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Operational Consequences of Private Equity Buyouts in Finland

Changes in operational efficiency and working capital investment after acquisitions

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ABSTRACT:

Empirical evidence from the 1980s is constant about private equity practitioner's ability to enhance the operational profitability of their portfolio companies, while more recent findings do not show the same consistency in the results. Overall, there is a substantial amount of inconsistent evidence of the subject, and a lack of evidence about the role of working capital management behind the obtained results. This is a clear shortcoming in the earlier research, as a company can operate more efficiently by releasing capital tied up in its working capital, especially in working capital-intensive industries. This research contributes to the existing literature by analyzing the changes in operational profitability and productivity indicators of portfolio companies during the two-year post buyout period. Moreover, the research provides new evidence about the role of working capital management behind the obtained results.

In Finland, the research has been led by the Finnish Venture Capital Association, which uses non-publicly available private equity databases as a source in their research. In 2013, the association began to collect a list of private equity investments from publicly available sources. This list was submitted to the author of this research, and based on this listing, the research examines 84 Finnish buyout targets and the changes in their key operational figures between the years 2014 and 2019. To explore the effect of private equity, all the figures are compared with their respective peer groups. This reveals the impact of private equity behind the obtained results and removes the erroneous conclusions that could be drawn if there is a general up- or downswing within the industry.

Results show that buyout targets are growing faster in sales and employees than their peers. However, the targets are not able to maintain their operational profitability during the expansion, and the cost related to growth drive operational profitability growth to negative. Although operational profitability is not increased on average, the study finds significant improvements in working capital efficiency during the period under review. The main driver of enhanced working capital efficiency is the decrease in the receivables to sales ratio, while the research shows no evidence of increased use of trade financing or enhanced inventory turnover ratio during the reference period. Yet, the study does not find a statistical relationship between improved working capital efficiency and a firm’s operational profitability, where the main driver of abnormal operational profitability seems to be the improved employee productivity, monitored with the ratio between companywide personnel costs and sales.

AVAINSANAT: Working capital, Leveraged buyout, Buyout, Private equity, Finland

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TIIVISTELMÄ:

Empiirinen tutkimus 1980-luvulta on osoittanut pääomasijoittajien kasvattavan sijoituksen kohteena olevien yrityksien arvoa tehostamalla näiden operatiivista toimintaa. Tuoreempi tutkimus ei kuitenkaan johdonmukaisesti tue näitä löydöksiä. Vaikka aiheesta on olemassa huomattava määrä epäjohdonmukaisia tutkimustuloksia, ei käyttöpääoman hallintaa tutkimustulosten takana ole juurikaan analysoitu. Tämä on selkeä puute aiemmassa tutkimuksessa, sillä yhtiön toimintaa voidaan tehostaa vapauttamalla käyttöpääomaan sitoutunutta pääomaa, etenkin käyttöpääomaintensiivisillä toimialoilla. Tämä tutkimus tukee aikaisempaa empiiristä tutkimusta analysoimalla kohdeyhtiöiden operatiivisen kannattavuuden ja tuottavuuden tunnuslukuja. Lisäksi tutkimus tuottaa uutta tietoa kohdeyhtiöiden käyttöpääoman hallinnasta yritysostojen jälkeisen tarkasteluajanjakson aikana.

Suomessa toimialan tutkimusta on johtanut Suomen Pääomasijoitusyhdistys ry, joka käyttää tutkimuksissaan lähteinä pääomasijoitustietokantoja, joiden dataa yhdistyksellä ei ole oikeutta jakaa. Yhdistys alkoi kuitenkin vuonna 2013 tekemään julkisista lähteistä kerättyä listaa pääomasijoitusyhtiöiden tekemistä sijoituksista, joka toimitettiin tämän tutkimuksen tekijälle. Tässä tutkimuksessa käsitellään 84 suomalaista pääomasijoituksen saanutta kohdeyritystä ja näiden tunnuslukujen muutosta vuosien 2014 ja 2019 välillä. Kohdeyrityksien muutosta tunnusluvuissa verrataan samalla toimialalla toimivien verrokkiyrityksien tunnuslukuihin, jonka avulla selvitetään pääomasijoituksen vaikutus yrityksen operatiiviseen toimintaan, sekä poistetaan nousu- ja laskusuhdanteiden rooli tutkimustuloksien taustalla.

Tutkimus osoittaa kohdeyrityksien kasvavan liikevaihdollisesti ja työntekijämääriltään selvästi nopeammin kuin heidän verrokkinsa. Tutkimus ei tue aikaisempaa näyttöä pääomasijoittajien kyvystä kasvattaa kohdeyrityksien operatiivista kannattavuutta. Vaikka operatiivinen kannattavuus ei ole keskimäärin noussut, pääomasijoittajat ovat pystyneet tehostamaan kohdeyhtiöiden käyttöpääoman tehokkuutta tarkasteluajanjakson aikana. Tätä ei olla saavutettu lisäämällä ostovelkojen määrää tai lyhentämällä varastojen kiertoaikaa, vaan pääsääntöisesti lyhentämällä myyntisaamisten kiertoaikaa. Tutkimus ei kuitenkaan löydä tilastollista riippuvuutta tehostuneen käyttöpääoman ja yrityksen operatiivisen kannattavuuden välillä. Tutkimuksen mukaan tärkein tekijä kohdeyrityksien operatiivisen kannattavuuden kasvun taustalla on ollut henkilöstön tuottavuuden tehostuminen, jota seurattiin vertaamalla yrityksien henkilöstökustannuksien suhdetta yrityksen myynteihin.

AVAINSANAT: Working capital, Leveraged buyout, Buyout, Private equity, Finland

Acknowledgments

Now is the moment when my almost six-year studies at the University of Vaasa come to its bittersweet end. I am pleased that the work is finished, and about the honors of graduation, while I miss the city and the fact that my friends from the university do not live in 200 meters range anymore. I can confirm that the years in the university is probably the best time in peoples' life, where I have made a bunch of new friends for the rest of my life.

I wish to thank various people and organizations for their contribution to this thesis project. First of all, I want to thank assistant professor Ville Tuomi for the supervision during the project. I am especially pleased with the interest that Ville showed in this thesis work where he was always available when I needed his guidance.

I would like to also express my sincere gratitude to the Vaasa Technical Society Association for their valuable financial support for the thesis, which was granted as a scholarship from the Reijo Ignatuis Scholarship Fund, making this thesis work possible. I am also in big debt of gratitude for the Finnish Private Equity Association since, without their help, the research work would not be possible in this timeframe. From the Finnish Private Equity Association, I want to especially acknowledge MR. Jonne Kuittinen who submitted the data for the thesis and worked as a contact person of the association during the project.

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1 INTRODUCTION

While it is rare to find an investment that constantly outperforms the public markets, (Harris, Jenkinson & Kaplan, 2014) estimates that each dollar invested in the buyout funds averagely returned at least 20% more over a fund's lifetime than a dollar invested in the Standard & Poors'500, constantly in the 1980s, 1990s, and 2000s. During the last three decades, the high performance has made buyouts a fascinating target for both institutional investors and academic researchers to examine how private equity firms had been able to increase the valuation of their portfolio companies. The topic is in special interest for the author since he highlighted the inconsistency in earlier evidence about buyout value creation at the literature review that he concluded as a part of his bachelor's degree at the University of Vaasa. In the literature review, he pointed out that there is a substantial amount of inconsistent evidence regarding the change in the company's operational profitability after buyout investments, and a lack of direct evidence about the role of working capital management behind the obtained results. To provide evidence about the role of working capital optimization as a channel of buyout value creation, this research aims to examine how working capital investment is changed during the post-buyout period. Furthermore, the research supports earlier findings by analyzing the change in employee ratios and operational profitability during the reference period. This research fills this gap in the existing literature by providing a transparent look at the Finnish private equity markets, implemented as a part of a master's degree at the University of Vaasa.

1.1 Purpose of the study and hypotheses

The purpose of the study is to find out how private equity has affected target companies' operational performance in Finnish buyout transactions. To explore the relationship between buyout targets and their operational efficiency, the research tracks the

magnitude and determinants of multiple different financial indicators during the three-year reference period. The final sample covers 84 Finnish companies that have undergone buyout transaction between 2014 and 2017. As the cash flow statements are not generally available for private companies, financial statements are used to perform a financial statement analysis. By examining the changes in accounting data, the research compiles a broad view of how the target's operational profitability, working capital efficiency, and personnel ratios have changed under the new ownership. To explore the changes in operational performance, all the figures are scaled with sales or assets to see how well the company is turning its operating resources into profits. To explore the effect of private equity, all the figures are compared with their respective peer group. This will reveal the impact of private equity behind the obtained results and remove the erroneous conclusions that could be done if there is a general up- or downswing within the industry.

1.1.1 Operational profitability

EBITDA is a financial indicator that indicates the amount of money left after deducting variable and fixed costs from turnover and is generally used to describe company's operational profitability. In this research, operational profitability is monitored with two different perspectives, EBITDA/sales (margin) and with EBITDA/total assets. The first one indicates how well a company is turning its sales to profit and the latter one indicates how effectively a company is using its assets to generate earnings. While the overall findings are contradictory about the relationship between the buyout transaction and increase in operational profitability, the evidence from Europe generally supports the view that private equity ownership improves target's operational profitability as shown by Bergström, Grubb & Jonsson (2007) and Achleitner, Braun, Engel, Figge & Tappeiner (2010). The same relationship is also expected in this thesis.

H_1: *Operational profitability of PE targets improve related to their respective peer group*

There are two reasons why EBITDA measures operational profitability in this research. At first, the aim is to study private companies where cash flow statements are not generally available. This makes EBITDA the closest alternative to examine the operational profitability in target companies. This also maximizes the number of variables since EBITDA is easily calculable from profit and loss accounts. Secondly, the use of EBITDA will make the results of the research more comparable with earlier empirical research, where EBITDA is generally used as the measure of operational value creation in the holding period. See e.g., Bergström, Grubb & Jonsson (2007) and Guo, Hotchkiss & Song (2011).

1.1.2 Working capital

To explore how private equity has affected target companies working capital efficiency, four different indicators are followed. The main indicator "working capital" refers to net working capital: inventory, accounts payable, and accounts receivable, while three other indicators are sub-components of the main indicator, used to provide a broader insight into the working capital management during the reference period. Working capital and its sub-components are scaled with sales, indicating how well a company can turn its operating resources into sales. Since high use of leverage is characteristic in buyout transactions, private equity firms are expected to release excess cash from operations to handle payments of the debt. Thus, it is expected that targets can generate more sales with less capital tied in their operations leading to improved efficiency of working capital during the reference period. However, the need for working capital is highly dependent on the industry that highlights the need for industry-specific research. The theories behind the expected hypothesis are introduced in the third section of the second chapter.

H_2: Working Capital efficiency of PE targets improve related to their respective peer group

Receivables and inventory tie working capital where the excess capital could be used to service the debt. Therefore, private equity practitioners should aim to squeeze the excess cash from operations, leading to an enhanced inventory and receivables efficiency. In theory, the high use of trade financing would eliminate the need for outside financing and make a company more profitable through decreased interest costs. However, earlier evidence has shown that high use of trade financing can be a sign of business problems, leading to a loss in cash discounts and therefore less profitable company. Moreover, the use of trade financing is relatively low in Finnish markets which is why a significant increase in trade financing during the reference period is not expected. The theories and earlier findings behind the expected hypotheses are introduced in the third section of the second chapter.

$H_{2.1}$: $Inventory/sales\ of\ PE\ targets\ decrease\ related\ to\ their\ respective\ peer\ group$

$H_{2.2}$: $Receivables/sales\ of\ PE\ targets\ decrease\ related\ to\ their\ respective\ peer\ group$

$H_{2.3}$: $Payables/sales\ of\ PE\ targets\ will\ not\ increase\ related\ to\ their\ respective\ peer\ group$

1.1.3 Employee effects

Increased operational performance is closely related to the company's personnel and productivity ratios. Simply, if company's operational performance increases, employee productivity should be expected to increase. Increased operational performance is expected in the research and therefore it is natural to expect that employee productivity would increase through an increase in sales or a decrease in companywide personnel

costs. The earlier findings behind the expected hypotheses are introduced in the fourth section of the second chapter.

H_3: *Personnel costs/sales in PE targets will decrease related to their their respective peer group*

$H_{3.1}$: *Sales/employees in PE targets will increase related to their respective peer group*

1.1.4 Determinants of operational profitability

The study forms multiple linear regression models to explain how the change in the target's operating indicators correlates with the change in operational profitability. While earlier evidence regarding buyout value creation is mainly focused only on the biggest transactions with significantly larger deal values, it is tested whether the size has a significant effect on the results which can be a possible selection bias for earlier empirical research. In theory, larger companies should have more capital tied into their operations and provide more potential for inefficiency in processes which is why a positive relationship between the target's size and operational profitability is expected. The empirical research behind the expected hypothesis is introduced in the fourth section of the second chapter.

H_4: *Larger companies provide better opportunities for profitability improvements in operations*

There is a substantial amount of earlier evidence indicating a negative relationship between working capital investment and a company's profitability, measured as different methods of return on assets (ROA) and return on investment (ROI). Therefore, a working capital percentage is expected to correlate negatively with the target's

operational profitability. The earlier findings behind the expected hypothesis are introduced in the fourth section of the second chapter.

H_5: $Decrease\ in\ Working\ Capital/sales\ leads\ to\ abnormal\ operational\ profitability$

Some critics claim that PE ownership cause wealth transfer from employees to owners, where enhanced operational profitability is achieved by minimizing the wages of employees (Davis, Haltiwanger, Jarmin, Lerner & Miranda, 2011; Davis, Haltiwanger, Handley, Jarmin, Lerner & Miranda, 2014). Thus, it is tested whether a negative correlation between wages and operational profitability is found.

H_6: $Decrease\ in\ avg.cost\ of\ employee\ leads\ to\ abnormal\ operational\ profitability$

The change in target personnel cost related to sales is also expected to correlate negatively with operational profitability. This is expected since EBITDA is calculated by deducting variable and fixed costs from turnover, where a company should generate more EBITDA when the personnel cost decrease. However, this is achieved only when a company can increase its employee productivity.

H_7: $Decrease\ in\ Personnel\ costs/sales\ leads\ to\ abnormal\ operational\ profitability$

1.2 Structure of the study

This study is structured as follows. In the first chapter, the research background is briefly introduced with a rationale for the selection of the research area. Moreover, the chapter introduces the aim and objectives of the research and its structure. The second chapter

represents the theoretical framework behind the research, aiming to introduce the asset class and earlier empirical research as an entirety. Furthermore, the chapter introduces the characteristics of private equity markets by focusing especially on the Finnish markets. The third chapter introduces and discusses the methods and data behind the obtained results allowing readers to evaluate the reliability and validity of this research. In the fourth chapter, the findings of the research are presented and compared with expected hypotheses and earlier empirical evidence. Chapter five concludes the work and highlights the scope for future studies in the same research area. The last chapter presents the literature used in the research.

2 THEORETICAL FRAMEWORK

Private equity (PE) is commonly misunderstood, and people often tend to view that PE considers only the smallest business angel investments that are commonly presented in the media. However, PE covers the financing required for different growth stages during the company life cycle, from the smallest seed investments to the largest buyout investments. The goal of this chapter is to introduce the asset class as an entirety, to answer the question "what private equity is". Secondly, the chapter introduces the characteristics of PE markets by focusing especially on the Finnish markets. After this, the different value creation levers of PE investments are introduced, followed by the introduction of the concept of working capital that explains why efficient working capital management is often considered to be one of the most important aspects behind successful buyout investment. The last section of the chapter presents the earlier empirical evidence about the company's post buyout operational performance and working capital efficiency.

2.1 Private equity industry

PE is a professional investment activity targeted at private companies. This generalization comprises multiple possible exceptions, which has led to criticism in recent years. For instance, acquisition can be structured as convertible debt, acquisition can concern a public company that is taken private after the acquisition, or acquisitions can concern new private instrument while the company remains listed. Even though all the exceptions, the basic definition remains generally true at a majority of the world's PE transactions. (Fraser-Sampson, 2010, pp. 1-14.) In connection with the investment, current owners relinquish their ownership to the PE investor often becoming co-owners in the company. As a result of the arrangement, the company receives financing that is generally implemented as equity based. Therefore, PE investment can be considered

when a company requires financing to achieve short- and long-term goals, when a company wants to sell a part of their business to share the business risk, and when a company is at the exit phase. PE investors work as temporary owners in a company, aiming to increase a company's value during the holding period to sell the shares with profit at the exit. PE investors can offer expertise in various fields for the company, where the experience and knowledge of pitfalls and shortcuts might be crucial, for example, to enter the new markets. Thus, if an investor can help a company to operate more efficiently, a smaller stake in a company may be more valuable than a 100 percent stake in a company without the investment. In principle, the investment is not repaid to the investor during the investment. Due to this, the investor shares the business and ownership risk with all the shareholders and receives a return for the investment if the company's value has increased during the holding period. (Talmor & Vasvari, 2011, pp. 279-280; Iverson, 2013, pp. 103-113.)

Most of the PE investments are executed by PE firms that raise equity capital through a PE fund. This fund is legally a limited partnership, which contains two parties: General Partners (GP) and Limited Partners (LP). PE firm acts as a GP for the fund and makes all the necessary decisions and actions regarding investments. LP's act as an outside investor, while providing most of the capital for the fund. Moreover, LP's pay management fee for GP's which is typically between 1.5 to 2.5 percent per annum of assets under the management, plus a "carried interest" which can be as high as 20% of total return over the hurdle rate. This contractual relationship allows investors to provide capital for PE specialists which they will invest in attractive businesses. After providing the capital, LPs do not have a voice at all in the investment process as the basic terms of the fund agreement are followed. Typical terms for the fund agreement define how much fund can invest in one company and the type of the companies that fund invest in. (Kaplan & Strömberg, 2009.) In general, PE fund is a closed-end fund with a defined lifetime of around ten years. Due to the limited partnership structure, withdrawals are not generally possible or limited during the fund's lifetime. Therefore, PE funds are long-term investment vehicles for investors such as private and public

pension funds, insurance companies, as well as wealthy individuals, who can afford to give up short-term liquidity in a chance for the promise of higher long-term returns. (Iverson, 2013, pp. 103-113.)

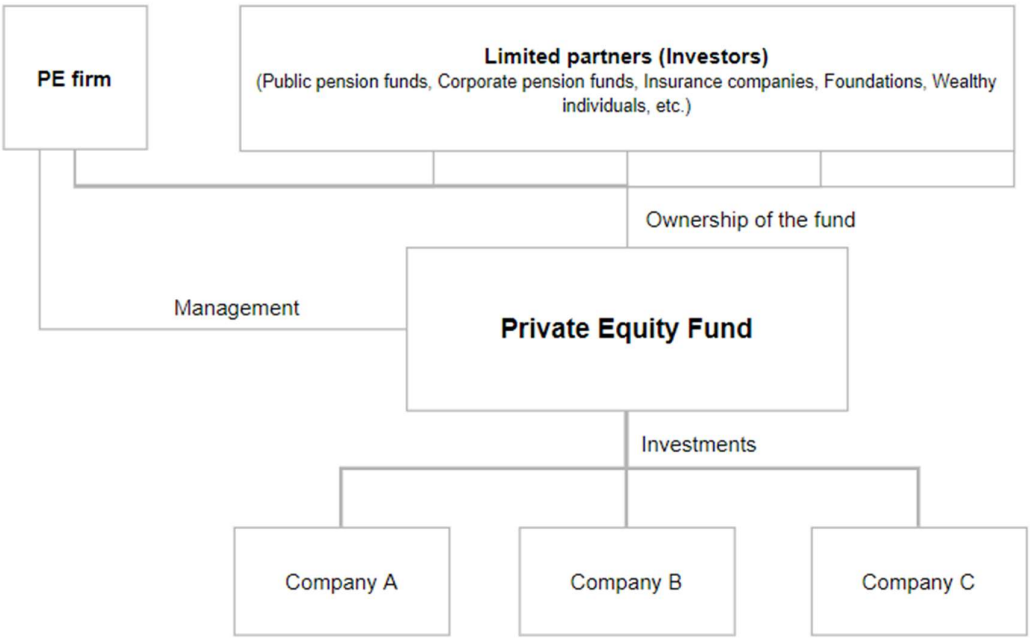


Figure 1. A limited partnership as a private equity investor (adapted from Talmor & Vasvari, 2011, p. 22).

The division between different PE investments has traditionally been made between the buyout and venture capital, with two major differences: buyout is usually made through the acquisition of a major share in a mature firm, while venture capital concern younger and growing companies usually without obtaining majority control in the target company. Secondly, a buyout is generally executed with their equity and debt, whilst venture capital investments generally use only equity. (Fraser-Sampson, 2010, pp. 1-14.) In addition to these traditional groups, growth capital is often considered. Growth capital refers to the investments where a relatively mature company is looking for primary capital to accelerate the business, enter new markets, or expand and improve the operations. Simply, it is the intermediate stage between the venture capital and buyout transactions. Furthermore, venture capital can be divided into three

subcategories: seed, start-up, and expansion capital, based on the phase of the target company. The rest of the investments are a special situation group including rescue/turnaround and replacement capital, where the first one refers to the financing of an existing business with financial distress and the latter one is minority stake purchases from another PE firm or other shareholders. (Iverson, 2013, pp. 103-113.)

Figure 2 illustrates the differences between the PE fund strategies with a basic tool of business analysis, product life cycle (PLC). The fundamental rule of the company's PLC is that cash flows should steadily increase while moving to the right in time at the PLC. In the early-stage company's cash flows are only modest where a company is still on the development level. When moving right to the "growth" stage, cash flows increase, while the overall cash flow is likely still strongly negative. Once the company achieves the "mature" stage, both cash flows and profitability should turn positive. (Iverson, 2013, pp. 103-113.)

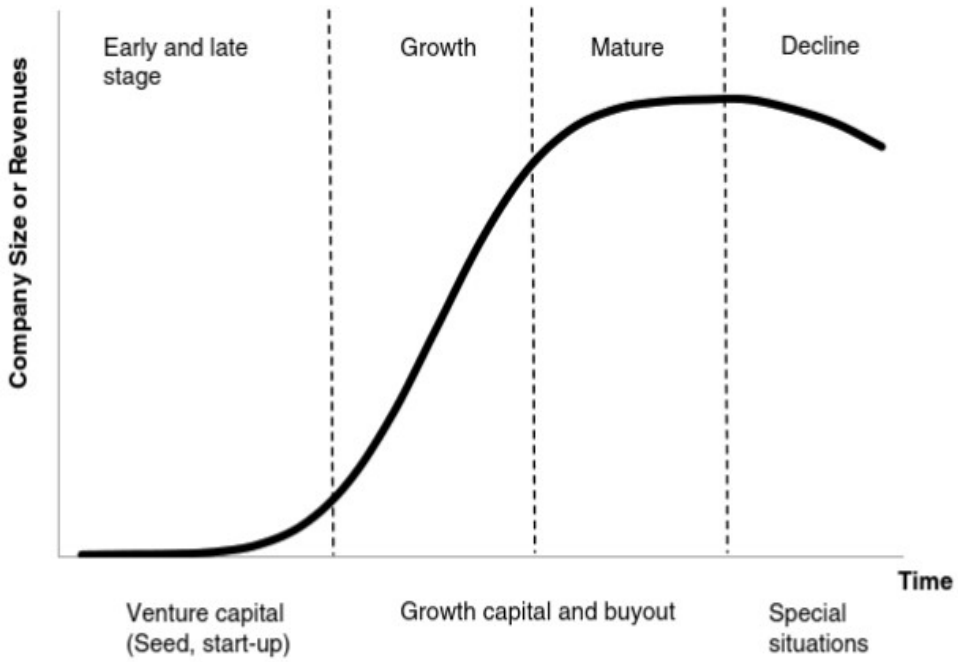
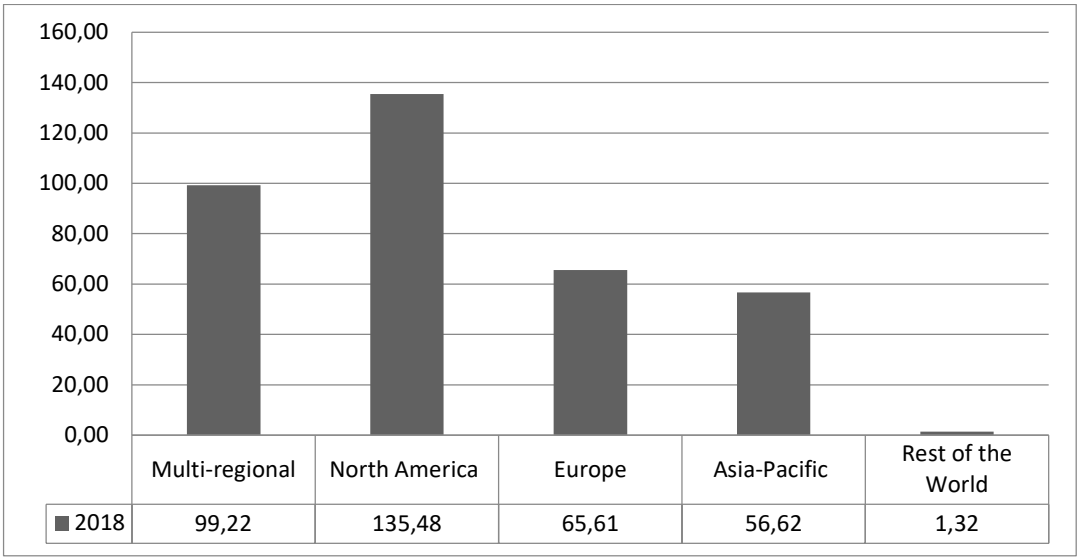


Figure 2. Private equity type by PLC stage (Iverson, 2013, p. 105).

As figure 2 indicates, buyout investments are mainly targeted to companies at the mature and sometimes in the decline stage of their relevant PLC. In contrast, venture capital concerns younger companies from the left end of the PLC. Consequently, the value creation methods also differ significantly related to the type of PE investments. The target for buyout investment is to improve the company's profitability through more efficient processes where mature companies can provide such opportunities from already established business processes. The goal for venture capital investments is to support the company's growth where companies are young and cash-hungry and free cash flows are required to support the growth. Furthermore, mature companies are safer targets than young companies which are more likely to fail and exhibit, which is why venture capital investments often need 3-4 rounds of funding to share the risk of investment. (Fraser-Sampson, 2010, pp. 2-14.)

The majority of PE activity to date has occurred in the US and Europe. According to the Private Equity International Fundraising Report (2019), total PE fundraising in 2018 amounted to 358.3 billion U.S dollars from which 73 % was raised by the regional funds that invest into companies inside the funds home country and 27% by the multiregional funds which invests globally. The biggest regional group North America accounts for 38% of the total fundraising in 2018, followed by European funds (18%), and Asia Pacific (16%), while the fundraising for emerging markets hit a 10-year low in 2018, with just $1.32 billion raised in the MENA, Latin America and sub-Saharan Africa regions combined (Table1). The U.S. headquartered firms accounted for 63 percent of the global fundraising between 2012 and 2018, being the biggest operator in the market.

Table 1. The proportion of capital raised by geographic focus (adapted from Private equity International, 2019).



2.1.1 Private equity in Finland

The report of Finnish PE activity (Finnish Venture Capital Association, 2020) categorizes PE investments between venture capital and buyout transactions. Table 2 represents the results of the report, by illustrating the total value of PE funding in Finnish companies between 2013 and 2019. The year 2018 generated the highest investment value with over 1.5 billion €, where buyout investments accounted for 1,3 billion € and VC deals 229 M€. In 2019 the total value of PE investment was 1,13 billion €'s, indicating a slow-down of 35% from 2018.

Table 2. Private equity activity in Finland (adapted from Finnish Venture Capital Association, 2020)

Buyout	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Total value M€	721	622	950	757	543	1320	720
Nbr of investments	61	85	77	69	63	107	68
Average Size M€	11.8	7.3	12.3	11.0	8.6	12.3	10.6
Venture Capital							
Total value M€	128	123	109	132	141	229	293
Nbr of investments	159	202	169	169	136	156	176
Average Size M€	0.8	0.6	0.6	0.8	1.0	1.5	1.7
Total							
Total value M€	849	745	1059	889	684	1549	1013
Nbr of investments	220	287	246	238	199	263	244

Venture Capital investments hit an all-time high in 2019, where 176 Finnish companies received investment with a total value of 293M€. This leads to the average deal size of 1.7 M€ which is over two times as big as the average deal size in 2013. This is also noticed in the report, which states that the average size of Venture Capital investment has especially increased due to the quality companies that have received expansion capital, where the average deal size of these companies has increased 111% from the year 2018. Buyouts do not share a similar pattern, and the changes in average deal size can be generally explained by the cyclical nature of the business.

Foreign PE investors made 517 M€ worth of investments in Finnish companies in 2019, showing a decrease of 48% from the year 2018. This explains the negative growth in the whole market since the value of domestic investments remained roughly the same. Furthermore, international PE firms seem to participate only in the largest deals with an investment value of 337M€ in just 10 deals, leading to the average deal size of 33,7M€. In contrast, the average deal size for domestic investors was 5.9M€ in 2019. Finnish buyout investors are mainly investing in domestic companies, where only 5 investments were made to foreign companies in 2019. Finnish venture capitalists seem to operate

more globally, and 47 of the total 213 investments were targeted to foreign companies. From the industry point of view, buyout practitioners seem to target a variety of different industries, where the largest share was addressed to B2B product/service providers with 43% share of the deals, followed by Consumer goods and services (18%), and ICT (14%). The most targeted sector for the venture capitalist in 2019 was ICT with a 50% share. Finnish PE funds gathered a total of 919M€ worth of capital in 2019, which is a 131% increase from the year 2018. Despite the strong fundraising in 2019, the uncertainty caused by the COVID-19 pandemic will undoubtedly slow the market in the following years.

2.2 Buyout

As introduced, a buyout is one strategy for PE company to invest its capital. Buyout investments are often also referred to as leveraged buyouts since the share of outside debt used in the acquisition can be as high as 60 to 90 percent. As the amount of own equity in the investment is small (related to debt), the potential return is significant. At the same time, a high leverage level increases financial risks and might result in big losses for PE firms, if the future cash flows of the company are not high enough to cover the payments from the debt. (Kaplan & Strömberg, 2009.) However, the possibility to use the high leverage levels makes buyouts attractive for PE practitioners, while the similar use of leverage is not generally possible in smaller venture capital investments, where free cash flows are required for a company's growth.

2.2.1 Deal types

Different types of transactions can be classified as buyouts. These leveraged transactions can be further divided into four different groups depending on the characteristics of the acquired company: **private-to-private** deals refer to buyouts of non–publicly traded firms, **divisional buyouts** refer to the acquisitions of divisions from

larger corporations, **secondary deals** are the buyouts of a firm that were already owned by another a PE firm, and **public-to-private** transactions include delisting of a public corporation. (Lerner, Sorensen & Strömberg, 2011.) In their research, Kaplan & Strömberg (2009) presents the characteristics of global buyout transaction between 1970 and mid-2007. The result shows that buyout activity has increased dramatically during the period. The combined enterprise value between 2005 and mid-2007 accounts for roughly 30 percent of the transactions and 40 percent of the total transaction value of the reference period. Large public-to-private transactions dominated the business in the 1980s and accounted for about half of the total combined enterprise value for the era. After the junk bond collapse in the late 1980s, large public-to-private transactions decreased substantially, accounting for only 9% of the total transaction value from 1990 to 1994. During the following years market has grown steadily and acquisition of the public companies and secondary buyouts has become more popular. About two-thirds of the $1.6 trillion transaction value at the PE boom between 2005 and mid-2007 was created by these types of buyouts. However, the largest source of deals during the sample period is divisional buyouts, where large corporations are selling off divisions. (Kaplan & Strömberg, 2009.)

Table 3. Global Leveraged Buyout Transaction Characteristics across time (adapted from Kaplan & Strömberg 2009).

% of combined enterprise value	1985-1989	1990-1994	1995-1999	2000-2004	2005-6/30/2007	1970-6/30/2007
Public to private	49 %	9 %	15 %	18 %	34 %	27 %
Private-to-private	31 %	54 %	44 %	19 %	14 %	23 %
Divisional	17 %	31 %	27 %	41 %	25 %	30 %
Secondary	2 %	6 %	13 %	20 %	26 %	20 %
Others	1 %	0 %	1 %	2 %	1 %	0 %

2.2.2 Buyout Value generation

The general target for buyout investment is to buy a company with leverage, execute a value creation strategy during the holding period, and resell the company with higher value at exit. Therefore, the main target for GPs is to find potential companies that have such qualities as specific ownership problems or ineffective processes and challenge the status quo in a firm, to sell the target company with profit. Historically, buyout value creation is analyzed from the investors' perspective and the success of the investment is calculated through the difference between equity value in entry and exit: (Berg & Gottschalg, 2005.)

$$(1)\ \text{Value Generation} = \text{Equity Value}_{\text{exit}} - \text{Equity Value}_{\text{entry}}$$

Furthermore, the formula of value generation can be formed into the accounting fundamentals: (Berg & Gottschalg, 2005.)

$$(2)\ Equity\ Value = Valuation\ multiple \times Revenues \times Margin - Net\ Debt$$

Thus, factors corresponding to the equity value can be distinguished from financial statements. Valuation multiple refers to changes in the valuation of the business, generally calculated as a relationship between enterprise value (EV) and earnings before interests, taxes, depreciation, and amortizations (EBITDA). In theory, company valuation should correlate directly to the financial performance of the company. However, so-called "value capturing" factors like higher expectations of future performance for the company or entire industry, can increase valuation even when financial performance has not been changed. In contrast, value creation can be achieved through improvement in revenues and operating margins, which are directly linked to the change in the financial performance of the company. Overall, these various value generation channels can be categorized as direct- and indirect value creation levers. When adding the value

capturing factors, the basic formula of value generation can be introduced: (Hannus, 2015.)

$$\text{(3) Value Generation} = \text{Value Creation} * (\text{Direct} + \text{Indirect}) + \text{Value Capture}$$

2.2.2.1 Direct value creation

The direct value creation wraps together financial engineering, operational engineering, and strategic refocus. These factors are directly linked to the company's profitability and are highly dependent on the GP's ability to manage the company efficiently. Financial engineering and operational engineering can be distinguished from the company's balance sheet in terms of financial statement analysis, where the changes affect the margins relatively rapidly. The strategic drivers can be noticed when examining the key figures in medium- and long-term analysis. (Hannus, 2015.)

Financial engineering

Berg & Gottschalg (2005) state that "financial engineering is one of the most acknowledged ways to increase the valuation of a portfolio company". In detail, the term "financial engineering" indicates the optimization of capital structure and minimization of the cost of capital. Findings from (Cohn, Mills & Towery, 2014) support this view by showing that a high level of leverage and debt used in transactions, reduces the number of tax payments i.e., create so-called tax shields. However, the study states that exploiting tax shields is the main purpose of buyouts, which is inconsistent with Berg & Gottschalg that highlights the multiple different value creation levers.

Hannus (2015) presents multiple different mechanisms for how a PE firm can improve a company's capital structure. At first, PE firms have a wide contact network which often results in better terms for outside debt. Due to multiple firms in a portfolio, PE firms can

benefit from economies of scale in debt markets by negotiating better terms for all their portfolio companies simultaneously. Moreover, PE firms operate continuously in debt markets and negotiate deals when the cost of debt is low and stay away from overheated debt markets. Secondly, PE firms are continuously optimizing the capital structure of their portfolio companies and implement multiple different debt instruments and creative finance to minimize the cost of debt financing. This financial restructuring leads to reduced tax payments, where loan interest is used to reduce taxable earnings. Furthermore, Hannus state that PE firms can achieve "free profits" when effective capital markets are lacking. In such situation, PE firms can work as a substitute for weak capital markets and can target their financing only on the most profitable companies that require capital for growth.

Operational engineering

To achieve gains through operational improvements, PE firms use their industrial and operational expertise to identify targets with ineffective processes and implement the value creation plan with strategic changes, cost-cutting, and repositioning. To find the most potential targets, the biggest PE funds organize themselves around certain industries and hire professionals with operating backgrounds. A cornerstone for operational engineering is to increase asset utilization, where PE firms aim to improve productivity and efficiency in target companies by rationalizing both the fixed and current assets. (Kaplan & Strömberg, 2009.) The main goal is to find an optimal level of investment in current assets with an optimal mix of long- and short-term financing. While a company can quite easily reduce its investment from fixed assets through leasing contracts or by renting some of its manufacturing equipment, the same kind of actions is not available for current assets. This leads to the notion, where the success of PE investment can be heavily dependent on management's ability to administrate the different operational working capital components: inventories, accounts payable, and accounts receivable. (Filbeck & Krueger, 2005; Berg & Gottschalg, 2005)

Hence, the main task for working capital management is to maintain the optimal working capital and use cash efficiently in daily operations. This releases the capital tied up to inefficient processes, leading to free cash flows and higher firm value (Kandpal, 2015). Earlier studies documented that PE ownership improves asset allocation efficiency by selling off underperforming assets while keeping operating profitability constant. See e.g., Muscarella & Vetsuypens (1990) and Lichtenberg and Siegel (1990). Similar findings are also presented in more recent studies showing that PE firms will more likely close establishments that are underperforming and are less likely to open new non-productive establishments. See, Davis et al. (2011) and Davis et al. (2014).

Strategic refocus

In connection to investment, a new strategy is often implemented. According to Rogers, Holland & Haas (2002), PE investors have a competitive advantage over their peers at the public firms when a new strategy is implemented. Executives on public firms are more guided by the long-term strategic missions, while PE practitioners are focusing to maximize the net present value of cash flows i.e., maximizing the returns for the relatively short holding period. This helps a company to focus on its core activity and facilitates the implementation of a new strategy. Due to this, a company can find its most important business profit drivers, leading to the redefinition of a more accurate growth strategy. Therefore, strategic refocus can also play a substantial role in value creation when examining a company's profitability in medium- and long-term view.

2.2.2.2 Indirect value creation

Indirect value creation levers do not directly affect the financial performance of the portfolio company. Instead, these levers affect company valuation through primary levers, impacting multiple direct value creation drivers simultaneously. The indirect levers of value creation can be distinguished between governance engineering and cultural engineering. (Hannus, 2015.)

Governance engineering

Governance engineering refers to the way how PE firms manage their portfolio company. Berg & Gottschalg (2005) states that the basis of the value creation through governance engineering is a decrease in agency costs i.e., buyout arrangement decreases the number of hidden agendas between management and owners. To minimize agency cost, PE firms often demand investments from GPs in portfolio companies to make sure that management risk is not only positive but also negative as well (Kaplan & Strömberg, 2009). Since investments are made to private companies, equity cannot be realized until the target company is sold. Due to this, owners are not aiming only at short-term returns as the equity is illiquid. Furthermore, PE firms often reinforce management with industry professionals. Findings from Guo et al. (2011) present that, PE firms actively replace the CEO of the portfolio company. In their study of 192 buyouts executed between 1990 and 2006, around a third of the target firms replaced the CEO inside the first-year post-buyout. Furthermore, the study states that PE firms are active in the governance of the portfolio firms, holding an averagely of half of the board seats.

Cultural engineering

Cultural engineering refers to a change in organizational culture that PE firms implement during the holding period. This is also called a “parenting advantage”, referring to how PE firms implement effective working manners to portfolio companies. For instance, performance standards are often higher after the transaction, decision-making is based on more accurate data, and budgets are identified for longer periods. Overall, various methods are often applied to make the company work more efficiently. Furthermore, centralized ownership connected to buyout transactions results in more closer monitoring and control of operations which accelerates decision-making. (Hannus, 2015.)

2.2.2.3 Value Capture

As introduced, value capture raises the valuation of the target firm without affecting the actual financial performance of the target. Value capture differs fundamentally from other levers of buyout value creation, where the value capture represents the part of the difference between the entry and exit phase that cannot be explained by increased profitability. Generally, gains are based on an increase in overall industry or market appreciation and timing of the business cycles. Berg and Gottschalg (2004) represent multiple arbitrages that tend to generate “free” value in buyouts. At first, PE firms often have private information of the target companies and industry, which can result in a more accurate valuation at the entry. Secondly, PE professionals often have superior deal-making capabilities which can effect on company’s valuation at the exit- or entry phase. Hence, the industry-focused expertise and superior deal-making capabilities combined with the overall industry or market appreciation can alone bring substantial profit for PE firms even when the actual performance of a portfolio firm has stayed at the same level.

2.3 Working capital

Working capital describes the amount of capital that is tied up in the daily operations of a company i.e., it shows how much equity or outside financing is required to run the company’s daily business. As mentioned earlier, the high debt levels generally used in buyout transactions require strong cash flows to cover the expenses of the debt. To generate cash flows, buyout practitioners aim to provide free cash flows from well-established business activities by increasing asset utilization. Since current assets can consider a substantial share of a company’s assets, the success of buyout investment can be heavily dependent on management’s ability to rationalize the use of different working capital components: inventories, accounts payable, and accounts receivable.

The need for working capital depends on the time lag between the purchase of inventory and receiving cash from a customer. During this period, a company must finance its daily processes before receiving the payment from a customer. This period is called the operating cycle which can be divided into two different stages: inventory holding period and receivables collection period. The **inventory holding period** includes all the steps from acquiring an inventory of raw materials and semi-finished products from suppliers to the sale of the finished product. The second period, the **receivables collection period**, refers to the time gap between the sale of finished products and receiving cash from customers. Since the company must finance its operations, the faster company can "push" its items through the operating cycle, the less financing is required, and free cash flows can be achieved. (Sharma, 2008, pp. 24–43; Sagner, 2010, pp. 1–7.)

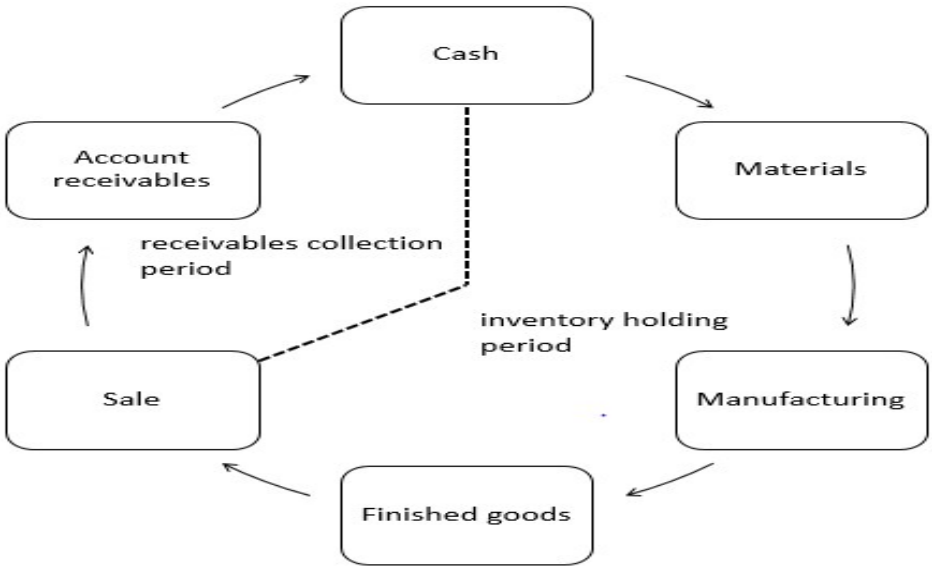


Figure 3. Working capital operating cycle (adapted from Sharma, 2008, p. 30).

Hence, working capital is an accounting metric that indicates the average amount of capital required to cover a company's expenses during the operating cycle. First, two concepts of working capital need to differ: gross concept and net concept. The gross concept describes the total amount of liquid capital that is committed to the company's operational business i.e., gross concept equals to company's current assets. The changes

in gross working capital generally reflect the changes in the scope of the business. The more common and better definition related to this research is the net working capital, which indicates the difference between a company's liquid resources and current liabilities. Further, working capital can be divided between operational working capital and financial working capital. Operational working capital includes accounts from the balance sheet that are directly linked to the operations of the company: inventory, accounts receivable, and accounts payable, while the accounts that are not employed by operational working capital are financial decisions, and therefore part of financial working capital. (Hill, Kelly & Highfield, 2009; Talonpoika, 2016.) In this research, the term "working capital" refers to the net operating working capital, which can be calculated from the balance sheet by reducing the accounts payable from the sum of inventory and accounts receivable: (Sharma, 2008, pp. 24-43; Filbeck & Krueger, 2005.)

(4) $$Working\ Capital = accounts\ receivable + inventory - accounts\ payable$$

The formula indicates how much equity or outside financing a company's daily operations require. In principle, the smaller the working capital is, the better company operates. However, the need for working capital varies substantially between industries, where an increase in working capital can simultaneously be an appropriate increase in material inventory or a sign of a business problem. Working capital can also be negative if a company can receive payments from customers before payments for their suppliers. (Filbeck & Krueger, 2005.) Table 4 works as an overlook to the most important accounts on the balance sheet regarding working capital. As earlier stated, working capital describes the amount of capital that is tied up in the daily operations of a company, where the need for outside funding is constantly related to the use of three different working capital components.

Table 4. Working capital in the balance sheet (adapted from Sagner 2010, 2).

Cash	Xx	**Accounts payable**	**Xx**
Short-term investments	Xx	Notes payable	Xx
Accounts receivable	**Xx**	Accrued expenses	Xx
Inventory	**Xx**	Taxes payable	Xx
Prepaid expenses	Xx		
Total Current Assets	Xxx	Total Current Liabilities	Xxx

2.3.1 Receivables management

Efficient management of receivables is essential for a successful company. Receivables are a part of a company's current assets that arise when a company sells its products or services with credit terms. Receivables can be classified as assets because they are expected to generate cash in the future. Moreover, the use of receivables can boost a company's sales through the payment period which lowers the customer's threshold to acquire the product. The payment period is attractive especially in business-to-business deals, where credit deals establish the use of account payables as a source of short-term financing. Furthermore, when a customer is credited through receivables, it also helps a company to establish long-term relationships with customers. On the other hand, trade receivables can also be a problem for a company. First, account receivables tie working capital, where the company needs to finance its operations during the receivables collection period. Secondly, the payment period always includes the risk of credit loss which is why creditors should invest its customer before granting the payment period. (Martínez-Sola et al. 2013; Giannetti, 2003.)

Overall, receivables play a major role in terms of capital commitment and active management of receivables should be one of the major tasks for a company's financial management. Poor receivables management can lead to business failure if a company is not able to collect the cash from receivables when obligations come at due. The efficiency of receivables management can be viewed through the receivables collection period, indicating the average of days the firm requires to collect the cash from the sale.

The reference level of the figure is determined by the average prevailing in the industry. Therefore, the change in the general market situation, customers, solvency, payment terms, seasons, etc. might influence the result, leading to industry-specific figures, that can be used when examining the average collection period within the industry: (Sharma 2008, 76-80.)

$$(5)\ Receivables\ Collection\ Period = \frac{Accounts\ Receivable}{Sales}\ x\ 365$$

The shorter the collection period is, the quicker cash from the sales is received. Long cycle time may indicate problems with credit sales and more assets are tied into the company's working capital. Therefore, the goal for receivables management is to minimize the cycle time without losing sales. A company can shorten the cycle of trade receivables by tightening its payment terms and by streamlining its debt collection. However, the terms must be determined with the respect to the average payment terms in the industry, where too strict terms can result in a loss of customers (Kallunki 2014.) To make receivables collection faster, companies often grant cash discounts. A cash discount is generally an expensive way to shorten the collection period since external financing is usually cheaper than the discount in the bill. For instance, 14 days - 2%, refers to the cash discount where a customer may deduct 2% of the invoice if the payment is made within 14 days from the date of the invoice. The other way to improve the collection period is factoring. Factoring refers to a deal, where a company sells all or part of its trade receivables to a financial institute. A company can therefore decrease the credit risk where the risk is transferred to the factoring company. Due to this, the company does not have to wait for cash from the sale which lowers the capital tied in working capital. However, such deals might be costly, which is why the seller must estimate the cost of selling the invoices where the cost should not exceed the benefit from receiving the payment before the due date. (Martínez-Sola, García-Teruel & Martínez-Solano, 2014; Sharma, 2008, pp. 34-35.)

2.3.2 Inventory management

Inventory is a part of current assets that refers to the combination of raw materials, work in process, and finished goods that the company held on the balance sheet date. Depending on the situation, similar goods can be either be part of fixed assets or inventory. The decisive factor is the purpose for which the goods are used. The assets acquired for sale are calculated as current assets, while the assets used in the manufacturing of the products are counted as a fixed asset. (Sagner, 2010, pp. 111-131.) Operations always require some level of inventories. However, the importance of inventory management varies substantially between industries. Efficiently managed inventory is generally one of the key aspects in manufacturing, retail, and wholesale, whereas inventory management is not as crucial for financial institutes and other non-manufacturing companies that do not require similar stocks for smooth operations. In addition to industry, the amount of inventory is also dependent on the quality of the products. Companies often keep larger stocks when materials are highly engineered, or when there are only a few suppliers in the market. Inside these industries, companies tend to keep higher inventories to reduce the risks of shipments. (Emery & Marques, 2011.)

There are two main types of costs related to inventory management. The first one, **ordering cost**, refers to all cost that arises from acquiring inventory: negotiation costs, placing costs, receiving costs, as well as all the cost from handling the orders. A company can minimize the ordering cost by purchasing bigger quantities, which will reflect negatively to the other type of cost related to the inventory management, **storage costs**, that include all the capital employed by warehouses. Therefore, an increase in the storage cost decreases the ordering cost and vice versa. Economic Order Quantity (EOQ) can be used to minimize a company's inventory costs by calculating the optimal order quantity. The optimal order quantity is achieved when the sum of ordering cost and storage cost is at a minimum. Figure 4 visualizes the relationship between order size and storage cost. (Niskanen & Niskanen, 2016, pp. 379-387)

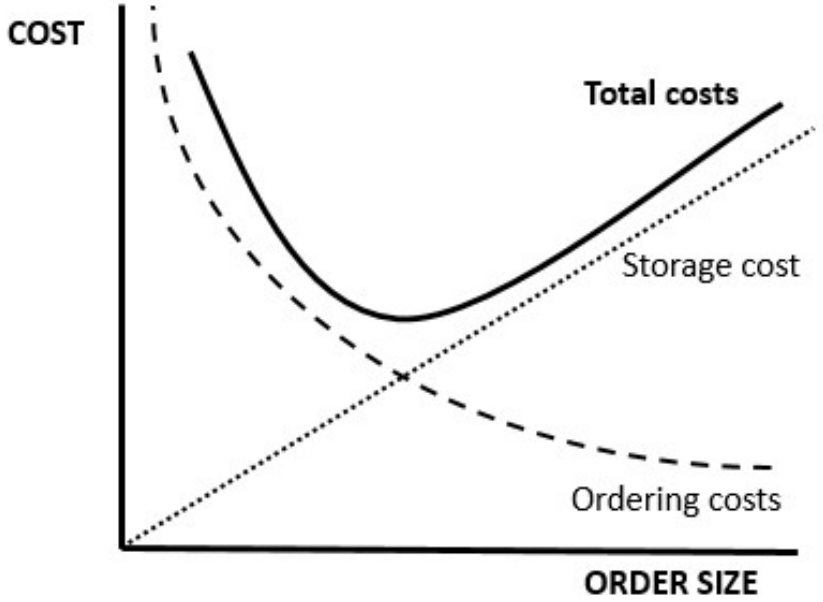


Figure 4. Economic Order Quantity (adapted from Niskanen & Niskanen, 2016, p. 381).

The main goal for inventory management is to secure the required level of service and ensure that demanded products are available as soon as they are needed. This should be done by minimizing the capital tied into inventories where backup stocks do not generate any revenue. Inventories are born from two different aspects. Firstly, some inventory is always born from the ongoing operations. These inventories are buffer stocks that companies often aim to minimize to improve profitability. The minimization of such stocks has had a major impact on the development of inventory management, where lower inventory levels require more frequent, regular, and smaller deliveries of materials from suppliers and subcontractors. Secondly, inventory work as a safety net ensuring the company's ability to continue smooth operations during unexpected events. For instance, the company is never able to forecast its sales with 100 percent accuracy, where inventories for finished goods are used to smooth the sales fluctuations. Inventories of raw materials are used to ensure the level of service if the supply of raw materials would fail. Consequently, inventory of semi-finished products ensures the supply if the company's operations would fail. Furthermore, the inventory

can be explained with volume discounts, price fluctuations, or by securement of the service level. (Niskanen & Niskanen, 2016, pp 379-387; Sharma, 2008, pp. 162-186.) From the working capital point of view, the effectiveness of inventory management can be examined through an inventory conversion period that indicates the average lag between the purchase of inventories and the sale of finished products: (Sharma, 2008, pp. 76-80.)

$$(6)\ Inventory\ Conversion\ Period = \frac{Inventories}{Cost\ of\ Goods\ sold}\ x\ 365$$

The inventory conversion period is an effective measure of operational efficiency inside the industry and is a key part of a company's strategic development. The negative relationship between profitability and inventory conversion period is found out in many studies (see e.g., Bellouma, 2011; Deloof, 2003) Thus, faster inventory conversion reduces capital employed by a company's operations, resulting in better profitability.

2.3.3 Payables management

Accounts payable is the most important liability regarding working capital management, indicating the monetary value of goods and services that the company has acquired on credit terms. Accounts payable have high importance during the inventory period where delaying payment from inventories can be a free source of finance, especially if the company can receive cash from their sales during the payable period (Sagner, 2010, pp. 131-150.) However, if a creditor is providing a cash discount, a buyer should use it if the cost from external financing is higher than the discount. In practice, the cost that arises when the company is not using cash discounts is substantial, which is why companies should always use the cash discount if it is provided. According to Niskanen & Niskanen (2016), only 67 percent of small and medium-sized Finnish companies are always using the cash discount when it is available. The plausible reason for the result is the lack of income financing where a company must rely on trade financing even when it would be more profitable to use the cash discount provided. Therefore, to maximize the use of

payables, a company should always pay its liabilities during the cash discount period, or at the end of the payment period if a cash discount is not provided. (Niskanen & Niskanen, 2016, pp. 394-400.)

Payables are the major source of short-term financing in many countries, while the use of payables in Finland is relatively small. The share of payables on the company's total assets in Finland is biggest at wholesale (23%) and retail (15%), while the average share in all industries is around 6%. In contrast, the average share of payables in all industries in France is 23%. The difference can be generally explained by different payment terms and the different business cultures. The average payment period in Finland is 24 days in the public sector and 27 days in the private sector, while the average periods in Europe are 65 and 56 days. (Niskanen & Niskanen, 2016, pp. 394-400.) The efficiency of payables management can be viewed through the average payment period, indicating how many days the company requires to pay its debts. When the average payment period is longer than the receivables collection period, the company receives more financing from its suppliers than it is giving to its customers. However, the result should be related to billing practices in the industry and overall market conditions. Due to this, average payment period, like receivables collection period, and inventory conversion period, should be used when examining the average periods within the industry. The ratio can be calculated as follows: (Sharma, 2008, pp. 76-80.)

$$(7)\ Average\ Payment\ Period\ = \frac{Accounts\ Payable}{Cost\ of\ Goods\ sold}\ x\ 365$$

The utilization of payables as a source of financing is more common in small and economically weaker companies than in large and profitable ones. Market interest rate seems also to increase the use of payables financing, where biggest companies are increasing the usage of trade financing when the rate is high (Niskanen & Niskanen, 2016, pp. 394-400; Bellouma, 2011.)

2.3.4 Working capital measures

Working capital can be measured from many different points of view. Managers can use different working capital indicators in decision making while investors can use different indicators to facilitate investment decisions. The different types of measures can be divided by the basis of the aspect of working capital they measure. The approach is adapted from the study by Talonpoika (2016), where the division is made between net working capital measures, operational working capital measures, and financial working capital measures. In this research, the division is made between financial measures and operational measures.

2.3.4.1 Financial measures

Financial measures of working capital are generally used in financial statement analysis, where a company's gross working capital is measured to see the company's liquidity. Liquidity indicates a company's ability to pay its short-term debts without outside financing and can be derived from the balance sheet by calculating the ratio between current liabilities and easily convertible assets. Liquidity management is crucial for every organization since a company might eventually go bankrupt if it is not able to pay its current obligations. However, an overly liquid company has a lot of low-yielding short-term investments and cash, which lowers its return on capital. The excess liquidity should be invested in profitable investments or distributed to shareholders in the form of dividends. Excess liquidity can also be used to repay long-term liabilities if a company needs to lighten its capital structure. (Kallunki, 2014, pp. 124-126.) Liquidity measures are easy statistic ratios that make them useful and easily achievable in financial statement analysis. However, the statistic nature of the ratios indicates that results are based on historical events, which makes the ratios rarely used in managerial decision making. Statistic ratios used to describe the short-term liquidity of a company are presented below.

The **Current ratio** is one of the most popular indicators used in financial statement analysis. It is a close concept with net gross working capital, but instead of a monetary amount, it indicates the ratio between the total of current assets and the total of current liabilities. As earlier introduced, current assets consist mainly of cash, short-term investments, accounts receivable, and inventories. While current liabilities include accounts payable, current maturities, accrued income taxes, and other accrued expenses. The ratio can be calculated as follows: (Sharma 2008, 189-191.)

(8) $Current\ Ratio\ = \frac{Total\ Current\ Assets}{Total\ Current\ Liabilities}$

The **quick ratio** is often called an acid test, and it is a similar measure to the current ratio. The difference between measures is that the quick ratio does not include inventory or prepaid expenses. Therefore, the quick ratio compares the sum of cash, short-term investments, and accounts receivable to the current liabilities. The main purpose of the ratio is to indicate how a company can manage its current liabilities without selling any inventory. The quick ratio is a better measure for the actual cash position of the company than the current ratio since inventory value might be relatively illiquid and consider obsolete products. The quick ratio can be calculated with the following equation: (Sagner 2010, 9-10.)

(9) $Quick\ Ratio = \frac{Quick\ Assets}{Current\ Liabilites}$

Thus, liquidity measures describe the number of current liabilities that a company would be able to pay if it would cease its operations at the financial statement date. The reference values of the measures are pictured below.

Table 5. Reference values for the current and quick ratio (adapted from Kallunki 2014, 124-126).

Current Ratio		Quick Ratio
2+	**Good**	**1+**
1-2	**Satisfactory**	**0,5 – 1**
1-	**Weak**	**0,5-**

The amount of working capital is also retrievable from the balance sheet and therefore can be examined in terms of financial statement analysis. **Working capital percentage** and **Working capital turnover** ratios refer to a relationship between working capital and sales. By monitoring the development of these indicators, it is possible to observe how the company's working capital changes as the sales change. For an efficient company, the working capital percentage should not increase when sales increase. Ratios are highly industry-specific, which is why reference values are not used. Thus, the efficient company has higher values than its competitors who work as an excellent benchmark since they sell similar products/services and share similar business structures. However, the low level of working capital might give false results by showing high values on ratios, even though the company is struggling to cover its current obligations. (Kallunki, 2014, pp. 124-126; Keythman, 2013).

(10) $$Working\ capital\ percentage = \frac{Working\ Capital}{Sales}$$

(11) $$Working\ capital\ turnover\ ratio = \frac{Sales}{working\ capital}$$

In summary, financial measures are at their best when examining the changes in company figures afterward from financial statements and especially when cash flow statements are not available. The use of financial measures is not preferable in managerial decision-making as all results obtained are based on historical events. Financial measures suit the purpose of this research since the aim is to examine what

has historically happened after the buyout transactions and since cash flow statements are not generally retrievable for Finnish private companies.

2.3.4.2 Operational measures

Operational efficiency of working capital is generally measured with cycle- and turnover times often referred to as performance metrics. These metrics are commonly used in managerial decision-making since they provide crucial information about the efficiency of working capital management. (Talonpoika, 2016.) As the previous sub-chapter introduced, quick and current ratios are the most widely used measurements of a company's liquidity. These indicators have faced criticism to measure the efficiency of working capital management, since operational liquidity is not dependent on the value of a company's liquid assets, while cash flows generated by those assets would give a better picture of the efficiency of working capital. (Shin & Soenen, 1998.) Due to this, Richards & Laughlin (1980) introduced the concept of the **Cash Conversion Cycle**, which can be used to measure the time in days between payables paid to suppliers and payments received on trade receivables.

Cash Conversion Cycle (CCC) is one of the most popular metrics to measure the efficiency of working capital management by indicating the average number of days cash is tied in the working capital. The length of the cycle also measures the need for outside financing and shows when a company must resort to outside financing. A negative CCC is often a major goal for the organization since decreased capital committed to day-to-day activities provides free cash flow which can be invested or distributed to shareholders. Industry and business characteristics also have a big impact on the result since companies that do not require inventory are more likely to achieve a negative CCC rate. However, a negative rate should not be achieved by stretching average payment or by insufficient inventories, which eventually results in a loss in reputation or credit defaults. Thus, the cycle time should be minimized without harming the reputation or sales of the company (Sharma, 2008, pp. 78-80.) The CCC can be calculated by adding

together the inventory conversion period and receivables collection period and subtracting the average payment period from the obtained result: (Sharma, 2008, pp. 76-80; Talonpoika, 2016).

$$(12) \quad CCC = Receivables\ Collection\ Period + Inventory\ Conversion\ Period - Avarage\ Payment\ Period$$

CCC measures how quickly different aspects of working capital are converted into cash. The collection period of trade receivables indicates how many days the firm requires to collect the cash from the sale. The inventory conversion period indicates the average lag between the purchase of inventories and the sale of finished products, while the average payment period indicates the lag between the purchase of inventory and the payment of cash. The main difference between CCC and the operational cycle is that the operational cycle does not include the aspect of the payable conversion period. The operational cycle is defined as the days between the purchase of inventory and the receivables collection, while CCC includes the lag between the purchase and payment. This lag can be viewed as a free source of finance, which can partly or entirely remove the need for external financing. (Richards & Laughlin, 1980.)

2.4 Empirical evidence

Evidence from the first buyout wave from the 1980s is consistent about the positive relationship between buyout investments and the company's operational profitability. (see e.g., Kaplan, 1989; Muscarella & Vetsuypens, 1990). As introduced earlier, the market has faced tremendous growth and changes in characteristics since the 1980s. Due to this, the data used in earlier studies consider mainly large public-to-private buyouts which dominated the markets during the era. This suggests that earlier relationships may do not hold any more and more recent studies about buyout value creation levers must be reviewed.

Cohn, Mills, and Towery (2014) represent inconsistent results with earlier findings by examining a sample of 317 U.S buyouts from 1995 to 2007. Although the study shows improvements in operating performance after the transactions, target firms do not averagely outperform their peers. The study suggests that financial engineering that leads to the reduction of tax payments seems to be the main motivation behind modern buyout investments. Similar conflicting results are presented by Guo et al. (2011), who also find only a modest positive change in operating performance from a sample of 94 buyouts completed from 1990 to 2006 in the U.S. Study states that generally accepted reason for the possible inability of modern U.S deals to recreate the operational improvements achieved during the first buyout wave is the intensified competition in the markets, where PE practitioners in the 1980s were able to focus their investments to only on the most potential companies.

However, if alteration of capital structure and benefits gained through tax shield is the main motivation behind modern U.S buyouts, significant changes in establishment productivity after buyout transactions should not be found. However, Davis et al. (2011) present significant operational improvements in the U.S by examining establishment productivity levels of 3,200 firms and their 150,000 establishments that undergone buyout transactions between 1980 and 2005. Before the acquisition, average employee productivity was 3.8 percent higher at the establishments of target firms, than in establishments of similar size firms in the same industry. Two years later, the productivity gap between targets and peers had increased to 5.2 percent. The findings are supported by Davis et al. (2014) who analyzed similar datasets before and after the acquisition, compared to controls defined by age, industry, prior growth, and size. On average, target firms seemed to outperformer controls in total productivity by 2.1 log points over a two-year post-buyout period. In line with Davis et al. (2011), the study highlights the importance of reallocation activity, stating that more than 70 percent of the estimated total productivity gains arise from the influence of job reallocation activities. Furthermore, both studies show a significant positive difference in initial employment growth over the two years post buyout transaction.

The findings from Europe also provide inconsistent results. A study of 206 buyout investments in Europe from 1991 to 2005 (Achleitner et al, 2010), reveals that around 60 percent of the value creation between entry and exit between 2001 and 2005 was achieved through improved operational performance and changes in EDITBA multiples, while the remaining 30 percent was due to the leverage effects. Findings are in line with (Bergström et al., 2007) who also found significant operational improvements in Sweden by using EBITDA measures and ROIC (Return on Invested Capital) metrics in a sample of 69 Swedish companies that exited PE ownership from 1998 to 2006. In line with these studies, the Finnish Private equity Association also presents significant improvements in operational profitability and personnel ratios between 2010 and 2019 (Impact Study 2020). In contrast, Weir et al. (2015) indicate significant declines in target's operational profitability (EBITDA/assets and ROI) in a sample of 138 UK public-to-private buyout deals from 1998 to 2004.

Overall, inconsistent findings are in line with (Ayash & Schütt, 2016) who find no evidence on operational improvements from a significant over-time sample of U.S buyouts. The findings of the study suggest no evidence of operational improvements even for the first buyout wave, where prior studies have indicated the strongest proof of operational improvements post transactions. Hence, the researchers state that there are conceptual and practical problems with accounting-based measures of operational performance, offering an additional explanation for the inconsistent results of academic research. Furthermore, some studies that indicate positive operational improvements after buyouts, especially those from the U.S, should be interpreted with some caution. Since buyouts target private companies, public disclosure requirements are lighter than in public companies, which makes studies with non-public data potential subject to selection biases (Kaplan & Strömberg, 2009).

2.5 Summary of the theoretical framework

Even though modern PE funds tend to organize themselves around industries and hire professionals with operating backgrounds, the empirical evidence is not consistent about the importance of operational engineering in modern buyout value creation. The commonly accepted explanation for the failure of modern buyouts to recreate the operational improvements achieved in the 1980s is a decrease in value creation opportunities over time, where the more adolescent markets in the 1980s offered better opportunities to acquire attractive companies with ineffective processes. Even though findings from Europe are also inconsistent about operational improvements post buyout transactions, European studies show more evidence on operational improvements than the findings from the U.S. The potential explanation for differences in results between the U.S and European studies is that there are relatively few public-to-private transactions in Europe. As a result, European samples concern less large public-to-private buyouts and more private-to-private deals, where the non-public deals might provide better opportunities to improve the operational performance of the acquired companies. Uniform issue in the earlier empirical evidence is the data, that limits primarily to the pre-financial crisis (prior 2008) preventing the examination of PE value creation, even in most recent studies.

Evidence regarding working capital management is constant that there is a negative relationship between the cash conversion cycle and the company's profitability (see e.g., Shin & Soenen, 1998; Deloof, 2003; Bellouma, 2011; Kaushik & Chauhan, 2019). Thus, a company can improve its profitability by decreasing the total amount of cash tied to working capital. While the earlier evidence has shown that the receivables collection period and inventory conversion period correlate negatively with profitability, the average payment period has also been founded to correlate negatively with profitability (see, Deloof, 2003; Bellouma, 2011). This is not in line with the theory that the high use of trade financing would eliminate the need for outside financing and make a company more profitable through decreased interest costs. Instead, it seems that high use of

trade financing might be a sign of business problems, leading to a loss in cash discounts and therefore less profitable company. Furthermore, utilization of payables as a source of financing is more common in small and economically weaker companies than in large and profitable ones. Moreover, the market interest rate seems to increase the use of payables financing, where the biggest companies are increasing the usage of trade financing when the rate is high.

While there is a substantial amount of inconsistent evidence about a company's operational profitability during the post-buyout period, there is a lack of direct evidence about the role of working capital management behind the obtained results. The cash flow measures used in earlier research (see e.g., Guo et al. 2011; Cohn et al. 2014) generally picture operational improvements as EBITDA minus Capital expenditure and therefore do not specify how the changes in working capital are connected to the findings. Some research that examines the topic through asset utilization as a different measure of ROA, captures the role of working capital better especially when current assets are covering the majority of the target's total assets. However, the results can be caused by many other factors than increased working capital efficiency, where the direct effect of working capital management is not identifiable.

3 DATA AND METHODOLOGY

To answer the expected hypotheses, the research tracks the magnitude and determinants of multiple different financial indicators during the three-year reference period. By examining the changes in accounting data, the research compiles a broad view of how the target's operational profitability, working capital efficiency, and personnel ratios have changed under the new ownership. As the earlier chapter introduced, empirical evidence is not consistent about the ability of PE ownership to enhance the operational performance of targeted companies. Since operational performance can be viewed from many viewpoints, the study examines multiple operational indicators to give a broad insight into the subject in Finnish PE markets.

3.1 Sample description and selection criteria

The research is carried out by examining financial statements of Finnish companies that have been received buyout investment between 2014 and 2017. Since unlisted companies are examined, accurate data of buyout targets is relatively difficult to access. Finnish Venture Capital Association provided important support to this matter by delivering a list of PE investments in Finnish companies since mid-2013. However, the association does not have the right to share the data that is used in their own research (European Data Cooperate (EDC) private equity database), which is why the list is based on publicly available sources, such as company websites. Since the data did not include all the transactions during the study period, the list was complemented by the author with the information gathered from PE firms' websites. When the sample of PE targets was gathered, it was entered into the Bureau van Dijk's Orbis database, which works as the main source of financial information in this study. However, in many cases, the information from the database was incomplete and financial data had to be supplemented with the information gathered from targets' annual data.

The original sample received from the Finnish Private equity Association included 138 investments that had been classified as buyouts. At first, this sample was filtered by removing all the companies from the list that had arisen due to a merger of two or more companies in connection with the acquisition. These companies were easy to target since Orbis-database shows automatically if a company is dissolved by showing a reference to a new parent company. These companies had to be deleted since if a company is arisen due to a merger during the reference period, the changes in financials are caused by other factors than the changes in operating performance. Secondly, the data were filtered by removing all the companies from the list with revenue less than 5 million Euros at the time of the buyout transaction. By excluding the small companies, the research gives a clearer insight into the subject by showing how PE executioners aim to improve mature companies' profitability through operational improvements. This also removes the transactions from the dataset that could be referred to as growth capital or later-stage venture capital. As mentioned, Orbis-database did not include all financials of target companies which is natural when examining private companies. Due to this, the third step was to filter out all the companies without sufficient or reliable financial statements. The final sample includes 84 companies with different amounts of accounting data available. The descriptive statistics of the final sample are presented in tables 5, 6, and 7.

3.1.1 Event window

The event window is defined to serve the purpose of the study and it is also highly dependable on the availability of the data. Since the data in this study start from mid-2013, it is not meaningful to examine operational value creation during the whole holding period (see e.g., Bergström et al., 2007; Guo et al., 2011). Instead, the study focuses to examine the changes in operational performance and working capital efficiency, where the longer reference period would probably just increase the variation in the result. A longer period would possibly also cause selection biases since companies that go bankrupt during the period need to be excluded from the observations. A three-

year reference period is especially suitable for larger capital investments where the target is generally to buy a company and execute a value creation plan for two to five years before selling the company with profit. Furthermore, examining the first years after the buyout transaction is also generally used in earlier empirical research when the aim is to examine the changes in operations instead of total value creation. Thus, a similar approach makes the results of the study more comparable with earlier findings. (see e.g., Lichtenberg and Siegel, 1989, Davis. et al., 2011; Davis. et al., 2014)

3.1.2 Peer group

All measures of operational performance are generally highly dependent on the industry and a company's size. Therefore, industry-adjusted results are used to compare operational changes with the averages of their respective peer group. To exclude the erroneous findings that could be due to the different company features, the peer group is defined for each industry to consider only companies with similar asset size and revenues at the time of the buyout transaction. The sample collection for the peer group began by searching all the Finnish companies from the Orbis database with revenues more than minimum and less than maximum of the buyout sample for each year during the sample period. After this, the sample was filtered to contain only companies with assets size also inside of minimum and maximum of the buyout sample. The third step was to filter the data to contain only companies with the same NACE industry classification codes as in the buyout sample. Fourthly, the companies that were already included in the buyout sample were removed. Finally, the data were analyzed in the SPSS to calculate the growth rates for each industry. Since the peer sample also include private companies, the data in the database is not always reliable. To exclude erroneous results, the growth figures were considered as trustable figures and implemented to the sample if the growth rates were inside the range between 5% and 95% of all obtained results. This generated a final sample of 9646 companies. The descriptive statistics of the peer group are pictured in tables 8 and 9.

3.2 Reliability and validity of the research

When compared to earlier empirical studies, the dataset has a lot of benefits. At first, the research can be done only if the company's account statements are retrievable. Thus, if a company goes bankrupt during the reference period, a company must be excluded from the research. This is also an existing feature in the data. However, the research aims to examine a company's operational performance where financial statements are required from a shorter reference period than in studies that examine value creation channels during the whole holding period. Due to this, the effect is by default substantially smaller than in value creation studies. Secondly, the data used in the research give a wide look at the whole buyout universe, where the earlier studies are majorly focused on large public-to-private buyouts which dominated the markets during the 1980s. In fact, the whole empirical research in the industry, regardless of the transaction type, is focused only on the biggest transactions with significantly larger deal values (see e.g., Bergström et. al., 2007; Achleitner et. al., 2010). Thus, this research gives a wide insight to the subject by examining the operating effects also on smaller buyout transactions. Moreover, the literature of Finnish buyout markets is mainly carried out by the Finnish Private equity Association with data that is not publicly available. The research fills this gap in the existing literature by providing a wide and transparent look to the Finnish PE industry with diverse transaction types and publicly available datasets.

The study is focused solely on the Finnish PE markets that make the dataset generally small when compared to the more general quantitative research. However, the research examines the industry where investment targets are not publicly available information, and the size of the sample is in line with other studies in the same field, around 100 companies. On the other hand, this makes statistically significant results hard to find and only a couple of exceptions in the obtained results can make results statistically not significant. Therefore, the analysis is not focusing only on statistical significance, instead more general views are also pointed out. Furthermore, there is a clear lack of empirical

evidence about working capital optimization as the channel of buyout value creation. Thus, the methodology is not directly proportional to the empirical research inside the industry, instead, the methodology is obtained from the research that examines working capital management generally. Another negative side when examining private companies is that there is a substantial number of missing values in the financial statements at the databases, especially in SMEs, which can be also a potential explanation why earlier research is focused mainly only on the largest investments. Due to this, many companies from the original dataset had to be deleted and multiple imputations are used in regression modeling.

3.2.1 Statistical tests

To support or reject hypotheses 1-4 about operational changes during the reference period, the research examines the result with two different methods. At first, it is tested whether the financial indicators change significantly during the reference period and secondly, whether targets can be statistically distinguished from similar firms operating in the same industry. The measures used in the analysis are categorized by the basis of the aspect they measure, presented in tables 9 and 10. The change in financials is easy to calculate from the figures, by subtracting the reference year value from examined value.

(13) $$Percentual\ change = \frac{P_{i,t+x}}{P_{i,t}}\ x\ 100 - 100$$

(14) $$Percentage\ point\ change = P_{i,t+x} - P_{i,t}$$

Where $P_{i,t}$ is the operational measure applied of firm i in period t and x refer to a length of a reference period.

To compare the changes in operational performance between targets and their peers, the industry-adjusted performance is calculated by subtracting the expected performance from realized change.

(15) $$Adjusted\ performance = \Delta P_{i,t} - \Delta PG_{i,t}$$

Where the expected performance $\Delta PG_{i,t}$ is the median growth rate within the respective peer group.

3.2.2 Statistical significance

The deviations of the normal distribution are presented in table 6, where both the Kolmogorov-Smirnov test and the Shapiro-Wilk test led to the same conclusion to reject the normality in the figures.

Table 6. Test for normality.

Tests of Normality	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sales growth t–+2	,192	77	,000	,778	77	,000
EBITDA/Sales t–+2	,173	53	,000	,933	53	,005
EBITDA/Total assets t–+2	,163	53	,001	,903	53	,000
Sales/Employees t–+2	,214	62	,000	,552	62	,000
Personnel costs/Sales t-+2	,298	51	,000	,522	51	,000
Avg. Cost of employees t-+2	,318	61	,000	,435	61	,000
WC/Sales t-+2	,163	56	,001	,805	56	,000
Inventory/Sales t-+2	,142	60	,004	,923	60	,001
Receivables/Sales t –+2	,159	71	,000	,794	71	,000
Payables/Sales t –+2	,164	72	,000	,820	72	,000

a. Lilliefors Significance Correction

The null hypothesis is defined as “variable follows a normal distribution”. The p-values of the tests can be found in the “Sig.” columns. For each measure, the null hypothesis is rejected since the p-values are less than 0,05 showing significant deviation from the normal distribution. The results indicate that normality cannot be assumed, and nonparametric methods should be used. Therefore, statistical significance is calculated with the Wilcoxon signed-rank test, which may be used instead of the dependent sample t-test if normal distribution cannot be assumed. Furthermore, the Wilcoxon signed-rank test is generally preferable if data contains a lot of extreme values which is characteristic when examining operational ratios after the buyout investment (Harris & Hardin, 2013).

In this research, the Wilcoxon signed-rank test is used to test whether the median growth rates of the operational figures are statistically significant. The null hypothesis is defined as “median difference between operational measure at year t and year t + x is equal to zero”. The test is performed by calculating the difference between positive and negative observations.

$$D_i = P_{i,t+x} - P_{i,t} \quad (16)$$

Where D_i indicates the difference of measure i and the $P_{i,t}$ is the operational measure applied of firm i in period t and x refer to a length of a reference period.

To test the hypothesis that there is no significant change in growth rates, the statistic calculation is carried out in SPSS statistics:

$$S = \sum_{i=1}^{n_n} r_i I(D_i > 0) - \frac{n_n(n_n+1)}{4} \quad (17)$$

I(Di > 0) indicate whether the ith comparison between measure i is positive or negative between t and t + x. Tied observations are excluded from the analysis. S is the result of the equation and can be used to calculate two-tailed statistical significance.

3.2.3 Explanatory model for operational profitability

To test hypotheses 5, 6, and 7, multiple linear regression models are formed to find the main drivers behind abnormal operation profitability. In general, linear regression is a modeling technique that can be used when the relationship between different variables is examined. Best model fit is found when the sum of the square of the differences between the linear model and dependent variable observations is at its minimum. In simple linear regression, the relationship between the dependent variable (y) and independent variable (x) is explored. Multiple linear regression is an extended version of the method, where the dependent variable is explained with multiple independent variables, producing a multivariate model (Tranmer & Elliot, 2008). As a result, the linear model shows how well independent variables explain the variance in the dependent variable, presented as r square. In multivariate analysis, the model also pictures how different independent variables explain the variance in the dependent variable and statistical significance can be explored with a null hypothesis. The explanatory model for the change in adjusted performance is presented below.

$$(18) \quad AP = \beta_0 + \beta_1 Size + \beta_2 \Delta Working\ Capital + \beta_3 \Delta Avg.cost\ of\ employee + \beta_4 \Delta Personnel\ costs + e$$

In the equation above, AP presents the industry-adjusted change in operational profitability during the reference period, measured with EBITDA/sales or with EBITDA/assets. β0 is the constant that determines the value of y when all independent variables are zero. β_1 refers to the size of the target's turnover at the time of buyout transaction in 10M €'s, where the addition of one unit of size refers to a change of the similar amount of turnover at the entry phase. β_2, β_3, and β_4, refer to a change in the operational figure during the reference period, all proportional to sales. e presents the error term to fulfill the equation. Since research examines private companies, there is a relatively high number of missing values in the data. To prevent the problems of a limited number of observations and minimize the risk of biased results, multiple

imputations are used in analysis to supplement missing values in the independent variables (see, Lee & Carlin, 2010).

4 RESULTS AND ANALYSIS

This chapter discusses and presents the empirical findings of the study. At first, the summary statistics for the buyout sample and peer group are presented. After this, the changes in the target's operational performance are analyzed. The last section of the chapter presents the findings of the regression analyzes.

4.1 Descriptive statistics

Table 7 below pictures the industry distribution within the buyout sample with NACE main section industry classification. The final sample consists of 84 Finnish companies that have been acquired in a buyout investment between 2014 and 2017. As the table indicates, the main industries in the sample are manufacturing and wholesale, both accounting for 16 observations. Thus, the majority of targets are operating in the industries where Working Capital generally considers a substantial amount of the company's total assets. This is pleasing since the aim is of the research is to examine changes in working capital efficiency during the post-buyout period.

Table 7. Industry distribution in the sample.

NACE main section	# of obs.	% of total
Manufacturing	16	19%
Wholesale and retail trade; repair of motor vehicles and motorcycles	16	19%
Construction	8	10%
Professional, scientific, and technical activities	8	10%
Information and communication	7	8%
Human health and social work activities	6	7%
Administrative and support service activities	5	6%
Transportation and storage	4	5%
Financial and insurance activities	4	5%
Agriculture, forestry, and fishing	2	2%
Water supply; sewerage, waste management, and remediation activities	2	2%
Accommodation and food service activities	2	2%
Electricity, gas, steam, and air conditioning supply	1	1%
Real estate activities	1	1%
Education	1	1%
Arts, entertainment, and recreation	1	1%
Total	**84**	**100%**

Table 8 below presents the industry distribution inside the peer sample. The distribution of the peer sample reveals that there is a substantial amount of peer companies operating in various industries. Hence, industry growth rates can be calculated from the sample and used in the industry-adjusted analysis. The biggest industries in the peer sample are wholesale and manufacturing which are also the biggest industries in the buyout sample. Overall, the large number of companies in the peer analysis should accurately picture overall industry performance, analyzed in the next section.

Table 8. Industry distribution within the peer sample.

NACE main section	# of obs.	% of total
Manufacturing	2633	27 %
Professional, scientific, and technical activities	720	8 %
Construction	619	6 %
Transportation and storage	601	6 %
Information and communication	535	6 %
Electricity, gas, steam, and air conditioning supply	416	4 %
Real estate activities	394	4 %
Financial and insurance activities	309	3 %
Human health and social work activities	168	2 %
Water supply; sewerage, waste management, and remediation activities	132	1 %
Education	121	1 %
Agriculture, forestry, and fishing	67	1 %
Arts, entertainment, and recreation	51	1 %
Total	**9646**	**100 %**

Descriptives for mean and median values inside the buyout sample are pictured in table 9, which presents the average figures at the time of the buyout transactions. The table shows that the median of the sales is slightly above 17 million €'s and four companies without available figures at the time of the buyout event are included in the final sample. The Median value for EBITDA margin is 9% which is similar to earlier empirical research by Kaplan (1989) and Guo et al. (2011). The Median Working Capital percentage of 10,8% is in line with industry distribution, where many targets are operating in Working Capital-intensive industries.

Table 9. Descriptives for mean and median characteristics of the buyout sample.

Descriptives	# of obs.	5	95	Median	Mean
Sales (thEUR)	80	4,802	177,461	17,379	38,987
EBITDA (thEUR)	56	-437	17,382	1,611	4,669
Total assets (thEUR)	80	1,935	192,412	12,844	38,022
Employees	67	13	1,208	88	228
Sales/Employee (thEUR)	67	49,7	946,9	225,5	359,1
Avg.cost of employee (thEUR)	47	22,9	76,5	48,5	49,5
Personnel cost / sales %	56	3,0	70,0	17,5	26,7
EBITDA / sales %	56	-5,8	32,6	9,0	11,1
EBITDA / total assets %	56	-3,6	55,0	14,0	17,8
Working capital / sales %	59	0,1	43,9	10,8	14,2
inventory / sales %	61	0,0	21,3	6,6	8,2
receivables / sales %	75	1,3	31,9	11,1	13,2
Payables / sales %	76	1,2	15,9	6,5	7,3

Table 10 below pictures the mean and median characteristics of the peer sample for each year under review. The table shows that the median of the sales show similar statistics with the buyout sample indicating similar company characteristics. EBITDA and EBITDA margin are smaller in the peer group, showing that buyout practitioners seem to focus their investment on companies that are already producing a high amount of free cash flows from ongoing operations. This is not surprising since PE firms require cash flows to service the debt related to the buyout event. Overall, the sample sizes between buyouts and peers are significantly different, and industry-adjusted performance is examined by comparing the results with companies that operate in the same industry. Due to these, deeper analysis based on median statistics of the full samples is not pleasing to do.

Table 10. Descriptives for mean and median characteristics of the peer sample.

Descriptives	# of obs.	5	95	Median	Mean
Sales (thEUR)	9,646	6,023	144,716	17,304	36,554
EBITDA (thEUR)	6,477	-251	13,665	1,135	3,086
Total assets (thEUR)	9,647	2,744	132,481	10,817	29,512
Employees	8,471	9	567	60	149
Sales/Employee (thEUR)	8,471	89,3	2,007,7	292,9	733,7
Avg.cost of employee (thEUR)	5,632	34,7	97,6	54,1	60,8
Personnel cost / sales %	6,473	2,6	59,3	16,6	21,5
EBITDA / sales %	6,477	-1,3	39,0	6,9	11,0
EBITDA / total assets %	6,477	-2,3	37,9	11,6	14,0
Working capital / sales %	9,592	-2,6	41,6	12,8	15,9
inventory / sales %	9,600	0,0	34,1	7,5	11,6
receivables / sales %	9,637	0,0	24,2	9,7	10,6
Payables / sales %	9,634	0,1	15,1	5,2	6,2

Table 11 picture the distribution of the buyout events by revenue size and transaction year. Years 2016 and 2017 show the highest number of PE activity in the sample with a total of 51 transactions. This is not in line with the report from Finnish Venture Capital Association (2020) that indicates more buyout investments into the Finnish companies in 2014 and 2015 than in the following two years. On the other hand, this highlights the difference between the datasets and the definition of the buyout. In this research buyout transaction refers to a mature company with revenues at least of 5mEUR's at the time of buyout event while mergers of two or more companies in connection with the acquisition are excluded from the dataset.

Table 11. Distribution of the buyout events by revenue size and transaction year.

Year	5-10mEUR	10-30mEUR	30-60mEUR	60+mEUR	Total
2014	2	7	4	4	**17**
2015	5	6	3	2	**16**
2016	9	7	6	5	**27**
2017	7	11	4	2	**24**
Total	**23**	**31**	**17**	**13**	**84**

4.2 Operating performance

The empirical evidence is not consistent about the importance of operational engineering in modern buyout value creation. Furthermore, the datasets used in empirical research are generally outdated and limited to a primarily pre-financial crisis. The purpose of this section is to provide evidence about operational improvements as a channel of buyout value creation in Finnish PE markets with the most recent dataset available. To explore the relationship between PE transactions and operating improvements, the research tracks the magnitude and determinants of multiple different financial indicators during the three-year reference period. To catch the effect of PE behind obtained results, all the figures are compared with their respective peer groups.

Tables 12 and 13 reports the median changes in operational measures. The first column reports the median growth rate between the transaction year (t) and the first year after the event (t+1), the second column presents the difference between the first and second year after the transaction (t+2), and the third column presents the difference between entry year and the end of the reference period.

Table 12. Unadjusted change in operating performance.

Table reports the unadjusted percentage and percentage point changes in operational measures during the reference period. The change is pictured in percentage points if the figure is already a percentage measure. The first values in parentheses indicates the number of available figures, and the second number indicate the number of positive observations. Significance is based on the two-tailed Wilcoxon signed-rank test where *, **, and *** show if the result is significantly different from zero at 10%, 5% 1% levels, respectively.

Unadjusted changes	t- t+1	t+1-t+2	t-t+2
A. Growth			
Sales growth	**10.82% (79;60)*** **	**5.05% (79;55)*** **	**18.16% (77;59)*** **
Employee growth	**12.32% (64;45)*** **	**8.65% (68;45)*** **	**20.19% (62;45)*** **
B. Operational profitability			
EBITDA / Sales	**-1.13 (49;18)** **	-0.93 (55;24)	**-1.80 (53;19)** *
EBITDA / Total assets	**-1.63 (49;17)** **	-0.49 (55;21)	-0.88 (53;18)
C. Employee effects			
Sales per employee	-0,93% (64;31)	-0.45% (67;33)	-2.83% (62;28)
Personnel costs / Sales	0,67 (49;30)	-0.37 (52;24)	0.45 (51;30)
D. Working capital efficiency			
Working capital / Sales	-0.51 (54;26)	0.46 (58;30)	-0.02 (56;28)
Inventory / Sales	-0.06 (59;26)	0.01 (64;32)	0.24 (60;33)
Receivables / Sales	**-0.48 (72;31)** **	0.07 (73;37)	**-0.51 (71;28)** *
Payables / Sales	-0.09 (73;36)	0.11 (74;40)	0.02 (72;37)

Results of the unadjusted figures indicate significant growth immediately after buyout transactions where both growth measures show significant statistical increases for each year under review. Only 18 of 77 companies with available figures did not grow in sales during the reference period. Employee growth shows a similar pattern where 45 observations from 62 are positive. While target companies have generally faced significant growth, it seems that targets have not been able to maintain their operational profitability during the expansion. Instead, the cost related to growth (marketing, employees, R&D, etc.) has pushed operational profitability growth to negative. EBITDA margin indicates a significant statistical decrease, where only 19 from 53 companies with available figures were able to increase their margin during the period under review.

The negative growth of operational profitability seems to be at its strongest immediately after the transaction where the measure of ROA and margin both face significant decreases within the sample.

The average effects on personnel ratios indicate that personnel costs related to sales face slight increases during the reference period. Overall, the changes in personnel ratios explain the negative growth in the EBITDA measures, while PE targets seem to grow faster in personnel than in sales. The measure of working capital efficiency does not face significant improvements during the period under review. Statistical improvements can be found from the measure of receivables collection that indicates improvements in 53 companies from the total amount of 71 observations. Simultaneously, the use of trade financing is not accelerated under the new ownership which is in line with the expected hypothesis. Against the expected hypothesis, the presence of PE does not seem to improve inventory management and the change is only minimal during the period.

As mentioned earlier, measures of operational performance are highly dependent on the industry and the company's size. Therefore, industry-adjusted results are used to compare operational changes with the averages of their respective peer group. To exclude the erroneous findings that could be due to the different company features, the peer group is defined for each industry to consider only companies with similar asset size and revenues at the time of the buyout transaction. The industry adjusted performance is presented in table 13 below. Statistical significance is analyzed by comparing the obtained growth pictured in table 12, with expected results i.e., with the average growth rates within the respective peer group.

Table 13. Adjusted change in operating performance.

Table reports the industry-adjusted changes in operational measures. The change is pictured in percentage points if the figure is already a percentage measure. The first values in parentheses indicates the number of available figures, and the second number indicate the number of positive observations. Significance is based on a two-tailed Wilcoxon signed-rank test where *, **, and *** show if the result is significantly different from zero at 10%, 5% 1% levels, respectively.

Adjusted changes	t- t+1	t+1-t+2	t-t+2
A. Growth			
Sales growth	**7.02% (79;52)*** **	**2.56% (79;47)** **	**11.66% (77;55)*** **
Employee growth	**10.86% (64;42)*** **	**6.57% (68;43)*** **	**16.84% (62;44)*** **
B. Operational profitability			
EBITDA / Sales	**-1.13 (49;17)** **	-1.08 (55;24)	-1.42 (53;19)
EBITDA / Total assets	**-1.60 (49;19)** **	-0.46 (55;23)	-0.83 (53;21)
C. Employee effects			
Sales per employee	-2.24 (64;29)	-1.43 (67;32)	-4.80 (62;25)
Personnel costs / Sales	0.83 (49;32)	-0.30 (52;24)	0.75 (51;29)
D. Working capital efficiency			
Working capital / Sales	-0.44 (54;26)	0.77 (58;31)	0.08 (56;29)
Inventory / Sales	-0.13 (59;28)	0.08 (64;35)	0.16 (60;35)
Receivables / Sales	**-0.60 (72;28)*** **	0.22 (73;37)	**-0.54 (71;27)** *
Payables / Sales	0.00 (72;36)	0.03 (74;36)	0.00 (72;36)

Albeit the peers also indicate growth during the reference period, the growth rate of PE targets is significantly higher. From 77 companies with available figures, only 12 companies did not grow faster in sales than the average of their industry peers. Similar results are presented for employee growth, where 44 observations are positive. In line with unadjusted changes, the measures of operational profitability are also negative, referring that PE targets have been outperformed in profitability growth by their peers. The personnel ratios do not provide statistical results and indicate similar results as unadjusted analysis. The measure of working capital efficiency does not face significant changes after the comparison with peer groups. The growth rate of receivables has

become statistically more significant, referring that the receivables collection period inside the peer group has become longer during the period under review. Overall, the findings of industry-adjusted performance are generally in line with unadjusted changes and the same conclusions can be done.

To explore deeper how PE ownership is connected to the working capital investment, tables 14 and 15 picture the adjusted and unadjusted changes in the figures divided by the basis of the working capital investment at the time of the buyout transactions. Targets categorized as “Below industry mean”, refers to observations with working capital Investment less than the average of their respective peer group, and targets categorized as “Excess working capital” refers to observations with working capital investment more than average of their respective peer group at the time of the buyout transactions. From 54 companies with available working capital to sales ratio at the time of buyout transaction, there are 25 investments made into companies with ratio below industry mean and 29 companies with above industry mean. Therefore, it seems that PE firms are not especially targeting their investments to companies with an excessive amount of working capital. This analysis is done since PE is claimed to cause underinvestment in working capital to service the debt (see, Davis et al., 2011 and Davis et al., 2014). Furthermore, by dividing the sample between companies with under or overinvestment issues, it is possible to explore the actual effect of PE in working capital management. While the excessive amount of long-term debt and current assets may correlate negatively to profitability, it also helps companies to maintain smooth operations. Therefore, if a company is already operating with a low level of working capital, the decrease in working capital investment would refer that buyout investments increase the operational risk in target companies.

Table 14. Unadjusted change in Working Capital performance.

Table reports the unadjusted changes in Working Capital measures. The change is pictured in percentage points if the figure is already a percentage measure. The first values in parentheses indicates the number of available figures, and the second number indicate the number of positive observations. Significance is based on a two-tailed Wilcoxon signed-rank test where *, **, and *** show if the result is significantly different from zero at 10%, 5% 1% levels, respectively.

Unadjusted change	**t- t+1**	**t+1-t+2**	**t-t+2**
Below industry mean			
Working capital / Sales	0,44 (29;15)	1,18 (28;17)	0,20 (29;16)
Inventory / Sales	-0,07 (30;14)	-0,35 (30;11)	0,05 (30;16)
Receivables / Sales	**-0,53 (30;12)***	**1,26 (29;19)****	-0,02 (29;14)
Payables / Sales	-0,11 (29;14)	0,14 (28;18)	0,46 (29;16)
Excess working capital			
Working capital / Sales	-0,73 (25;11)	-0,36 (25;10)	**-0,74 (27;12)***
Inventory / Sales	-0,02 (27;12)	0,05 (27;15)	0,93 (28;16)
Receivables / Sales	-0,42 (26;12)	**-1,55 (26;8)***	**-2,45 (28;7)*****
Payables / Sales	0,44 (27;16)	-0,19 (27;12)	0,12 (28;15)

The table above pictures the unadjusted change in working capital performance. The results indicate that companies with efficient operations (working capital investment below the median of peer sample), do not face significant decreases in working capital or its sub-component ratios during the reference period. Thus, results indicate that PE ownership is not causing underinvestment in working capital to cover the payments of the debt. When examining the companies with overinvestment issues, the ratio of decreases significantly, suggesting that PE ownership can improve working capital efficiency when the return for current assets is low at the time of the buyout transaction. In line with the earlier findings of the paper, the main driver of enhanced working capital

efficiency is the decrease in the receivables to sales ratio, while the use of trade financing has improved only slightly in both categories. Surprisingly, the negative growth in inventory efficiency founded earlier seems to be higher in companies with already high-level of capital committed to the working capital. Suggesting that PE practitioners have not able to enhance their target's inventory management during the reference period.

Table 15. Adjusted change in Working Capital performance.

The table reports the industry-adjusted changes in Working Capital measures. Percentage point changes are pictured for the figures that are already percentage measures. Values in parentheses indicate the number of observations and the number of positive observations. Significance is based on a two-tailed Wilcoxon signed-rank test where *, **, and *** show if the result is significantly different from zero at 10%, 5% 1% levels, respectively.

Below industry mean			
Working capital / Sales	0,28 (29;15)	1,14 (28;17)	0,48 (29;17)
Inventory / Sales	-0,09 (30;14)	-0,39 (30;11)	-0,02 (30;15)
Receivables / Sales	**-0,72 (30;10)***	**1,49 (29;19)****	0,00 (29;14)
Payables / Sales	-0,03 (29;14)	0,05 (28;16)	0,27 (29;16)
Excess working capital			
Working capital / Sales	-0,99 (25;11)	-0,36 (25;11)	**-0,61 (27;12)***
Inventory / Sales	-0,13 (27;13)	0,2 (27;17)	0,93 (28;18)
Receivables / Sales	**-0,53 (26;11)***	**-1,53 (26;8)***	**-2,56 (28;7)*****
Payables / Sales	0,27 (27;15)	-0,34 (27;13)	0,00 (28;14)

Similar conclusions with unadjusted results can be done after comparing the results with average growth rates inside the peer group. Overall, research shows strong proof that PE ownership can improve working capital efficiency when the target company has overinvested its working capital and does not cause underinvestment issues when the target is already operating efficiently i.e., when working capital efficiency is already below the median of the peer group.

4.3 Determinants of abnormal performance

Although median changes in operational profitability do not generally indicate significant findings in the sample, the standard deviation is large in both profitability measures, EBITDA margin and EBITDA/total assets. Multiple linear regression models are formed to find the main drivers behind the changes in operational profitability. The tests are performed with both scaled and unscaled measures of operational profitability. Results of the time series regressions are reported in table 16, where the first two columns of the table picture the main behind the changes in EBITDA margin, while columns 3 and 4 represent the drivers behind the changes in EBITDA/assets (ROA) during the reference period. All regressions in the table are conducted as multiple linear regressions with a significance level of 1%, 5%, and 10%, respectively.

Table 16. Determinants of operational profitability.

	unadjusted EBITDA/sales	**adjusted EBITDA/sales**	**unadjusted EBITDA/assets**	**adjusted EBITDA/assets**
constant	**-2,589*** **(0.079)**	**-2,452*** **(0,092)**	-5,077* (0,175)	-4,784 (0,199)
size	0,180 (0,354)	0,181 (0,346)	0,278 (0,573)	0,272 (0,579)
change in WC/sales	-0,105 (0,551)	-0.114 (0,512)	-0.330 (0,458)	-0.330 (0,455)
change in average cost of employee	0,061 (0,449)	0,063 (0,426)	0,294 (0,143)	0,296 (0,138)
change in personnel costs /sales	**-0,820*** **(0,001)**	**-0,841*** **(0,000)**	**-1,638*** **(0,007)**	**-1,662*** **(0,006)**
obs.	52	52	52	52
R^2	0,251	0,264	0,173	0,178

The first independent variable “size” shows the effect of turnover at the time of buyout transaction. Size is presented in 10M €’s, indicating how much such increase in target’s turnover at the time of buyout transaction effect the expected change in operational profitability during the reference period. All regressions show a positive relationship between company size and operational profitability, where the relationship is slightly stronger in EBITDA margin measures. However, there are no statistically significant results, suggesting only light evidence for this relationship. The relationship was found to be at its highest within the largest companies in the dataset, which supports the view that larger companies are more likely to achieve enhanced operational profitability through PE ownership. The second explanatory variable “WC/sales” pictures the relationship between the change in working capital percentage and the target’s operational profitability during the reference period. As the table indicates, there is also only light evidence for this relationship, where all the regression shows similar negative results but without statistical significance. Overall, the results of the regressions suggest that the main driver behind increased operational profitability during the three-year reference period is the change in personnel cost related to sales. Since the average cost of employee does not show a similar relationship, enhanced operational profitability seems to be achieved through increases in employee productivity, instead of decreases in wages.

5 CONCLUSIONS

The purpose of the study is to find out how private equity has affected companies' operational performance in Finnish buyout transactions. To explore the relationship between buyout targets and their operational efficiency, the research followed the magnitude and determinants of multiple different financial indicators in 84 Finnish target companies between the years 2014 and 2019. By examining the changes in accounting data, the research compiled a broad view of how the target's operational profitability, working capital efficiency, and personnel ratios changed under the new ownership. To explore the changes in operational performance, all the figures were scaled with sales or assets to see how well the companies turn their operating resources into profits. To explore the effect of private equity, all the figures were compared with their respective peer groups. This revealed the real impact of private equity behind the obtained results and removed the erroneous conclusions that could be drawn if there has been a general up- or downswing within the industries.

While the buyout targets generally faced significant growth in sales and employees related to their respective peer groups, the targets were not able to maintain their operational profitability during the expansion. Instead, the cost related to growth (marketing, employees, R&D, etc.) drove operational profitability growth to negative. The strongest evidence of negative growth was found immediately in the first year after the transactions where the measure of ROA and EBITDA margin both faced a significant decrease within the sample. The changes in personnel ratios partly explain the negative growth in the EBITDA measures, where the PE targets seem to grow faster in personnel than in sales. The measure of working capital efficiency did not face significant improvements during the period under review when the whole sample was examined. However, after dividing the buyout sample between companies with under and overinvestment issues in working capital, significant results for improved working capital efficiency were found.

Companies with pre-buyout working capital to sales ratio already lower than the average of their industry peers did not face significant decreases in working capital or its sub-component ratios during the reference period. Thus, PE ownership does not seem to cause underinvestment in working capital to handle the payments of the debt. When targets with overinvestment issues were examined, the ratio of working capital decreased significantly, suggesting that PE ownership can improve working capital efficiency in companies with overinvestment issues. The main driver of enhanced working capital efficiency was found to be a decrease in the receivables to sales ratio, while the use of trade financing grew only slightly in both categories. Surprisingly, the negative growth in inventory efficiency was higher in companies with overinvestment issues, suggesting that PE practitioners are not able to enhance their target's inventory management during the reference period.

Although median changes in operational profitability do not generally indicate significant results within the sample, the standard deviation was large in profitability measures. Thus, multiple linear regression models were formed to explain the main drivers behind the abnormal performance, where the main driver was found to a decrease in personnel cost related to sales. Simultaneously, the average cost of employee does not correlate negatively with operational profitability, suggesting that enhanced operational profitability is achieved through increases in employee productivity, instead of a decrease in wages. Furthermore, models suggest that the size of a target and a decrease in working capital percentage are also related to improved operational profitability. However, the findings of these figures are not statistically significant. The expected hypotheses and their support are presented in table 17 below.

Table 17. Summary of hypotheses

Hypothesis:	Support
Operational changes	
H1: Operational Profitability of PE targets improve related to their respective peer group	**No**
H2: Working capital efficiency of PE targets improve related to their respective peer group	**Yes**
H2.1**:** Inventory/sales of PE targets decrease related to their respective peer group	**No**
H2.2**:** Receivables/sales of PE targets decrease related to their respective peer group	**Yes**
H2.3: Payables/sales of PE targets will not increase related to their respective peer group	**Yes**
H3: Personnel cost/sales in PE packed companies will decrease related to their respective peer group	**No**
H3.1 Sales/employees in PE targets will increase related to their respective peer group	**No**
Determinants of abnormal performance	
H4: Larger companies provide better opportunities for profitability improvements in operations	**No**
H5: Decrease in Working Capital/sales leads to abnormal operational profitability	**No**
H6: Decrease in Avg.cost of employee leads to abnormal operational profitability	**No**
H7: Decrease in Personnel costs/sales leads to abnormal operational profitability	**Yes**

In line with Weir et al. (2015), Cohn et al. (2014), and Guo et al. (2011), the research shows no evidence about private equity practitioners' ability to enhance the operational profitability of their portfolio companies. This is surprising since the impact study (2020) composed by the Finnish Private Equity Association shows that buyout targets have generally faced increases in EBITDA margin during the holding period. This highlights the difference in the datasets between the studies, where the definition of buyout seems to be more restricted in this research than in the study of the association. In line with Davis

et al. (2011) and Davis et al. (2014), the results indicate significant employee growth during the reference period and suggest that increased operational profitability is not connected to the decrease in wages. In line with these studies, the increase in employee productivity seems to be the main driver behind abnormal operational profitability. However, the employee growth is averagely faster than the growth of sales which results in a decrease in overall employee productivity. Therefore, the research shows contrasting results with these studies and claim that buyout investment is not connected with the increase in employee productivity.

The research supports the role of working capital optimization in buyout transactions and claim that the relationship should be examined by concerning the level of working capital investment at the time of the transaction. While the overall evidence regarding working capital management is constant that there is a negative relationship between the working capital investment and company's profitability (see e.g., Shin & Soenen, 1998; Deloof, 2003; Bellouma, 2011; Kaushik & Chauhan, 2019), this research cannot conclude this relationship where the relationship was not statistically significant. While the earlier evidence regarding buyout value creation is mainly focused only on the biggest transactions with significantly larger deal values (see e.g., Bergström et. al., 2007; Achleitner et. al., 2010), this research examined whether the bigger transactions provide better opportunities for operational improvements. A slight prove for this relationship was found in the regression models, but the results were not statistically significant, and the relationship cannot be concluded in this paper.

Overall, the data used in the research give a wide look at the Finnish buyout markets, where the literature is mainly carried out by the Finnish Private equity Association with the data that is not publicly available. Thus, the research fills the gap in the existing literature by providing a wide and transparent look to the Finnish PE industry with the publicly available dataset. The research focused solely on the Finnish PE markets which made the dataset generally small when compared to more general quantitative analyses. However, the sample size is in line with research within the industry where the

sample sizes are generally around 100 companies under review. Nevertheless, the methodology used in the research would give broader results when applied to multiple markets, or in the U.S where the majority of the World's PE activity happens. Due to one market under review, the findings of this research should be taken with caution before generalizing to other markets.

Moreover, one limitation of this study is that the financial data is gathered from Orbis-database which includes several missing values for private companies. Hence, hand-collected data from trade registers would provide more accurate results, especially in research with smaller sample sizes. Furthermore, it would be pleasing to examine the actual causes behind the changes in working capital investment. For instance, this research shows significant proof of decreased inventory turnover period during the reference period, which could be explained with volume discounts, price fluctuations, or by securement of the service level. Similarly, the significant evidence of improved receivables collection period could be achieved through larger cash discounts or the use of factoring, which could partially explain the negative profitability growth founded in the research. Therefore, a closer look at the actual actions that PE practitioners execute at their portfolio companies would provide a great topic for future researchers to cover.

REFERENCES

Ayash, B., & Schütt, H. (2016). Does going private add value through operating improvements? Journal of Corporate Finance, 40, [online], [cited 6.4.2021], 192-215. Available: https://doi.org/10.1016/j.jcorpfin.2016.07.015

Bellouma, M. (2011). The impact of working capital management on profitability: the case of small and medium-sized export companies in Tunisia. Management international/International Management/Gestiòn Internacional, 15(3), [online], [cited 6.4.2021], 71-88. Available: https://www.erudit.org/en/journals/mi/1900-v1-n1-mi1813695/1005434ar.pdf

Berg, A., & Gottschalg, O. F. (2005). Understanding value generation in buyouts. Journal of Restructuring Finance, 2(01), [online], [cited 6.4.2021]. 9-37. Available: https://doi.org/10.1142/S0219869X05000221

Cohn, B. C., Mills, F. L & Towery, M. E. (2014). The evolution of capital structure and operating performance after leveraged buyouts: Evidence from U.S. corporate tax returns. Journal of Financial Economics, 111(2), [online], [cited 6.4.2021], 469-494. Available: https://doi.org/10.1016/j.jfineco.2013.11.007

Davis, S. J., Haltiwanger, J. C., Handley, K., Jarmin, R. S., Lerner, J., & Miranda, J. (2014). Private equity, Jobs, and Productivity. American Economic Review, 104(12), [online], [cited 6.4.2021], 3956-3990. Available: https://www.aeaweb.org/articles?id=10.1257/aer.104.12.3956

Davis, S. J., Haltiwanger, J. C., Jarmin, R. S., Lerner, J., & Miranda, J. (2011). Private equity and Employment. NBER Working Paper Series; Cambridge, 17399, [online], [cited 6.4.2021], Available: https://www.nber.org/papers/w17399

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms?. Journal of business finance & Accounting, 30(3-4), [online], [cited 6.4.2021], 573-588. Available: https://doi.org/10.1111/1468-5957.00008

Emery, G. W., & Marques, M. A. (2011). The effect of transaction costs, payment terms, and power on the level of raw materials inventories. Journal of Operations Management, 29(3), [online], [cited 6.4.2021], 236-249. Available: https://doi.org/10.1016/j.jom.2010.11.003

Filbeck, G. and Krueger, T. (2005). "An Analysis of Working Capital Management Results Across Industries", American Journal of Business, Vol. 20 No. 2, [online], 11-20. [cited 6.4.2021], Available: https://doi.org/10.1108/19355181200500007

Finnish Venture Capital Association (2020). Finnish Venture Capital Activity [Online], [cited 6.4.2021], Available: https://paaomasijoittajat.fi/wp-content/uploads/2020/04/Venture-Capital-in-Finland-2019-korjattu-14.4..pdf

Finnish Venture Capital Association (2020) Impact Study [Online], [cited 6.4.2021], Available: https://paaomasijoittajat.fi/wp-content/uploads/Impact_study_VC_PE_Industry_2020.pdf

Fraser-Sampson, Guy (2010). Private equity as an Asset Class. Chichester United Kingdom: John Wiley & Sons. Ltd. [online], [cited 27.3.2021], 1-14. Available: https://ebookcentral-proquest-com.proxy.uwasa.fi/lib/tritonia-ebooks/detail.action?docID=699328

Giannetti, M. (2003). Do better institutions mitigate agency problems? Evidence from corporate finance choices. Journal of financial and quantitative analysis, 38(1), [online], [cited 27.3.2021], 185-212. Available: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.201.3368&rep=rep1&type=pdf

Guo, S., Hotchkiss, E., & Song, W. (2011). Do Buyouts (Still) Create Value? The Journal of Finance, 66(2), [online] [cited 27.3.2021], 479-517. Available: http://www.jstor.org.proxy.uwasa.fi/stable/29789787

Hannus, Simon (2015). Value Creation in Private equity: A Case Study of Outperforming Buyouts in the Nordic Countries. Tampere University of Technology. Doctoral dissertation. Publication; Vol. 1328. [online], [cited 27.3.2021], Available: https://tutcris.tut.fi/portal/files/3707005/hannus_1328.pdf

Harris, S. R., Jenkinson, T. & Kaplan, N. T. (2014). Private Equity Performance: What Do We Know? The journal of Finance, [online] 69(5), [cited 7.1.2021], 1851-1882. Available: https://www.nber.org/system/files/working_papers/w17874/w17874.pdf

Harris, T., & Hardin, J. W. (2013). Exact Wilcoxon signed-rank and Wilcoxon Mann–Whitney rank sum tests. *The Stata Journal*, *13*(2), [online], [cited 27.3.2021], 337-343. Available: https://journals.sagepub.com/doi/pdf/10.1177/1536867X1301300208

Hill, Matthew & Kelly, Gary & Highfield, Michael. (2009). Net Operating Working Capital Behavior: A First Look. Financial Management. 39, [online], [cited 27.3.2021], 783-805. Available: https://doi.org/10.1111/j.1755-053X.2010.01092.x

Iverson, David (2013). Strategic Risk Management: A Practical Guide to Portfolio Risk Management. Singapore: John Wiley & Sons. Ltd, [online], [cited 8.3.2019], 103-113. Available: https://ebookcentral.proquest.com/lib/tritonia-ebooks/detail.action?docID=1376940

Kallunki, J. (2014). Tilinpäätösanalyysi. [Helsinki], Talentum Media.

Kandpal, V. (2015). An analysis of working capital management in select construction companies. Journal of Commerce and Management Thought, 6(1), [online], [cited 8.2.2021], 7-31, Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3498041

Kaplan, S. N., & Stromberg, P. (2009). Leveraged buyouts and private equity, Journal of Economic Perspectives, 23(1), [online], [cited 8.2.2021] 121-146. Available: https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.23.1.121

Katherine J. Lee, John B. Carlin (2010). Multiple Imputation for Missing Data: Fully Conditional Specification Versus Multivariate Normal Imputation, American Journal of Epidemiology, 171 (5), 1, [online], [cited 8.2.2021], 624–632 Available: https://academic.oup.com/aje/article/171/5/624/137388

Kaushik, Nikhil & Chauhan, Swati. (2019). The Role of Financial Constraints in the Relationship Between Working Capital Management and Firm Performance. The IUP Journal of Applied Finance. 25. 60. [online], [cited 7.1.2021], Available: https://www.researchgate.net

Keythman, B. (2013). A high working capital turnover rate indicates what?. Houston Chronicle. [online], [cited 7.1.2021], Available: https://smallbusiness.chron.com/high-working-capital-turnover-ratio-indicates-what-61036.html

Lerner, J., Sorensen, M., & Strömberg, P. (2011). Private equity and Long-Run Investment: The Case of Innovation. The Journal of Finance, 66(2), [online] [7.1.2021], 445-477. Available: http://www.jstor.org.proxy.uwasa.fi/stable/29789786

Lichtenberg, F. R., Siegel, D., Jorgenson, D., & Mansfield, E. (1987). Productivity and changes in ownership of manufacturing plants; comments and discussion. Brookings Papers on Economic Activity. (3), [online], [cited 7.1.2021] 643-683, Available: https://doi.org/10.2307/2534451

Martínez-Sola, C., García-Teruel, P. J., & Martínez-Solano, P. (2014). Trade credit and SME profitability. Small Business Economics, 42(3), [online], [cited 7.1.2021], 561-577. Available: https://www.researchgate.net

Martínez-Sola, C., García-Teruel, P. J., & Martínez-Solano, P. (2013). Trade credit policy and firm value. *Accounting & Finance*, *53*(3), [online], [cited 7.2.2021] 791-808. Available: https://doi.org/10.1111/j.1467-629X.2012.00488.x

Meszek, W., & Polewski, M. (2006). Certain aspects of working capital in a construction company. Technological and Economic Development of Economy, 12(3), [online],

[cited 7.1.2021], 222-226. Available: https://www.tandfonline.com/doi/pdf/10.1080/13928619.2006.9637745

Mullins, J. W. (2009). Capital is king!. Business Strategy Review, 20(4), [online], [cited 7.1.2021], 4-8. Available: https://doi.org/10.1111/j.1467-8616.2009.00622.x

Muscarella, C., & Vetsuypens, M. (1990). Efficiency and Organizational Structure: A Study of Reverse LBOs. The Journal of Finance, 45(5), [online], [cited 7.1.2021], 1389-1413. Available: https://www.jstor.org/stable/2328742

Niskanen, J. & Niskanen, M. (2016). Yritysrahoitus. Helsinki: Edita.

Private equity International (2019). Fundraising Report 2018. [online], [cited 7.11.2020], Available: https://www.privateequityinternational.com

Richards, V. D., & Laughlin, E. J. (1980). A cash conversion cycle approach to liquidity analysis. Financial management, [online], [cited 7.1.2021], 32-38. Available: https://www.jstor.org/stable/3665310?seq=1

Rogers, P., Holland, T., & Haas, D. (2002). Value Acceleration: Lessons from Private-Equity Masters. Harvard Business Review, 80(6), [online], [cited 12.8.2020], 94-101. Available: https://europepmc.org/article/med/12048998

Sagner, James. (2010) Essentials of Working Capital Management, John Wiley & Sons, Incorporated, ProQuest Ebook Central.

Sharma, Dhiraj. (2008) Working Capital Management : A Conceptual Approach, Global Media, ProQuest Ebook Central.

Shin, H. H., & Soenen, H. L. (1998). Efficiency of working capital and corporate profitability. Financial Practice & Education, 8(2), [online], [cited 12.8.2020], 37–4, Available: http://search.ebscohost.com.proxy.uwasa.fi/login.aspx?direct=true&db=buh&AN=1712459&site=ehost-live

Talmor, E. & Vasvari, F. (2011). International Private equity. John Wiley & Sons. [online], [cited 7.1.2021], Available: https://books.google.fi

Talonpoika, A-M. (2016). Financial working capital – management and measurement. Väitöskirja. Lappeenranta, Lappeenrannan teknillinen yliopisto, tuotantotalouden osasto. Acta Universitatis Lappeenrantaensis 695. [online], [cited 7.1.2020], Available: https://lutpub.lut.fi/handle/10024/123168

Tranmer, M., & Elliot, M. (2008). Multiple linear regression. The Cathie Marsh Centre for Census and Survey Research *(CCSR)*, *5*(5), [online], [cited 7.1 2021], 1-5. Available: http://hummedia.manchester.ac.uk/institutes/cmist/archive-publications/working-papers/2020/multiple-linear-regression.pdf

Weir, C., Jones, P., & Wright, M. (2015). Public to private transactions, private equity and financial health in the UK: an empirical analysis of the impact of going private. *Journal of Management & Governance*, *19*(1), [online], [cited 7.1.2021], 91-112. Available: https://rgu-repository.worktribe.com/preview/296725/WEIR%202015%20Public%20to%20private%20transactions.pdf

Appendix – Target companies

Company	Year	NACE-4digits	Size
DESTIA OY	2014	Engineering activities and related technical consultancy	4
SECTO AUTOMOTIVE OY	2014	Renting and leasing of cars and light motor vehicles	4
MUSTI JA MIRRI OY	2014	Retail sale of flowers, plants, seeds, fertilisers, pet animals and pet food in specialised stores	4
SILMAASEMA OPTIIKKA OY	2014	Other retail sale of new goods in specialised stores	3
VESIVEK OY	2014	Roofing activities	3
HARVIA OYJ	2014	Retail sale of electrical household appliances in specialised stores	3
LEHTIPISTE OY	2014	Other printing	4
MED GROUP OY	2014	Other human health activities	2
AMERPLAST OY	2014	Manufacture of plastic packing goods	3
FIDELIX OY	2014	Engineering activities and related technical consultancy	2
ROTOTEC OY	2014	Construction of utility projects for fluids	2
PROFIT SOFTWARE OY	2014	Computer programming activities	2
SUOMEN LAMPOIKKUNA OY	2014	Retail sale of hardware, paints and glass in specialised stores	2
MEDIVIDA OY	2014	Other residential care activities	2
FUNC FOOD FINLAND OY	2014	Wholesale of other food, including fish, crustaceans and molluscs	2
PRIMEX PHARMACEUTICALS OY	2014	Wholesale of pharmaceutical goods	1
SAHKOTASO ESITYSTEKNIIKKA OY	2014	Retail sale of electrical household appliances in specialised stores	1
EVAC OY	2014	Engineering activities and related technical consultancy	3
LEDIL OY	2014	Computer consultancy activities	3
CITYTERVEYS OY	2014	Specialist medical practice activities	1

KOTKAMILLS OY	2015	Manufacture of paper and paperboard	4
FINNKINO OY	2015	Motion picture projection activities	4
CRF BOX OY	2015	Computer programming activities	3
DIETA OY	2015	Wholesale of other machinery and equipment	2
MITTA OY	2015	Engineering activities and related technical consultancy	1
QUANT FINLAND OY	2015	Manufacture of fluid power equipment	2
FINSILVA OYJ	2015	Activities of holding companies	2
KYMSOL OY	2015	Other construction installation	2
HOPLOP OY	2015	Activities of amusement parks and theme parks	1
COPTERSAFETY OY	2015	Service activities incidental to air transportation	1
ECOLAN OY	2015	Silviculture and other forestry activities	1
ENVIRONICS OY	2015	Manufacture of instruments and appliances for measuring, testing and navigation	2
GREEN TASTE OY	2015	Non-specialised wholesale of food, beverages and tobacco	2
ACCOUNTOR GROUP OY	2015	Other activities auxiliary to financial services, except insurance and pension funding	4
MONDI POWERFLUTE OY	2016	Manufacture of paper and paperboard	4
ESPERI CARE OY	2016	Residential care activities for the elderly and disabled	4
TIETOKESKUS FINLAND OY	2016	Retail sale of computers, peripheral units and software in specialised stores	2
REMEO OY	2016	Treatment and disposal of non-hazardous waste	4
FORENOM OY	2016	Renting and operating of own or leased real estate	3
TOUHULA VARHAISKASVATUS OY	2016	Child day-care activities	3
BMH TECHNOLOGY OY	2016	Engineering activities and related technical consultancy	3
WISE GROUP FINLAND OY	2016	Engineering activities and related technical consultancy	3
VEXVE OY	2016	Manufacture of other taps and valves	3
LTP LOGISTICS OY	2016	Other transportation support activities	2

SUVANTO TRUCKS OY	2016	Sale of other motor vehicles	3
AB A. HAGGBLOM OY	2016	Manufacture of lifting and handling equipment	2
RENTA TELINEET OY	2016	Renting and leasing of construction and civil engineering machinery and equipment	2
OY ORTHEX FINLAND AB	2016	Manufacture of other plastic products	2
AAC GLOBAL OY	2016	Other education	2
BERTIL'S HEALTH OY	2016	Wholesale of other food, including fish, crustaceans and molluscs	1
ATTIDO OY	2016	Computer programming activities	2
PREVENT 360 TURVALLISUUSPALVELUT OY	2016	Private security activities	4
REALIA GROUP OY	2016	Other financial service activities, except insurance and pension funding	1
KAS-TELINEET OY	2016	Other specialised construction activities	1
TIMECAP OY	2016	Freight transport by road	1
PUUHA GROUP OY	2016	Manufacture of sports goods	1
FICOTE OY	2016	Manufacture of other special-purpose machinery	1
HONKAJOEN TUULIPUISTO KY	2016	Production of electricity	1
NAPS SOLAR SYSTEMS OY	2016	Wholesale of other machinery and equipment	1
SLEIPNER FINLAND OY	2016	Manufacture of other general-purpose machinery	1
OTSO METSAPALVELUT OY	2016	Support services to forestry	3
MOLOK OY	2016	Manufacture of builders' ware of plastic	2
INDOOR GROUP OY	2017	Retail sale of furniture, lighting equipment and other household articles in specialised stores	4
ROYAL RAVINTOLAT OY	2017	Restaurants and mobile food service activities	4
ARNON OY	2017	Wholesale of other machinery and equipment	3
HYDROLINE OY	2017	Manufacture of fluid power equipment	3
LAPWALL OY	2017	Manufacture of other builders' carpentry and joinery	3
DEBORA OY	2017	Other human health activities	2

ROIMA INTELLIGENCE OY	2017	Computer programming activities	2
TEIJO-TALOT OY	2017	Construction of residential and non-residential buildings	2
TLT-GROUP OY	2017	Combined office administrative service activities	2
SMOOTHIE HEAVEN OY	2017	Restaurants and mobile food service activities	2
VAIHTOLAVACOM OY	2017	Freight transport by road	1
KOTISUN VIEMARIPALVELUT OY	2017	Plumbing, heat and air conditioning installation	2
SPECIM, SPECTRAL IMAGING OY LTD	2017	Manufacture of instruments and appliances for measuring, testing and navigation	2
KOTISUN OY	2017	Plumbing, heat and air conditioning installation	2
FINNSIIRTO OY	2017	Renting and leasing of other machinery, equipment and tangible goods	1
CONSOLIS OY AB	2017	Activities of holding companies	2
HOLMBERG BRANDS OY	2017	Wholesale of clothing and footwear	1
PINJA INDUSTRY SOLUTIONS OY	2017	Engineering activities and related technical consultancy	2
WUNDER FINLAND OY	2017	Business and other management consultancy activities	1
DESTACLEAN OY	2017	Recovery of sorted materials	1
OY MESMEC AB	2017	Other specialised construction activities	1
FICOLO OY	2017	Other information technology and computer service activities	1