE fund is compensated due to risk and the returns their invested capital produces.

4.5.5 GP equity share in PE funds

The equity share the sample of Norwegian GPs have in PE fund is presented in the table 37. The variation of GP equity share is varying greatly. An important aspect to consider is the time the GP have been GPs in the PE firms. As time goes by and funds are liquidated, the equity share is assumed

	Mean	Median
Percentage of partner ownerhsip in a fund	8.1	5
Number of respondents	7	7

Table 37: Partner ownership in PE funds

to increase for GPs. Therefore, it may be reasonable to assume that the variation of equity share can be partially explained by factors such as the GP's time working in the PE firms. For European and US PE firms. Equity shares vary greatly from PE firm to PE firm. Therefore, equity share by GPs in PE funds is expected to reduce the agency conflict, along with the carried interest.

4.6 ESG and private equity

At the end of the survey, the private equity firms were asked openly to explain the PE firms focus on ESG and its focus on ESG in investments. Of all the seven respondents, they all stated that they see ESG as important. The focus differs between firms, but all PE firms make an ESG plan for the businesses and focus on increasing ESG efforts for its businesses during the holding period. ESG efforts vary in PE firms, and some PE firms don't invest in businesses without a business model with a fundamental focus on ESG. Some PE firms also use ESG as a core integrated part of investment strategy in evaluating investment opportunities. Based on the sample of Norwegian PE firms, these results show that all respondents develop an ESG strategy for their businesses and focus on ESG in their investments.

4.7 Concerns for the survey and interviews

In general, in this thesis, the PE firms respondents are assumed to give accurate results. Therefore, all the results are aggregated. Each PE firm can not be identified based on the results presented. All PE firms that were approached were assured that their results would not be possible to identify back to the PE firm. Due to GDPR, the results could not track back to an email address or IP address by the software Nettskjema. Therefore, the incentives for the sample of the Norwegian PE firms to give inaccurate results to overly shed a positive light on PE practices is considered low. Still, some may be willing to respond to some questions overly positive with the goal that the Norwegian PE industry will be shed a further positive light.

The respondents may overstate their IRR target, but GPs will be punished during the next fundraising if they overstate their performance. Uncertainty in answers for areas such as methods they use to value businesses should also have a low effect on their results. The PE firms value creation factors and their abilities to add value to their investments are potential sources of concern. What factors PE firms use is difficult to verify other than to evaluate the consequences based on public annual financial reports. The PE firms fraction of deals they considered proprietary is also difficult to verify and evaluate if these results are true. The PE firms may want to be seen as friendly, and it would be in the interest for PE firms to be seen as friendly and not presenting regularly replacing executive management post-transaction. CEO's replacement in PE businesses can be

validated by using the Brønnøysund register.

Last, PE firms may want to report that they focus more on revenue and growth than cost-cutting and profit-maximizing. In this way, the PE firms may be seen as creating jobs instead of cutting jobs, which they may want to overstate. As seen on most PE firms homepages, the number of employees in their invested businesses is commonly reported. Overall, there exist some incentives for the sample of Norwegian PE firms to report differently, but as discussed, there exists no strong reason to believe they reported differently than actual.

5 Conclusion and implications

This section will summarize the main findings, and the conclusion from the thesis will be presented. Lastly, the limitation and suggested future research are discussed.

PE firms have been studied in many different areas of impact in the literature. However, limited data and little transparency in the industry make it difficult to understand what they do. This thesis analyzes what the sample of national Norwegian PE firms say they do based on a survey and interviews across all disciplines.

Firstly, the findings suggest that there are differences between the US and Norwegian PE firms. It appears that the sample of Norwegian PE firms is more involved in its investments due to less use of outside operational engineering contributors, smaller boards, more focus on the ability to create value, and lastly, more focus on the business model and competitive advantages as value creation instead of focus on financial key levers. This suggests the Norwegian PE firms are more active than US PE firms. However, the sample of Norwegian PE firms is less risk-taking with less usage of debt than US PE firms and less risky in the timing of exit. In contrast, Norwegian PE firms are less willing to hold an investment for a potential upside and sell when their return target is achieved. The sample of Norwegian PE firm's gross IRR target is also lower than US PE firms, which correlates to less risky investment strategies. The sample of Norwegian PE firms is similar to the US PE firms, where their main focuses are on increasing growth and revenue rather than cost-cutting.

The sample of Norwegian PE funds performance net of fees compared to public market equities in the last decade with the given data is difficult to see that the returns have beaten the OBX index. Regarding exits, financial exit through secondary buyouts is more common for the sample of Norwegian PE firms than the US PE firms. The PE-owned business is a typical buyout target that is characterized by superior growth and revenue generation. Further, the sample of Norwegian PE firms uses the same deal evaluation metrics as the US PE firms, focusing on gross IRR, MOIC, and comparable company multiples, and not CAPM or DCF methods. The sample of Norwegian PE firms do not adjust their return target through traditional capital asset pricing models and factor models but assess risk on an ad-hoc framework. The Norwegian PE firms see absolute performance as not important to performance benchmark for their LPs. Given the often intense focus on public market indexes for LPs in public equity investments, the reason for this finding is not clear. PE firms are more focused on net IRR and net multiple of invested capital such as MOIC. This shows that LPs may choose their PE investments based on relative performance indicators.

The results show that most of the sample of Norwegian PE firms are generalists, with a few respondents PE firms have dedicated specialist roles and special organizations structures according to industry criteria. In the future, PE firms will be more specialized as the competition increases and the hurdle rates decrease. The sample of Norwegian PE firms focuses most on value creation

on operational engineering, and key levers that increase revenue and demand.

The thesis has its limitation with only seven respondents. However, the total number of national Norwegian PE firms is low. According to NVCA members, there are 17 buyout firms in Norway, including Nordic and European firms. Since this thesis mainly focused on Norwegian PE firms, the results should be represented by more than half of the national Norwegian PE firms represented when the European and Scandinavian firms are excluded.

All of the respondents stated that focus on ESG is important. For some PE firms, ESG is in their core investment philosophy. The sample of the Norwegian PE firms all establish an ESG strategy and report on key factors during the holding time.

Compared to US PE firms, the sample of Norwegian PE firms consider 28 % of their total deals as proprietary, whereas the US PE firms consider 48% of their deals as proprietary. A few respondents see proprietary deals as an important value driver and have advanced sourcing programs in place. The deal funnel is similar for most of the US PE firms, European firms, and the Norwegian sample of PE firms.

The findings have some implications for LPs. First, most asset owners lack the expertise to invest in PE directly. PE-fund investments are primarily bet on PE-firms managers' skills. Second, the contracts give little flexibility or insights for an LP. The problem with regular evaluations and selection bias cause problems for an LP for assessing risk and return. In this thesis, there is little evidence-based literature that PE firms have significantly outperformed the public market when the PE investments are risk-adjusted. The evidence is the opposite, and by most studies, the industry has had a poor performance in the last two decades. The PE contracts today tend to exacerbate, rather than ameliorate, agency problems. Fees are high, and management fees dominate incentive fees.

LPs should demand more advanced reporting and benchmark with public equities. Revise PE contracts and reduce management fees and increase incentive fees. Agency issues are a concern in the PE industry.

Results, as presented, showed that ESG is an important deal criterion for investing. ESG is equally ranked as competitive position and valuation for some PE firms when considering an investment opportunity. For some time, ESG models for ranking public companies and their ESG efforts have been in place. However, there is an inflection point when PE firms equally rank ESG efforts with the competitive position on their investment criteria. In retrospect, more questions on ESG should have been applied in the survey. Apparently, this is important for deal selection and to understand what Norwegian PE firms say they do. Further, this area of what PE firms say they do, needs further analysis on more in-depth studies in this area to get more insights. There is a lot more to study, especially verifying the performance and value creation findings in the PE industry.

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A Survey

Skjemaet skal være anonymt. Les mer.

Spørreundersøkelse innen norske private equity (PE) selskaper

Denne spørreundersøkelsen er en del av en masteroppgave ved NTNU. I studieprogrammet til NTNU, MIT og NHH sitt executive masterprogram og skal studere hva norske PE-selskaper gjør, og sammenligne praksis mellom liggende studier utført på amerikanske PE-selskaper. Spørreundersøkelsen benytter tjenesten Nettskjema, som er en sikker løsning som ivaretar din og ditt selskaps anonymitet. Denne studien ser spesifikt på hva PE-selskaper i Norge gjør og skal bidra med å gi ny kunnskap innenfor denne bransjen. Publisering av resultatene fra denne studien vil ikke kunne spores til tilbake til enkeltsselskaper eller enkeltpersoner. Alle svar vil være helt anonyme. Eksakte tall er ikke nødvendig og anslag vil være godt nok. Har du noen spm rundt studien, eller vil ha et eksemplar av oppgaven i ettertid send mail til fredrik.s.moen@ntnu.no

Hvor mye kapital forvalter PE-selskapet aktivt i Norge i dag? *

- ○ under 1mrd NOK
- ○ 1 - 5 mrd NOK
- ○ 5 - 10 mrd NOK
- ○ 10 - 20 mrd NOK
- ○ over 20 mrd NOK

Hvilken type investeringer beskriver best PE-selskapet? *

- ○ Venture investeringer
- ○ Vekstkapital
- ○ Distressed buyout
- ○ Fond i fond
- ○ Gjeldsfinansiert oppkjøp (LBO)
- ○ Andre

Har dere kontorer eller gjennomfører investeringer utenfor Norge? *

- ○ Ja
- ○ Nei

Hva er din rolle i selskapet? *

- ○ Partner eller direktør
- ○ Manager
- ○ CFO
- ○ Annen

På en skala fra 1 til 8, hva er den mest brukte metoden dere bruker for å vurdere en investeringsmulighet?

	1 - Benytter ikke denne metoden i dag	2	3	4	5	6	7	8 - Mest brukte metoden i dag	Vet ikke / uaktuelt
Brutto IRR	○	○	○	○	○	○	○	○	○
Multippel på investert kapital	○	○	○	○	○	○	○	○	○
Diskontert kontantstrøm(DCF) beregnet via justert nåverdi	○	○	○	○	○	○	○	○	○
DCF beregnet med WACC som diskonteringsrente	○	○	○	○	○	○	○	○	○
EBITDA multipler på sammenlignbare selskaper	○	○	○	○	○	○	○	○	○
Fri kontantstrøm til egenkapital. (FCF to equity)	○	○	○	○	○	○	○	○	○
Andre	○	○	○	○	○	○	○	○	○

Hvor lang tidshorisont benyttes i hovedsak på en budsjettert kontantstrøm for en typisk investeringsmulighet?

[Antall år]

Hvilken beregningsmetode for terminalverdi benytter dere? *

- ○ Sammenlignbare selskapsverdier fra noterte selskaper
- ○ Sammenlignbare verdier fra transaksjoner
- ○ DCF med anslag på langsiktig vekst (DCF growing perpetuity)
- ○ Andre metoder

På en skala fra 1 til 8. Hva er viktig i utvelgelsen av kriterier for hvordan dere velger sammenlignbare selskapsmultipler til å beregne selskapsverdi?

	1 - minst viktig	2	3	4	5	6	7	8 - mest viktig	Vet ikke /uaktuelt
Industri	○	○	○	○	○	○	○	○	○
Selskapsrisiko	○	○	○	○	○	○	○	○	○
Størrelse	○	○	○	○	○	○	○	○	○
Vekst	○	○	○	○	○	○	○	○	○
Marginer	○	○	○	○	○	○	○	○	○

	1 - minst viktig	2	3	4	5	6	7	8 - mest viktig	Vet ikke /uaktuelt
Kapitalintensitet	○	○	○	○	○	○	○	○	○
Geografi	○	○	○	○	○	○	○	○	○
Andre	○	○	○	○	○	○	○	○	○

Hva er brutto avkastningsmål for deres selskapsinvesteringer? *

Svar i %

Av de variablene listet opp, hva har mest innflytelse på forventet avkastningskrav til en selskapsinvestering?

	1 - lite viktig	2	3	4	5 - viktigst	Vet ikke / uaktuelt
Selskapets risiko	○	○	○	○	○	○
Gjeldsgrad	○	○	○	○	○	○
Historisk forventninger på avkastning fra PE fondets investorer	○	○	○	○	○	○
Andre	○	○	○	○	○	○

På en skala fra 1 til 8, hvor 8 er viktigst. Hva har mest påvirkning på risiko justeringen av avkastningskravet til en investering?

	1 - mindre viktig	2	3	4	5	6	7	8 - Veldig viktig	Vet ikke
Risiko for uforventet inflasjon	○	○	○	○	○	○	○	○	○
Renterisiko	○	○	○	○	○	○	○	○	○
Risiko knyttet til utvikling i bruttonasjonalprodukt/ konjunktursyklusrisiko	○	○	○	○	○	○	○	○	○
Råvarerisiko	○	○	○	○	○	○	○	○	○
Valutarisiko	○	○	○	○	○	○	○	○	○
Risiko for mislighold	○	○	○	○	○	○	○	○	○
Risiko pga selskapets størrelse	○	○	○	○	○	○	○	○	○
Pris/bok (P/B)	○	○	○	○	○	○	○	○	○
Momentum	○	○	○	○	○	○	○	○	○
Likviditetsrisiko	○	○	○	○	○	○	○	○	○
Andre	○	○	○	○	○	○	○	○	○

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Hvilken avkastning blir dere målt på av deres investorer? *

○ Netto IRR fratrukket forvaltningshonorarer

- ○ Brutto IRR
- ○ Netto IRR vs hovedindeks på Oslo børs
- ○ Netto IRR vs internasjonal hovedindeks som feks S&P 500
- ○ Netto multippel eller 'cash-on-cash'
- ○ IRR fra andre PE-selskaper

Hvilken avkastning markedsfører PE-selskapet ditt til deres investorer?

- ○ 15-20%
- ○ 20-25%
- ○ 25-30%
- ○ 30-35%
- ○ 35-40%
- ○ over 40%

Hva er typisk gjeldsandel etter gjennomført investering for deres porteføljeselskaper?

(Gjeld / Totalkapital)

Hva er typisk gjeld / EBITDA etter gjennomført investering for deres porteføljeselskaper?

Gjeld / EBITDA

På en skala fra 1 til 5. Hva er de viktigste faktorer for å avgjøre hvor mye gjeld et selskap tar opp i en transaksjon?

	1 - ikke så viktig	2	3	4	5 - Veldig viktig	Vet ikke / uaktuelt
Benytte høy gjeldsgrad for å tvinge operasjonelle forbedringer	○	○	○	○	○	○
Benytte så mye gjeld som markedet tilbyr	○	○	○	○	○	○
Dagens rente og hvor mye selskapet kan betale	○	○	○	○	○	○
Gjeldsgrad til bransjen selskapet operer i	○	○	○	○	○	○
Optimal avveining mellom skattefordeler og risiko for mislighold	○	○	○	○	○	○
Andre faktorer	○	○	○	○	○	○
PE-selskapet finansierer ikke kjøp av selskaper med gjeld	○	○	○	○	○	○

De neste spm vil se på eiersammensetningen i et typisk norsk porteføljeselskap. Eksakte tall er ikke nødvendig.

Hva er typisk samlet eierandel etter en transaksjon for alle PE-investorer (hvis flere enn en PE investor) i et typisk porteføljeselskap?

74

Svar i %

Hva er typisk eierandel etter en transaksjon eller i løpet av det første året for en CEO i et porteføljeselskap?

Svar i %

Hva er typisk samlet eierandel etter en transaksjon eller i løpet av det første året for de 10 viktigste personene i selskapsledelsen til et porteføljeselskap?

Svar i %

Hva er typisk samlet eierandel etter en transaksjon for eksterne (PE-selskaper defineres ikke som ekstern) i et porteføljeselskap?

Svar i %

Hva er størrelsen på et typisk styre til et porteføljeselskap? *

- ○ 3 eller mindre
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10
- ○ 11 eller flere

I et typisk styre til porteføljeselskapene hvor mange av porteføljeselskapets ansatte er i styret?

I et typisk styre til porteføljeselskapene hvor mange fra et PE-selskap er i styret?

I et typisk styre til porteføljeselskapene hvor mange eksterne er i styret?

PE-ansatte defineres ikke som eksterne i denne sammenhengen

Rekrutterer PE-selskapet egne nye ledere til deres porteføljeselskaper?

	Ja	Nei
Før en investering	○	○
Etter en investering	○	○

Hva er den typiske andel av de gjennomførte investeringene dere har gjennomført, hvor dere har byttet ut CEO?

Svar i %

Hvor mange selskapsvurderinger har dere vurdert i løpet av et typisk år? *

Hvor mange inngående analyser og gjennomganger av en potensiell selskapsinvestering har dere gjennomført i løpet av et typisk år? *

Et anslag er godt nok

Hvor mange forhandlinger eller tilfeller hvor PE-selskapet ditt foreslår investeringsvilkår til et selskap foretar dere i løpet av et typisk år?

Et anslag er godt nok

Hvor mange intensjonsavtaler signerer dere i løpet av et typisk år?

Et anslag er godt nok

Hvor mange investeringer gjennomfører dere i løpet av et typisk år?

Et anslag er godt nok

På skala fra 1 til 8. Hva er de mest vanlige kilden til investeringsmulighetene til PE-selskapet i løpet av et typisk år?

	Ikke aktuell / eller er ikke en kilde	1 - veldig lite brukt	2	3	4	5	6	7	8 - Mest brukte kilden
Investeringsmuligheter ditt PE-selskapet selv har fremskaffet	○	○	○	○	○	○	○	○	○
Investeringsbanker	○	○	○	○	○	○	○	○	○
Selskaper som selv tar kontakt med PE-selskapet	○	○	○	○	○	○	○	○	○
Fra andre PE-selskaper	○	○	○	○	○	○	○	○	○
Meglere og rådgivere	○	○	○	○	○	○	○	○	○
Eget nettverk	○	○	○	○	○	○	○	○	○
PE-selskapets investorer	○	○	○	○	○	○	○	○	○
Selskaper som dere har kommet i kontakt med på en konferanser eller lignende arrangementer	○	○	○	○	○	○	○	○	○
Andre kilder enn de nevnt ovenfor	○	○	○	○	○	○	○	○	○

Hvor mange investeringsmuligheter er ansett som eksklusive for PE-selskapet i løpet av et år?

Svar i % av totale gjennomførte investering i løpet av et typisk år

På en skala fra 1 til 8, hvor 8 er høyest, på hva som er viktig å ta med i betraktning om man skal investere i et selskap?

	1 - Ikke viktig	2	3	4	5	6	7	8 - Viktigst
Muligheter til å skape verdi i selskapet	○	○	○	○	○	○	○	○
Forretningsmodell eller konkurransefortrinn til selskapet	○	○	○	○	○	○	○	○
Investeringen passer til fondets strategi	○	○	○	○	○	○	○	○
Industri eller marked selskapet opererer i	○	○	○	○	○	○	○	○
Selskapets ledelse	○	○	○	○	○	○	○	○
Verdivurdering	○	○	○	○	○	○	○	○
Selskapets innsats innen ESG	○	○	○	○	○	○	○	○

På en skala fra 1 til 8, på hva som er de viktigste verdidriverne til et selskap dere har identifisert FØR en investering?

	1 - Mindre viktig	2	3	4	5	6	7	8 - Veldig viktig	Vet ikke / uaktuelt
Redusere kostnader generelt	○	○	○	○	○	○	○	○	○
Forbedre IT systemer eller andre informasjonssystemer	○	○	○	○	○	○	○	○	○
Introdusere delte tjenester mellom virksomheter (slå sammen varekjøp på tvers av flere selskaper feks)	○	○	○	○	○	○	○	○	○
Øke inntekter eller forbedre etterspørselen	○	○	○	○	○	○	○	○	○
Redefinere nåværende forretningsmodell eller strategi	○	○	○	○	○	○	○	○	○
Byttet ut CEO, CFO eller tilsvarende andre nøkkelstillinger i selskapet	○	○	○	○	○	○	○	○	○
Forbedre selskapsledelse og eierstyring	○	○	○	○	○	○	○	○	○
Øke insentiver	○	○	○	○	○	○	○	○	○
Oppfølgende oppkjøp	○	○	○	○	○	○	○	○	○
Strategisk investor	○	○	○	○	○	○	○	○	○
Fasilitere en høy exit verdi	○	○	○	○	○	○	○	○	○
Kjøp på en attraktiv lav pris	○	○	○	○	○	○	○	○	○
Andre	○	○	○	○	○	○	○	○	○

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Hvem er aktiv til å identifisere verdidrivere FØR en investeringen?

	1 - Ikke aktiv	2	3	4	5 - Veldig aktiv	Vet ikke / uaktuell

	1 - Ikke aktiv	2	3	4	5 - Veldig aktiv	Vet ikke / uaktuell
PE-selskapets ansatte	○	○	○	○	○	○
Rådgivere og andre partnere	○	○	○	○	○	○
Konsulenter	○	○	○	○	○	○
Andre	○	○	○	○	○	○

På en skala fra 1-6, hva er de viktigste verdidriverne til et porteføljeselskap dere har identifisert ETTER en gjennomført investering?

	1 - minst viktig	2	3	4	5	6	7	8 - Mest viktig	Vet ikke / uaktuell
Redusere kostnader generelt	○	○	○	○	○	○	○	○	○
Forbedre IT systemer eller andre informasjonssystemer	○	○	○	○	○	○	○	○	○
Introdusere delte tjenester mellom virksomheter (slå sammen varekjøp på tvers av flere selskaper feks)	○	○	○	○	○	○	○	○	○
Øke inntekter eller forbedre etterspørselen	○	○	○	○	○	○	○	○	○
Redefinere nåværende forretningsmodell eller strategi	○	○	○	○	○	○	○	○	○
Byttet ut CEO, CFO eller tilsvarende ansatte i selskapet	○	○	○	○	○	○	○	○	○
Forbedre selskapsledelse og eierstyring	○	○	○	○	○	○	○	○	○
Øke insentiver	○	○	○	○	○	○	○	○	○
Gjennomføre oppfølgende oppkjøp	○	○	○	○	○	○	○	○	○
Få med strategisk investor i selskapet	○	○	○	○	○	○	○	○	○
Fasilitere en høy exit verdi	○	○	○	○	○	○	○	○	○
Andre	○	○	○	○	○	○	○	○	○

Hvordan er fordeling av exit for en selskapsportefølje til ditt PE-selskap?

	1 - minst vanlig exit	2	3	4	5	6	7	8 - mest vanlig exit
IPO - notering på børs	○	○	○	○	○	○	○	○
Strategisk salg	○	○	○	○	○	○	○	○
Finansielt salg	○	○	○	○	○	○	○	○
Andre	○	○	○	○	○	○	○	○

Hvem er aktiv til å identifisere verdidrivere ETTER en investeringen?

	1 - minst aktiv	2	3	4	5 - mest aktiv
PE-selskapets ansatte	○	○	○	○	○

	1 - minst aktiv	2	3	4	5 - mest aktiv
Rådgivere og andre partnere	○	○	○	○	○
Konsulenter	○	○	○	○	○
Andre	○	○	○	○	○

Hvilke forhold bestemmer tidspunktet for et exit til et porteføljeselskap?

	1 - minst viktig	2	3	4	5	6	7	8 - mest viktig
Oppnådd operasjonell plan	○	○	○	○	○	○	○	○
Kapital markedsforhold	○	○	○	○	○	○	○	○
Konkurransemessige hensyn	○	○	○	○	○	○	○	○
Oppnådd avkastningsmål	○	○	○	○	○	○	○	○
Press fra investorer til å returnere kapital	○	○	○	○	○	○	○	○
Selskapsledelsen sin anbefaling	○	○	○	○	○	○	○	○
Andre	○	○	○	○	○	○	○	○

Hvordan er PE-selskapet organisert? Velg den organisering som passer best ditt selskap

- ○ Industri
- ○ Produkter/tjenester
- ○ Generalister
- ○ Andre kriterier
- ○ Andre

Dette spørsmålet skal se på fordelingen av ansatte og roller i PE-selskapet ditt. Hvordan er fordelingen til ansatte fordelt på ulike spesialisering i PE-selskapet?

Svar i % som andel av alle ansatte i PE-selskapet

	Ingen i PE-selskapet er dedikert til denne rollen	< 10 %	10%	20%	30%	40%	50%	60%	70%	80%	90%	10
Spesialist til å finne investeringsmulighet	○	○	○	○	○	○	○	○	○	○	○	○
Spesialist innen operasjonell strategi	○	○	○	○	○	○	○	○	○	○	○	○
Spesialist innen transaksjoner	○	○	○	○	○	○	○	○	○	○	○	○
Eksterne konsulenter	○	○	○	○	○	○	○	○	○	○	○	○
Kapital innhenting	○	○	○	○	○	○	○	○	○	○	○	○
Talentspeidere til porteføljeselskap	○	○	○	○	○	○	○	○	○	○	○	○
Generalist	○	○	○	○	○	○	○	○	○	○	○	○

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Innen utarbeidelse av operasjonelle strategier for deres porteføljeselskaper. Hvor aktivt benytter PE-selskapet følgende grupper?

	1 - Benyttes ikke	2	3	4	5 - Benyttes i stor grad
Rådgivende gruppe bestående av eksterne rådgivere	○	○	○	○	○
PE-selskapets investorer	○	○	○	○	○
Kjøp av tjenester fra konsulenter	○	○	○	○	○
Andre	○	○	○	○	○

Hva er et typisk forvaltningshonorar relativ til et typisk fond størrelse pr år for PE-selskapet ditt?

- ○ 0 - 1%
- ○ 1 - 1.5%
- ○ 1.5 - 2%
- ○ 2 - 2.5%
- ○ 2.5 - 3%
- ○ 3 - 3.5%
- ○ 3.5 - 4%
- ○ over 4%
- ○ Har ikke klassisk fond struktur og dermed ikke relevant

Etter at et fond har realisert alle investeringene, hvor stor andel av overskuddet går til PE-selskapet?

- ○ 0 - 5%
- ○ 5 - 10%
- ○ 10 - 15%
- ○ 15 - 20%
- ○ 20 - 25%
- ○ 25 - 30 %
- ○ over 30%

For en partner/forvalter i PE-selskapet hva er en vanlig eierandel i PE-selskapet i de ulike fondene?

Svar i %

Innen kompensasjon til PE-selskapet, har du noen kommentarer på perspektiver som burde vært med i undersøkelsen?

80

Fortell litt om ESG og deres forhold til dette i vurderingen av en potensiell investering

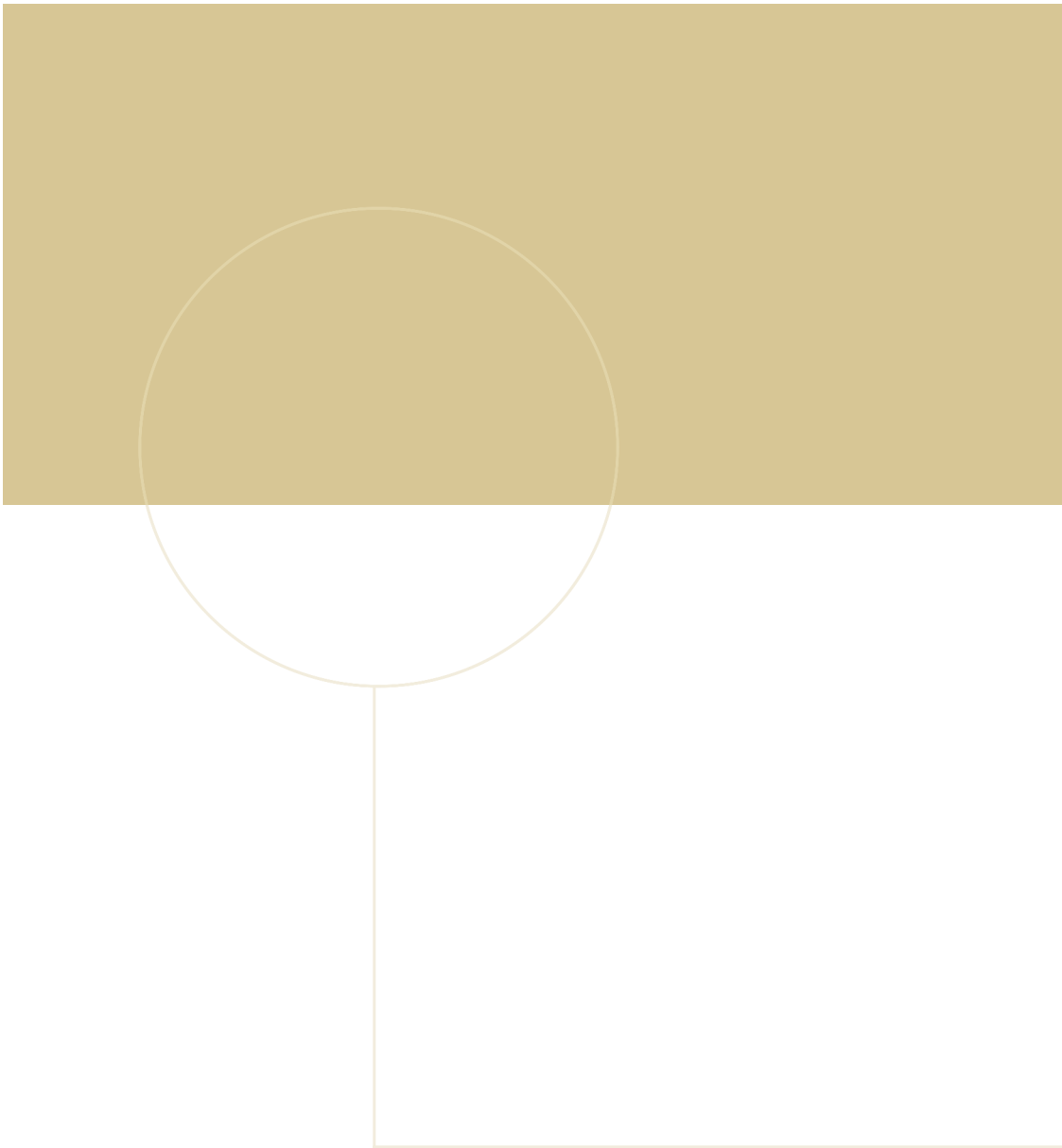
Fortell litt om hvor viktige det er for deres porteføljeselskaper å gi økonomiske insentiver som eierandeler for nøkkelpersoner i porteføljeselskaper?

Hvis det skulle være noen tilbakemeldinger eller kommentarer gjerne skriv de her

Tusen takk for at du tok deg til å svare på denne undersøkelsen. Ditt bidrag er veldig viktig. Hvis du har noen spm, send mail til fredrik.s.moen@ntnu.no

Send

Ansvarlig for skjemaet: fredrik.s.moen@ntnu.no.



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