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# **Nordic Large-Cap Buyouts**

*Nordic Private Equity Large-Cap Buyouts Portfolio Companies'  
Performance Effect on Close Competitors and Industry Performance*

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## Executive Summary

The thesis will analyze the Nordic private equity Large Buyouts portfolio companies' performance effect on Close Competitors and industry performance in the timeline 1997-2016. 116 Large Buyouts will be the foundation of this analysis provided by Argentum Asset Management. The research explores how the industry has developed in Sweden, Denmark, Norway and Finland. Only 33 Large Buyout have exited so far. This paper defines Large Buyouts in the range of around EUR 337 million - EUR 12,300 million, which includes the range of upper mid-market buyouts and mega-cap buyouts. The deals have an enormous impact which often results in appraisal by stakeholders involved, or sparks political debates impacting the future of the private equity industry in the Nordic markets. The performance measurements are analyzed using the difference-in-difference methodology looking at changes in mean values from the Large Buyouts investment years. (1) Operating Performance, (2) Liquidity and Leverage, and (3) Employees, Wages and R&D are analyzed for Large Buyouts compared to Close Competitors. Sectors such as Energy, Health Care & Life Science, Industrials, Consumer, ICT, or Multiple Sectors, will also be analyzed compared to Close Competitors.

The analysis results are consistent with most academic literature implying that Large Buyouts perform better compared to Close Competitors, or other control groups. This is seen in (1) Operating Performance and (3) Wages, Employees and R&D. In contrast, Close Competitors have better (2) Liquidity and Leverage performance compared to Large Buyouts. The findings also suggest that Large Buyouts improve in performance and have spillover effects on Close Competitors on some measurements.

The (1) Operational Performance efficiency is mainly better for the respective industries in the Energy Sector, Health Care & Life Science Sector, Industrials Sector and Multiple Sectors. On the other hand, Close Competitors have better (2) Liquidity and Leverage performance and (3) Wages, Employees and R&D performance. The results show that the respective industries and Close Competitors are experiencing an increase or decrease in value triggered by the Large Buyouts in the Nordic markets, but at different performance measurements. In summary, this thesis provides results suggesting that their Large Buyouts creates spillover effects on Close Competitors and industry sectors performance.

## **Preface**

This thesis is written as part of a Major in Finance and marks the end of the two-year master study of the MSc in Economics and Business Administration at the NHH - Norwegian School of Economics in Bergen.

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Thank you!

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# 1. Introduction

This thesis will investigate the Nordic private equity Large Buyouts portfolio companies' performance effect on Close Competitors and industry sector performance. Most academic literature supports that the private equity buyouts are increasing performance measurements, but this paper uniquely assesses the Large Buyouts effect on Close Competitors and Industry performance. Existing literature is mainly on buyouts in the US or other more developed markets. This paper researches the private equity industries in Sweden, Denmark, Norway and Finland. These countries buyouts have sometimes been studied one by one, but little research regarding private equity is on the Nordic buyouts markets as a group and Large Buyouts are seldom evaluated into detail. The Large Buyouts segment has few observations in each country. Studying the Nordic markets will increase the scope to 116 Large Buyouts and 33 recorded exits. This research is possible due to the close collaboration with Argentum Asset Management, the Argentum Centre for Private Equity and Finans|Bergen. The Large Buyouts are having an increasing impact in the Nordic and this research is of great importance, since the countries are still not sure how the Large Buyouts will affect their Close Competitors or industry sectors in the future.

Nordic Large Buyouts activity during 1997-2016 starts with Sweden, then Denmark, Norway and Finland. The Nordic Large Buyouts activity is most frequently observed in the Consumer, Energy, Health Care & Life Science and Industrials Sector. The countries and industry observations show that private equity Large Buyouts are very cyclical in the Nordic markets. Large Buyouts observations imply that such investments are often together in groups with other private equity funds, or invested one by one, in the same specific geographic region or industry trying to capitalize on the spillover effects from the Large Buyouts.

The large impact of the deals often results in appraisal by stakeholders involved or triggers political discussions impacting the future of the Nordic private equity industry. The Health Care & Life Science Sector is notably one of the most debated large buyout industries and received criticism in Sweden. Finance Minister Anders Borg responded: "*There will be considerably tougher rules for private equity firms to operate in this sector*" (Johnson, S. 2014). The uncertainty was also noticeable in Denmark when Dong Energy was invested in by Goldman Sachs. Dragsted of the Red-Green Alliance commented that the Dong Energy case has been a lesson for Danish politicians in how not to handle foreign investment (Levring, P.

(2017). The Dong Energy initial public offering was later in 2016 considered a success as it was one of the largest in Europe that year. Uncertainty was also debated in neighbouring countries. Norway has politicians arguing against private equity and may in some sense discourage future investments into the country, or even the Nordic region. For example, Norwegian political leader Bjørnar Moxnes, of the Red Party is choosing to stop these ‘welfare profiteers’. *“I think everyone understands that these are business people who want to profit from welfare”* (Langen, M. 2017). The politicians have raised a crucial ethical dilemma whether it is ethically right to profit from services such as education and health care, or not. These services should according to Nordic countries governments often be offered for free, even if they are not profitable. The bordering countries are influencing and learning from each other, in particular the latecomer market development in Finland has the opportunities to learn from these important examples and has a latecomer advantage. This research paper may not only provide an understanding how private equity funds can make better investments, but it may also inform stakeholders in the Nordic about the results of these buyouts and if they are contributing to economic growth. The research objectives of this thesis are to investigate the Nordic private equity large-cap buyouts portfolio companies’ performance effect on Close Competitors and industry performance. My research questions are the following:

- 1. What effect the private equity ownership have on the competitors?**
- 2. What effect the effect private equity ownership have on the industry where the acquisition takes place?**

The results are consistent with most academic literature implying that Large Buyouts perform better and create more innovation compared to Close Competitors. This is seen in (1) Operating Performance and (3) Wages, Employees and R&D. In contrast, Close Competitors have better (2) Liquidity and Leverage performance compared to Large Buyouts. The findings imply that Large Buyouts effect change value for both Large Buyouts and Close Competitors. Large Buyouts may also create more value through innovation and have an increasing impact on long run performance for the portfolio companies Close Competitors and the Nordic markets, compared to industry sectors. The (1) Operational Performance efficiency are mainly better for the respective industries. On the other hand, Close Competitors have better (2) Liquidity and Leverage performance and (3) Wages, Employees and R&D performance. This thesis provides evidence suggesting that there are Large Buyouts spillover effects on Close Competitors and the industry sector where the acquisitions takes place, but on different measures.

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## 2. Large Buyouts in the Nordic

The private equity industry is experiencing an increased deal flow in the Nordic region where the investments are making an increasing impact. The Nordic countries have to recognize that private equity is a critical component of the economies when more known companies are backed by both international and domestic private equity houses. The Nordic private equity markets, which for this research includes Denmark, Finland, Norway and Sweden, are considered by some to be one of the most successful and active in Europe (BVCA Guides 2012). Global and domestic private equity funds also have a long history of receiving funding from Nordic institutions. Institutions investing in private equity are various state-owned pension funds, insurance companies and banks.

The Nordic private equity industry has since 1990s grown to be one of the region's key investor groups. Today most private equity research is based on US empirical data or theories. It is therefore very difficult to analyze Nordic private equity performance. The different investment environments should be taken more into consideration. According to (Spliid, R. 2013), the Nordic region management's motivation factors are different. The investment universe is also smaller and less developed than in the US, consequently activities such as fundraising is more complicated. The Nordic private equity firms are more dependent on international investors from very different jurisdictions, and there are fewer credit sources in the bank-dominated Nordic credit markets. The Nordic is in contrast with the well-diversified US capital market. Nordic governments are also considered more eager to control private equity industry development and to reduce the industry's tax advantages compared to the US.

The table Large Buyouts in the Nordic – Countries provides an overview of the 73 Argentum Asset Management companies that have experienced Large Buyouts. The Large Buyouts are done together with partner private equity funds or done by individual funds, and in this data, it is to a total of 116 Large Buyouts distributed per country between 1997-2016.



**Table 1 Large Buyouts in the Nordic - Countries**

This table provides an overview of the large-cap/mega-cap buyout distribution by entry year and sorted by investment headquarter country (Panel A). The data is from Argentum Asset Management, 73 companies which have experienced a total of 116 large buyouts.

Entry Year	Buyouts in Sweden	Buyouts in Denmark	Buyouts in Norway	Buyouts in Finland	Sum
1997	-	-	1	-	1
1998	-	-	-	-	-
1999	-	3	-	-	3
2000	-	2	-	1	3
2001	-	-	3	-	3
2002	1	-	-	-	1
2003	1	-	-	-	1
2004	5	-	-	-	5
2005	12	2	2	-	16
2006	7	4	1	1	13
2007	10	5	-	-	15
2008	-	4	1	1	6
2009	-	-	-	-	-
2010	-	-	6	-	6
2011	1	3	1	-	5
2012	-	4	-	-	4
2013	-	3	2	3	8
2014	10	-	-	-	10
2015	5	-	-	1	6
2016	3	1	6	-	10
Sum	55	31	23	7	
Total Large Buyouts	116				

The Swedish market for Large Buyouts has the most significant deal flow of 55 deals. The deal flow varies among the different years, but the recorded observations show that the most active year was in 2005 when 16 of the Large Buyouts were completed. Denmark is the second busiest market with 31 Large Buyouts, while Norway was the third most active market with 23 Large Buyouts. The market for Large Buyouts in Finland had a total of only 7 large buyouts and has therefore the lowest deal flow of the Nordic countries. As a result, this paper will mainly focus on the markets and use data from where there are more Large Buyouts deals. For example, the industry in Sweden and Denmark combined is 74% of the Large Buyouts in the Nordics and deserves more attention. The years of 1998 and 2009 had the fewest Large Buyouts in the Nordic region. The data is consistent with the (BVCA Guides 2012) explaining that international private equity investment activity in the Nordic region has increased since the financial crisis, both regarding deal volume and amount. The Argentum Asset Management data shows no Large Buyouts in the year 2009 and the following years demonstrate the deal flow is back to the frequency before the financial crisis in 2008. Furthermore, the market seems to be cyclical changing over time and driven by the markets deal flows as there are multiple buyouts in the data clustered together.

The Nordic private equity industry for Large Buyouts is different in each country. Table 1 Large Buyouts in the Nordics – Countries show that the Large Buyouts activity peaks in each country starting with Sweden, then Denmark, Norway and Finland. The industry developed first from Sweden with 34 Large Buyouts in the years 2004 to 2007. Denmark followed the development in 2005-2008 with 15 Large Buyouts before the financial crisis in 2008. The Norwegian industry, on the other hand, was most active in 2005 and 2015 with 12 Large Buyouts. Finland had its busiest year with only 3 Large Buyouts in 2013. The Table 1 Large Buyouts in the Nordics – Countries depicts that the private equity investments are often clustered together with other private equity Large Buyouts in the same countries when investing in the Large Buyouts segment.

## 2.1 Large Buyouts in Sweden

The Swedish Large Buyouts market is the most active in industries such as Industrials, Health Care & Life Science and Consumer Sector, and is therefore a leading example for the other Nordic countries regarding how the industry should develop. Two important Large Buyouts examples from the Health Care & Life Science Sector are Attendo and Capio. Attendo is one of Sweden's biggest private providers of elderly care. The company was backed by IK Investment Partners from 2006 and exited successfully through an initial public offering in 2015. Attendo share sales were registered in 2016 according to the Argentum Asset Management data. Example number two is the leading healthcare company Capio. The UK Apax Partners and Swedish Nordic Capital invested in Capio also in 2006. Apax Partners sold its stake in Capio in 2016 after successfully achieving growth focusing on internationalization and improving performance. Thomas Berglund, president and CEO of Capio said: *"We have succeeded in growing the Group in recent years thanks to the work and commitment of our teams. I am pleased of the relationship we developed with the Apax team. Their strong experience of acquisitions combined with their expertise in Healthcare was precious knowledge to support our development strategy"* (Cornet, C. 2016). Nordic Capital sold its remaining shares in 2017. *"Nordic Capital is proud to have supported Capio's exceptional employees and management team in the development of Capio into the European champion of modern medicine,"* says Fredrik Näslund, Partner, NC Advisory AB, advisor to the Nordic Capital Funds and member of Capio's Board of Directors (Janerud, K. 2017). The two examples demonstrate therefore how Large Buyouts are done in Sweden and how the private equity funds provide financing or advisory in order to improve the performance of the companies.

The two examples from the Health Care & Life Science industry of Sweden have also been causing political debate. The Health Care & Life Science industry is an industry of great importance for the welfare in the Nordic countries. During 2010, Triton Partners and Kohlberg Kravis Roberts & Co (KKR) invested in Ambea, one of the leading providers of health care in the Nordics. Ambea's Carema managed a retirement home experiencing a heated debate. The private equity funds had to deny that the elderly resident was refused treatment (Johnson, S. 2014). Finance Minister Anders Borg responded: *"There will be considerably tougher rules for private equity firms to operate in this sector"* (Johnson, S. 2014). The response may have caused private equity investments to potentially avoid the Swedish Health Care & Life Science Sector in later years. There were 12 Large Buyouts in 2006 and 10 Large Buyouts in 2007, but

no Large Buyouts in the Health Care & Life Science Sector in recent years. Private equity firms may have avoided investing in Large Buyouts in the Health Care & Life Science Industry as shown in the table Large Buyouts in the Nordic – Industry. However, the investments into the Health Care & Life Science Sector appears to have been very profitable and thus investors should be tempted to seek similar opportunities in the future. As an example, Attendo for instance saw revenues rise 56% from 2008 to 2012, with operating profit growing 78% over the period. Similarly, investing capital into firms like Capio, Attendo and Aleris have experienced attractive double-digit revenue growth. *“The political debate has cast a pall over the willingness to invest,”* said Fredrik Naslund, a board member of private equity-owned healthcare company Capio. On the other hand, it is also plausible that their expertise is no longer needed. The private equity funds may find it challenging to improve performance and look for new investments opportunities. A change of ownership may have been done to welcome other management teams to operate the Health Care & Life Science Sector firms. The growing cost of supporting an ageing population and other health care services needs financing, but the private equity industry seems to look for Large Buyouts opportunities elsewhere and countries such as Sweden should be more concerned.

## 2.2 Large Buyouts in Denmark

The Danish Large Buyouts market is the second most active market in the Nordic with most buyouts from the Industrials, ICT and Health Care & Life Science Sector. An example of great importance was the 2014 investment by Goldman Sachs in Dong Energy. The large buyout changed the Danish government's stake in the Energy Sector firm from 81% to 66% when investing. A joint stake of 7% was also invested together with two Danish pension funds ATP and PFA. *"With the injection of new equity, we have almost fully delivered on our financial action plan and have thus secured the necessary platform for pursuing our ambitions for the coming years,"* said Henrik Poulsen, Dong's chief executive (Milne, R. 2013). Whether Dong Energy would have made it without the capital infusion is questionable, but the process was delivered with efficiency and executed with impressive results. Michael Bruun, a managing director at Goldman Sachs commented he is proud to have contributed to Dong Energy's growth following the company's strong financial results (Levring, P. (2017). The increasing deal flow and impact on the economies have improved business performance also for state-owned companies through private equity turnaround missions.

The Dong Energy initial public offering was one of the largest and most criticized in Danish history. Danish critics are calling the deal an irresponsible use of public assets, since Goldman Sachs seems to have seen a 165-240% increase on the value of its investment in less than three years after the initial public offering in 2016. The buyout was controversial, since the stake acquired was challenged by huge resistance from Danish citizens (Carlström, V. 2016). The buyout led to a political crisis that split the ruling coalition. For instance, the political party Socialistisk Folkeparti made the decision to leave the government and top politicians protested together with several thousand Danes against Goldman Sachs involvement in a state-owned company (Sætren, L. & Steinbakk, A. F. 2014). Some may still be in doubt whether Large Buyouts will create value for the companies they invest in, or whether they will destroy value in the process. Dragsted of the Red-Green Alliance commented the process has been a lesson for Danish politicians in how not to handle foreign investment (Levring, P. (2017). The alternative may be bankruptcy, or a slower recovery and growth for Dong Energy. If Dong Energy had been able to achieve the largest initial public offering in Denmark's history without Goldman Sachs is questionable. However, financially troubled companies like Dong Energy may still need financial advisory and financing to achieve their objectives.

## 2.3 Large Buyouts in Norway

ICT, Energy and Consumer Sector is where Norwegian Large Buyouts market is experiencing the most frequent Large Buyouts. An excellent example from Norway is Visma in the ICT Sector. The company operates in Northern Europe providing business software solutions. Visma has been able to sustain growth using the expertise of the private equity owners through acquisitions of competitors in the increasingly popular software industry. The private equity firms involved at different stages have been HgCapital, Montagu Private Equity, KKR and Cinven. Nic Humphries, CEO of HgCapital, said, *"We chose to work with KKR as our preferred partner in this investment because of their combination of capital and global expertise in the technology sector. The KKR-Hg Capital partnership is a great example of growth focused Private Equity. Together, we have the expertise to bring the company to its next stage of development. This partnership, whereby we retain almost 40% of our original stake in the company, allows us to maintain exposure to the significant further upside that we see in Visma over the coming years"* (KKR 2010). Anders Borg, Director and Head of the Nordic Region at KKR, further commented: *"We are proud to have built a clear leader in the European software market over the past seven years. Visma has truly put the Nordics on the global tech map. Our partnership with Øystein Moan and the Visma team has been a very fruitful one - I would like to personally wish them all the best for the future"* (KKR 2017). KKR announced in 2017 it has agreed to sell its entire remaining stake in Visma, together with a smaller stake from Cinven, to an investor group led by HgCapital together with GIC, Montagu and ICG. The transaction values Visma at \$5.3 billion (NOK45 billion), which makes it the largest ever software buyout in Europe and one of the top 5 globally. Øystein Moan, CEO of Visma, said: *"KKR has been an outstanding partner over the past seven years to take Visma to the next phase of its development. Their support, engagement and strategic expertise from both global and local resources have been key drivers of the firm's growth and success"* (KKR 2017). The Visma example shows how the change of ownership happens when expertise is needed and efficiently changed to improve the performance of the company.

In Norway, the private equity industry is both praised and criticized for trying to improve companies to become more profitable. The term 'welfare profiteers' regarding the private equity industry was introduced in the book 'Velferdsprofitørene' by (Herning, L. 2016). The book describes the private equity investors as people with money and power. The investors are also portrayed to be purely profit driven. The ethical dilemma arises from conflicts of interest.

It would be terrible if services such as Health Care & Life Science Sector is not offered to people who need help only because it is not profitable. Health Care & Life Science Sector should in many situations be offered to everyone, even though it is not profitable. Other industries are also used as examples, but the main protest is against the Health Care & Life Science Sector and other welfare services like education. Political leader Bjørnar Moxnes, of the Red Party, is choosing to stop these ‘profiteers’. *“I think everyone understands that these are business people who want to create business of welfare. They are welfare profiteers, since they operate welfare services for profit”* (Langen, M. 2017). The debates are similar as seen in Sweden. Neighboring countries and the debates regarding the different Large Buyouts, may make it more challenging for private equity firms to operate in the Nordic markets. In contrast, there are some political initiatives that are more welcoming. Prime Minister of Norway is Erna Solberg, of the Conservative Party, who described one of her first objectives to achieve growth for 2017 is to make the public sector more efficient. Public authorities should choose solutions in the market where these are better and cheaper than the state or municipalities. Furthermore, they must ensure same terms when private and public compete for assignments. It contributes to innovation, better services for residents, more entrepreneurs and greater diversity (Solberg, E. 2017). The examples show how the private equity industry is being evaluated by different politicians from the Norwegian market. Norway should learn from the neighboring countries examples and discuss how to develop the private equity industry to become even better.

## 2.4 Large Buyouts in Finland

The industry in Finland for Large Buyouts is the least active in the Nordic, but has the opportunity to learn from the neighbouring countries and develop the industry more quickly through a second mover advantage. Finland has Large Buyouts mainly in the Industrials Sector, but also have one in the Health Care & Life Science, Infrastructure, ICT and Consumer Sector. Sanitec has been an EQT portfolio company since 2005 and is one of the most successful industrial turn-around examples in EQT’s history. *“Sanitec fits well into EQT’s strategy to invest in high-quality companies with significant growth and development potential. We believe that EQT’s financial resources, sector experience and knowledge in driving industrial acceleration will ensure that Sanitec is provided with the right resources to continue to develop and focus its business further,”* says Juha Lindfors, partner at EQT Partners (Lindorfs, J. & Hähnel, J. 2005). Sanitec was one of the single largest equity investment any EQT fund has ever made and the company was acquired in 2005 from BC Partners for an enterprise value of

EUR 1,325 million. Given a successful bid from Geberit, the Sanitec investment will approximately have returned the EUR 596 million invested, including additional equity injections. *“Sanitec is one of the most challenging and demanding investments EQT has made and we are of course not happy with the returns. However, without EQT’s industrial approach and the resulting successful restructuring, the outcome could certainly have been far worse for all involved. Had EQT walked away in 2009, the whole investment would have been lost but abandoning Sanitec was never an option,”* says Caspar Callerström Partner at EQT Partners, Investment Advisor to EQT IV (Callerström, C. 2015). Sanitec is therefore an excellent example of how the financial crisis has also made the private equity environment challenging in the Nordics. The private equity investors are not always lucky with their returns, but it is an important example demonstrating that they are impacted by many challenges facing most of the industry and still try to improve the performance, often with great success.

The portfolio companies from Argentum Asset Management in Finland are few and the Large Buyout examples in Sweden, Denmark and Norway were therefore found to be more interesting. The historical development of the buyout markets in Finland have developed positively, but is small compared to international peers in absolute size, international participation and fund size. According to (Saarikoski, M., Roine, P., Ruohonen, J., Halonen, A., Sulin, J. & Lebreton, H. 2014), the Finnish private equity markets have developed positively over the last 20 years, but the development has stagnated after 2008. During the last 15 years Finnish private equity has had a compounded average growth rate (CAGR) of 11% for the period. However, the development during the last 5 years has been slow growing with CAGR of 1% from 2008. Overall private equity has stabilized its position as a major funding opportunity for companies and as an alternative for stock market listing or traditional debt financing. The environment is learning from neighboring countries and thus Finland may develop the industry more efficiently through a latecomer mover advantage.



### 3. Large Buyouts Distribution by Industry

The Table 2 Large Buyouts in the Nordic – Industry illustrate which industries experience the most frequent Large Buyout deals. During 1997-2016 private equity Large Buyouts are most active in the Industrials Sector, where 30 of the 116 Large Buyouts have been done.

**Table 2 Large Buyouts in the Nordic - Industry**

This table provides an overview of the large-cap/mega-cap buyout distribution by entry year and sorted by industry (Panel B). The data is from Argentum Asset Management, 73 companies which have experienced a total of 116 large buyouts.

Panel B: Large-Cap/Mega-Cap Buyout Distribution Per Industry

Entry Year	Industrials	Consumer	Health Care & Life Science	ICT	Energy	Infrastructure	Other	Sum
1997	-	1	-	-	-	-	-	1
1998	-	-	-	-	-	-	-	-
1999	-	3	-	-	-	-	-	3
2000	-	3	-	-	-	-	-	3
2001	-	3	-	-	-	-	-	3
2002	-	1	-	-	-	-	-	1
2003	-	1	-	-	-	-	-	1
2004	-	5	-	-	-	-	-	5
2005	-	12	-	-	4	-	-	16
2006	-	-	12	-	1	-	-	13
2007	-	-	10	5	-	-	-	15
2008	-	-	-	6	-	-	-	6
2009	-	-	-	-	-	-	-	-
2010	-	-	-	6	-	-	-	6
2011	3	-	-	2	-	-	-	5
2012	4	-	-	-	-	-	-	4
2013	8	-	-	-	-	-	-	8
2014	10	-	-	-	-	-	-	10
2015	5	-	-	-	-	1	-	6
2016	-	-	-	-	-	-	10	10
Sum	30	29	22	19	5	1	10	
Total Large Buyouts	116							

Consumer Sector is the second most active market with 29 Large Buyouts, Health Care & Life Science Sector was the third most active market with 22 Large Buyouts and then the ICT Sector with 19 Large Buyouts. As a result, this paper will mainly focus on these industries where there are more Large Buyouts deals. The Energy Sector has only 5 Large Buyouts that are in the data. An example from the Energy Sector is from 2007 when Herkules Capital together with Ferd Capital invested in Aibel. Aibel is a leading service company that works within the oil, gas and renewable Energy Sector. In 2012 the company changed ownership when Ratos bought a 32% stake in the company. The data on Infrastructure and Other industries are not used in this paper for the empirical analysis section when calculating the differences in mean values,

since there is only 1 Large Buyout in Infrastructure and the Other category is not clearly defined what type of companies it includes. Combining Industrials and Health Care & Life Science Sectors represents more than 50% of the total Large Buyouts segment in the Nordic. Today the most popular industry is the Industrials Sector, while the other sectors have not recently had any Large Buyouts.

Table 2 Large Buyouts in the Nordics – Industry demonstrate that the Large Buyouts activity is highest in the Consumer, Energy, Health Care & Life Science and then Industrials Sector. The Consumer Sector was from 1997 to 2005 experiencing total of 29 buyouts. The Energy Sector was active in 2005 and 2006 with only 5 Large Buyouts. 2006 and 2007 was the years of the Health Care & Life Science Sector, while the private equity focused on ICT Sector in the years 2007 to 2011, excluding the financial crisis year in 2008. Today the Large Buyouts in the Nordics is mainly investing in the Industrials Sector, but the future may be different. The Table 2 Large Buyouts in the Nordics – Industry shows that the private equity investments are often together with similar investments in the same sectors in the Large Buyouts segment.

## 4. Large Buyouts Distribution by Exit Strategies

Which exit strategies that are most frequently implemented by the private equity funds are illustrated in Table 3 Large Buyouts in the Nordic – Exit Strategies. Only 34 of the Large Buyouts in the timeframe used in the data have exited so far.

**Table 3 Large Buyouts in the Nordic – Exit Strategies**

This table provides an overview of the large-cap/mega-cap buyout distribution by exit year and sorted by exit strategy (Panel C). The data is from Argentum Asset Management, 73 companies which have experienced a total of 116 large buyouts.						
Panel C: Large-Cap/Mega-Cap Buyout Distribution by Exit Strategy						
Entry Year	Secondary	Share Sale	Trade Sale	Merger	Other	Sum
1997	-	-	-	-	-	-
1998	-	-	-	-	-	-
1999	-	-	-	-	-	-
2000	-	-	-	-	-	-
2001	-	-	-	-	-	-
2002	-	1	-	-	-	1
2003	-	-	-	-	-	-
2004	-	-	-	-	-	-
2005	-	1	-	-	1	2
2006	2	1	2	-	-	5
2007	-	1	-	-	-	1
2008	1	1	-	-	-	2
2009	1	-	-	-	-	1
2010	-	-	-	-	-	-
2011	1	1	1	2	-	5
2012	2	2	-	-	-	4
2013	1	-	3	-	-	4
2014	-	1	-	-	-	1
2015	2	-	2	-	1	5
2016	1	-	1	-	-	2
2017	-	1	-	-	-	1
Sum	11	10	9	2	2	
Total Exits	34					

The most commonly used exit strategy for Large Buyouts in the Nordic is Secondary with 11 exits, while the second most used exit strategy is Share Sale. Trade Sale is also very common with 9 exits. The least used strategy is Merger with only 2 exits. In this case, the example is

from 2011, when the two confectionary companies Leaf and Cloetta started their merger. Some exit strategies are not defined and categorized as Other.

Table 3 Large Buyouts in the Nordics – Exit Strategies portrays the exit activity is relatively evenly spread out in each year without any notable groupings. The private equity Large Buyouts exit strategies are challenging to interpret, since there have only been 33 exits so far in the Large Buyouts segment and this will be clearer in the future. It is likely that they exit strategies are also somewhat cyclical and groupings of the exits may occur. This may therefore be similar to the groupings seen in Table 1 Large Buyouts in the Nordic - Countries and Table 2 Large Buyouts in the Nordic - Industry.

## 5. Private Equity Literature Review

The literature review will provide an overview of existing research of academic literature on private equity topics evaluated in this thesis. The following literature is researched on Large Buyout Operating Performance together with Liquidity and Leverage in private equity. Furthermore, it will investigate Employees, Wages and R&D changes during the years after a Large Buyout. The literature review will also evaluate how a Large Buyouts may impact Close Competitors or industry sector performance. Research has explored several aspects of the private equity industry mainly from more developed industries like on the US, or European markets. However, it is a foundation together with Nordic literature on which it is possible to learn more about the private equity industry in the Nordic region.

### 5.1 Large Buyouts Performance

Academic research has often covered how the private equity performance through analysis of historical data to gain an insight into the world of private equity and Large Buyouts. Most academic literature supports positive results regarding the profitability and productivity improvements observed for private equity-backed companies. The research is also positive for management buyouts of historic companies between 1980 and 1986 when analysing the effects of management buyouts on Operating Performance (Kaplan, S. N. 1989). Profitability and productivity improvements observed for private equity-backed companies is also documented by (Muscarella, C. J., & Vetsuypens, M. R. 1990), (Lichtenberg, F. R. & Siegel, D. 1990), (Guo, S., Hotchkiss, E. & Song W. 2011) and (Wilson, N., Wright, M., Siegel, D. S. & Scholes, L. 2012). The improvements can also be interpreted as higher investor returns, but fund returns are difficult to estimate and will not be evaluated in this paper. A recent study of nearly 1,400 US funds was done by (Harris, R. S., Jenkinson, T. & Kaplan, S. N. 2014), which shows that buyout outperformance versus the S&P 500 averages 20% to 27% over a fund's life and more than 3% annually. (Strömberg 2009) summarize the overall research across different methodologies, measurement units and time periods, that private equity in general enhances company performance. Furthermore, the positive effects on financial performance have not been found to be at the expense of long-term investment and growth.

Large buyout news often starts by mentioning rumors on how large the most recent deal is and sometimes an official statement regarding transaction value. Seldom is the performance explained in detail with supporting data, but performance is often highlighting to be positive. In contrast, some academic literature on buyout performance often underlines how returns are lower than you think (Phalippou 2007). However, it is a risky business with many unsuccessful buyouts as well. Sometimes the discussion moves on to whether they are beneficial to the economy, or not. Based on industry association reports, the press has spread the belief that buyout performance has been high. According to (Phalippou 2007), the buyout results are mainly evidence that the marketing of past performance is misleading and presents incomplete information. (Kaplan and Schoar 2005) and (Phalippou and Gottschalg 2007) reports use data containing cash flows going from and to investors of buyout funds, where they find that the average performance of buyout funds is below that of the S&P 500 net of fees. Furthermore, value increase in private equity is researched in different aspects. The improved performance of private equity funds may either provide value to investors by within the invested firm or by through acquiring undervalued assets or a combination of both (Wright, M., Gilligan, J. & Amess, K. 2009). The performance of a Large Buyouts may therefore be challenging to interpret. The above-mentioned aspects should be researched thoroughly. Private equity may be increased performance regarding added economic value, or only a value transfer from other stakeholders (Tykvov'a, T., & Borell, M. 2012). Another topic that impacts performance that this paper will not investigate is different types of incentives for the management to improve the return performance of the funds. A typical compensation structure is a 2% annual management fee on the fund's capital and a 20% carried interest on the profits above a certain threshold (Metrick & Yasuda 2010). The incentives are sometimes not ideal. According to (Phalippou 2007), the compensation contracts not only hide important details, but they also sometimes seem to offer distorted incentives to fund managers. The main obstacle for the private equity seems to be misleading data or unclear information.

The Nordic has similar limitations, but since the market is often described as small compared to the US, it may be even more challenging to have enough observations, or access to an updated data set. The existing literature on performance in the Nordic outweighs the prevailing criticism and provides some findings of positive impact. In the paper by (Bienz, C. 2016) the financial and operational performance of private equity buyouts firms in Norway was analyzed and found increase in performance measurements. On most financial and operational measures firms seem to improve relative to a carefully selected group of controls. (Friedrich, T. 2015)

has also done company performance in the Nordics, but again only for a singular country. The paper highlights that performance is improved, even in the Norwegian private equity industry. The research looks at Operating Performance, insolvency risk, employment and even innovation. The results demonstrate an increase in operating income and net cash flow due to increase in sales. The research does not look at other Nordic countries, but the Nordic region is often developed together, and one may find similar findings in bordering countries. Another example of a country analysis is (Bakke, G. & Bull-Berg, J. M. 2016) paper on the private equity in Finland. Here specifically it looks at Operating Performance, insolvency employment and total factor productivity. The findings support those portfolio companies achieve significantly higher growth in turnover after an acquisition. The research of Nordic performance is therefore usually on a singular country and performance measurements of the Nordic countries is a topic that should be explored more.

The Nordic buyouts have been evaluated in different areas and under different market conditions. Determinants of buyouts in private equity firms by (Nordström, L. 2010) provides strong evidence that private equity activity contributes positively to the rapid growth of the portfolio companies in the Nordics. One of the main findings is that change in the operating variables; employees, debt over equity and EBITDA-Margin is important for the probability of a buyout. (Rasmussen, M. R. & Enggård, N. B. 2014) also evaluates the Nordic, but in a different aspect. The findings suggest that secondary buyouts are not inferior deals in terms of operational performance improvements, compared to first round buyouts. Additionally, interviews by (Anker, N. C. J. & Stärk-Johansen, J. 2015) explains that exit strategies by private equity firms in the Nordic region may also be linked to portfolio company performance. Initial public offerings may represent the preferred exit for particularly successful and large portfolio firms as it enables participation in future value creation, while at the same time taking some risk off the table. Otherwise, the majority interviewees expressed strong preference for trade sales, since Initial public offerings appeared to represent the least favorable exit channel due to inefficient divestment and extensive regulation. Table 3 Large Buyouts in the Nordic – Exit Strategies shows that there is a mix of exit strategies including mainly secondary, share sale, or a trade sale. Since there are few exits in the Large Buyouts segment, it is too early to see if there is a pattern and this will be clearer in the future. (Jääskeläinen, J. 2011) researched operational performance of Nordic private equity back buyouts in the recession of 2007-2009. The research finds that private equity can create economic value also through tough economic conditions. When comparing the Nordic countries, the paper results indicated that Swedish and

Norwegian buyouts had performed better than Finnish and Danish buyouts. However, more comparable Large Buyouts analysis could provide supporting evidence for performance in the Nordic countries.

## 5.2 Insolvency Risk and Leverage

Since private equity financing often uses leverage, the academic literature on insolvency risk and leverage has attempted to learn more about these factors impact performance in Large Buyout transactions. The financial structure of private equity funds is researched in detail by (Axelson, U., Strömberg, P., & Weisbach, M. 2009). The paper describes some professionals not following the Modigliani-Miller theorem, but following the philosophy to lever deals as much as possible to give the highest returns to the limited partners. With this in mind, there should be noticeable risks regarding Liquidity and Leverage. (Tykvov'a, T., & Borell, M. 2012) analyzed the financial distress risk after the buyouts, but find lower distress risk and bankruptcy rates for buyout-backed firms than non- buyout control companies. The financing by the funds and expertise advisory they bring may therefore have improved this area of performance for the portfolio companies. The reason to finance with more leverage is most likely due to tax shields and other benefits of using leverage. (Roald & Roti 2015) research indicates that the Norwegian private equity portfolio companies to a larger extent than their peers tax plan. Tax planning enables private equity to use leverage and generate tax shields. With regards to active tax planning, Carsten (2017) finds there is little evidence for portfolio companies doing more tax planning than comparable companies. This paper will not evaluate tax planning. The master thesis will evaluate Large Buyouts and measurements such as Liquidity and Leverage ratios develop after the buyouts. It may be possible to learn more about how levered the buyouts are and compare them to the control group. A Nordic cross-country analysis may give a better understanding of the riskiness of Large Buyouts in the Nordic region.

## 5.3 Employees, Wages and R&D

Academic literature has also researched on different performance measurements such as innovation, wages and R&D. The value beyond the buyout has been of increasing interest and (Nordström, L. 2010) finds that target companies in the Nordic seem to be expansive firms regarding a positive development in employees. During the recession of 2007-2009, while



employee productivity increases relative to benchmark, (Jääskeläinen, J. 2011) find no significant difference in wage or employment development after the buyouts. (Bakke, G. & Bull-Berg, J. M. 2016) results indicate that portfolio companies increase employment substantially more than benchmark in the three years after. However, the findings appear to be at the expense of lower wage growth. (Lichtenberg, F. R. & Siegel, D. 1990) shows average R&D-intensity of firms involved in leveraged buyouts increased at least as much from 1978 to 1986 compared to firms responding to the survey of industrial R&D. Similarly, the analysis by (Friedrich, T. 2015) highlights the empirical challenges such as the lack in reported R&D expenditures within the profit and loss statement involved when assessing the innovative performance of companies within a country such as Norway. However, (Long, W. F. & Ravenscraft, D. J. 1993) find that leveraged buyouts cause R&D intensity to drop by 40%. Similar findings may be seen in the Nordic Large Buyout segment, but the challenge is to have enough published data. Furthermore, as the accounting item R&D is an expense, it is not possible to say whether or not the expenditure creates innovation, but it may be underlined as an indicator for innovation. Another alternative way to look at innovation is investments in innovation as measured by patenting activity like (Lerner, J., Sørensen, M & Strömberg, P. 2010) when evaluating 472 leveraged buyouts in the US. Debate have often been regarding whether leverage buyouts relieve managers from short-term pressures from public shareholders, or whether leverage buyouts funds themselves sacrifice long-term growth to boost short-term performance. However, the results indicate evidence of any decrease in these activities. (Strömberg 2009) summarizes that academic research has shown a positive link between private equity investment and innovation, but some studies have found diverging evidence on the causal relationship.

## 5.4 Close Competitors Performance

Academic research findings suggest diverse opinions on the performance of private equity investments, but today it has been increasingly focusing on the economic value beyond the portfolio companies. Private equity backed firms have improved operations has been supported by a number of empirical studies, focusing on the effects on the individual portfolio companies (Bernstein, S., Lerner J., Sørensen, M. & Strömberg, P. 2014). The main view since the 1980s is that cash flow is one of the dozen reasons to acquire a target and was early documented by (Jensen, M. C. 1986). The acquisitions targets are companies often with poor management, or have large free cash flows which they refuse to pay out to shareholders. The idea is therefore

highlighted the value from the company operations and describes mainly the target company internal performance as the economic value created. However, alternative and more recent views of buyout impacts have emerged. (Chevalier, J. A. 1995) results indicate that the announcement of a leveraged buyout actually increases the expected future profits of a firm's product-market rivals. The paper also shows that supermarket chains and that the presence of leverage buyout firms encourages local entry and expansion by rivals. (Chevalier, J. A. 1995) suggests it would be interesting to look at the dimension on which competition in the product market changes. However, the paper points out a limitation with the research. It may be a debatable whether or not these buyout firms in the research were value-maximizing. (Oxman, J. and Yildirim Y. 2008) suggest that other spillover effects from private equity activity may occur. The research looks at how corporate governance practices spill over on competitors after a buyout. However, a recent paper by (Bienz, C. 2017) also encourage more research about the effect of PE ownership on competitors or the effect on the industries in which the buyout happens. This paper will therefore attempt to learn more about how Large Buyouts impact Close Competitors performance.

## 5.5. Industry Performance

Recent academic research is investigating more regarding how buyouts may impact the industry performance. (Strömberg 2009) points out that discussion tends based on isolated examples and with little reference to the actual real economic impact of the private equity industry. Furthermore, he finds that private equity has a positive impact on economic growth, due to a beneficial effect on productivity and innovation. (Strömberg 2009) argues that there is no academic evidence that, due to higher leverage ratios in portfolio companies, private equity activity contributes to economic downturns. However, the evidence suggests that private equity is likely to have a particularly beneficial effect on the economy during downturns when access to capital is scarce. The industries where private equity funds have invested in the past five years have grown more quickly in terms of productivity and employment, and these industries appear to be less exposed to aggregate shocks (Bernstein, S., Lerner J., Sørensen, M. & Strömberg, P. 2014). These findings are promising and should be highlighted more in academic literature and to politicians in search for how to grow an economy such as Sweden, Norway, Denmark, or Finland. However, the research finds few significant differences between industries with lower or higher levels of private equity activity. This may suggest that the impact of private equity buyouts on industry performance is not primarily due to the direct

effect of ownership on the firms they acquire, but rather that buyouts gives rise to spill-over effects on other firms in the industry (Bernstein, S., Lerner J., Sørensen, M. & Strömberg, P. 2014). The research in this paper will thus address how Close Competitors have impacted industry sectors such as Energy, Health Care & Life Science, Industrials, Consumer and ICT. In addition, it will evaluate how Close Competitors compare to all of these industries as a control group.

## 4. Data

The data used in this paper comes from several relevant sources for the analysis. This paper uses data mainly from: the portfolio companies provided by Argentum Asset Management; the accounting data from Wharton Research Data Service; the organization numbers, industry sector variable and investment years categorization from Argentum Centre for Private Equity at the Norwegian School of Economics; and additional information such online news resources commenting on the large Nordic buyouts, or the Nordic private equity industry. Private equity industry has been challenging to research and notable scholars in recent years comment on the challenges in data being one of the key challenges. (Kaplan and Schoar, 2005) mentions that one of the main challenges is that private equity investments have been largely exempting from public disclosure requirements. On the other hand, (Phalippou 2007) underlines that performance data might be upward biased as only buyout firms with a relatively good track record raises a new fund. It is important to keep these key findings in mind when attempting to learn more about the Nordic private equity industry. Nordic private equity performance research by (Friedrich, T. 2015) highlights that little research has been done on singular countries like Norway. (Bakke, G. & Bull-Berg, J. M. 2016) also finds that there limited comprehensive assessments of the Finnish buyout market. In order to tackle the data challenges, this paper increases the scope when looking at all the Nordic countries combined and may provide an insight into the Nordic private equity industry. Multiple countries are often analyzed, but mainly with an even larger scope such as the paper by (Bernstein, S., Lerner, J., Sørensen, M. & Strömberg, P. 2010) which examines the impact of private equity investments across 20 industries in 26 major nations between 1991 and 2007. In particular, the thesis will look at the Nordic Large Buyouts segment, since there is little research on the topic and Large Buyouts are often researched together with smaller buyouts. The Large Buyouts segment is therefore an interesting area to learn more about and may provide insights into how the Nordic private equity industry has developed.

This research is possible in particular due to the close collaboration with Argentum Asset Management, the Argentum Centre for Private Equity and Finans|Bergen. Students, researchers and the financial industry are collaborating in order to learn more about private equity and finance. The collaboration facilitates an opportunity to contribute to academic literature and assist companies in important strategic decision making. Furthermore, in countries such as Norway there are organizations such as the Brønnøysund Register Centre which collects both

public and private company information enabling this paper to evaluate the Large Buyout Portfolio Companies in detail compared to other countries.

Argentum Asset Management has supported the research with a collection of data on medium-cap, large-cap and mega-cap buyouts portfolio companies in the Nordic region. The information was collected 2017 on the 28<sup>th</sup> of February, from Argentum Asset Management's database, based on publicly available information from the funds home pages and the relevant stock exchanges. Invest Europe's definition of large cap-buyouts are transaction values between EUR 500 – EUR 1,000, while mega-cap buyouts are EUR 1,000 million or more (EVCA 2012). The data received from Argentum Asset Management are starting at lower range categorized as upper mid-market segment buyouts and larger. An example from the lowest range of the available data is Duni. In the year 1997, it was recorded that EQT Partners invested EUR 337 million for a 50% stake in the Swedish Consumer Sector company Duni. The highest transaction value was the mega-cap transaction of TDC in Denmark for EUR 12,300 million. The ICT Sector company was invested in together by Apax Partners, Blackstone, KKR, Permira Advisers and Providence Equity Partners. Due to the large range of transaction values and some values being not disclosed, this paper will use the term Large Buyouts for the buyouts considered the largest in the Nordic region, which includes medium-cap, large-cap and mega-cap buyouts.

Descriptive statistics are shown in the Table 1 Large Buyouts in the Nordic – Countries, with an overview of the 73 Argentum Asset Management portfolio companies that where together with partner private equity funds translates to a total of 116 Large Buyouts distributed per country between 1997-2016. Descriptive statistics is also visualized regarding industry activity and exit strategies for Large Buyouts. Table 2 Large Buyouts in the Nordic - Industry shows the Large Buyouts during 1997-2016 demonstrating that most active in the Industrials, Consumer, Health Care & Life Science, ICT Sector where 100 of the 116 Large Buyouts have been recorded. Table 3 Large Buyouts in the Nordic – Exit Strategies demonstrates that only 34 of the Large Buyouts in the timeframe used in the data set have exited. Even though there are few Large Buyout Portfolio Companies exits, the table shows that Secondary, Share Sale and Trade Sales are frequently used. However, after cleaning the data, it was only 33 companies that was available for analysis looking at differences in mean values. Observations are therefore a key limitation in this master thesis.

Online sources are used regarding news or debates on the Large Buyout portfolio companies and the private equity industry in the Nordic. Online news sources are often the private equity fund webpages where investors provide an announcement or publication regarding transactions. However, these online sources are limited with information and does not include detailed data on their projects. Political debates are from online news sources which comments the impact from the Large Buyout deals or provides government officials public statements on the private equity industry.

The organization numbers, sector categorization and investment years are collected from Argentum Centre for Private Equity at NHH – Norwegian School of Economics database. The database also includes data on the name of the portfolio company, the fund investing and other deal related information. The information is historically collected from buyouts from late 1990- and to 2012. According to Bienz, C. (2016), the database has been updated and includes a total of 250 buyouts up to 2013. Furthermore, the data has been matched to the Institute for Research in Economics and Business Administration (SNF) accounting database which covers all Norwegian firms from 1997 to 2014 (Berner, E., Aksel M. & Olving, M. 2014). The data is maintained by Aksel Mjøs and the Department of Finance at the NHH – Norwegian School of Economics using organization numbers. In addition, historical ownership information was purchased from Bisnode and covers all Norwegian deals up to 2012. However, the underlying accounting data in this analysis is from the Wharton Data Research Services.

The underlying accounting data used for the performance measurements is from Wharton Data Research Services. The Wharton Data Research Services includes one of the most comprehensive sources of financial, accounting and management data. Wharton Research Data Services has therefore accounting data for all the portfolio companies and all the Nordic companies both public and private. All variable data is from very large, large and medium-sized companies at the Wharton Research Data Services - Bureau van Dijk - Amadeus Financials (1995-2017) for Norway, Denmark, Sweden and Finland. The Table 11 Variable Descriptions provides an overview of the performance variables used when comparing both Large Buyouts portfolio companies with their Close Competitors, or Large Buyouts portfolio companies' Close Competitors with companies within the respective industry sectors. Only a selected few performance measurements identified as relevant were used, while many of the Wharton Data Research Services performance variables were not used.

Close Competitors are hand-picked by the author of this master thesis. The reason is due to the complexity of identifying Close Competitors. Academic scholar such as (Porter, M. E. 1979) describes one of many methods on how the competitive forces can be used to get an overview of the competitive landscape. Research by (Friedrich, T. 2015) and (Bakke, G. & Bull-Berg, J. M. 2016) use the propensity score matching method, but this will not be able to identify the right Close Competitors. Close Competitors is a topic that is of great complexity and identifying them will be challenging. Cross-country analysis research has also been done by (Bernstein, S., Lerner, J., Sørensen, M. & Strömberg, P. 2010). However, they use an alternative method. Their method measures the growth rate in a particular industry relative to the average growth rate across countries in the same year. Country and industry fixed effects impact of private equity activity was measured relative to the average performance in a given country, industry, and year. All Close Competitor data collection methods are complex, and this thesis has chosen to hand-pick the Close Competitors based on dimension explained in the methodology section of the paper.

## 5. Empirical Analysis

### 5.1 Methodology

The empirical aim of this paper is to evaluate the Nordic private equity large-cap buyouts portfolio companies' performance effect on Close Competitors and industry sectors performance. This research will test the differences in mean values on how: (A) Large Buyout Portfolio Companies compare to Close Competitors, (B) Close Competitors Compare to Energy Sector, (C) Close Competitors Compare to Health Care & Life Science Sector, (D) Close Competitors Compare to Industrials Sector, (E) Close Competitors Compare to Consumer Sector, (F) Close Competitors Compare to ICT Sector and (G) Close Competitors Compare to Multiple Sectors. The data sets from Argentum Asset Management, Argentum Centre for Private Equity and Wharton Research Data Services were merged together. The performance measurements are selected due to the relevance in order to describe the performance of a company and listed in the Table 11 Variable Description. The performance measurement data is from very large, large and medium-sized companies at the Wharton Research Data Services - Bureau van Dijk - Amadeus Financials (1995-2017) for Norway, Denmark, Sweden and Finland. Holding companies were mainly selected if available, or a company under the holding company was selected. The paper mainly uses consolidated statements if possible, if not available, the analysis will use the unconsolidated statements or performance measurement data available for that given year. The measurements are categorized into measurements within (1) Operating Performance and (2) Liquidity and Leverage. And finally, measurements with regards to (3) Employees, Wages and R&D.

One of the main challenges in this paper is to merge and categorize the data in order to do the analysis. The categorization of the collected data was in the groups of: (1) Large Buyouts, (2) Close Competitors, (3) Energy Sector, (4) Health Care & Life Science Sector, (5) Industrials Sector, (6) Consumer Sector, (7), ICT Sector, (8) Multiple Sectors. After merging the data from Argentum Asset Management, Argentum Centre for Private Equity and Wharton Research Data Services, the data included 2 million observation lines and data cleaning was needed in order to conduct the research in this paper.

(1) Large Buyouts categorization variables in the data set from Argentum Asset Management was created in order to clearly identify the portfolio companies as Large Buyouts. Argentum



Asset Management Large Buyout Portfolio Companies data did not include organization numbers. The organization numbers were therefore first hand-collected from the Argentum Centre for Private Equity Database. The challenge was to pick the correct organization number. Holding companies were preferred.

(2) Close Competitors organization numbers were also hand-collected from the Argentum Centre for Private Equity Database and identified based on dimensions as Close Competitors. This method simple and most likely best due to the complexity of selecting these observations for Close Competitors. This research will do a simple approach through subjectively identifying 5 Close Competitors per Large Buyout Portfolio Companies based on simple dimensions. The companies are selected based on subjectivity that the author of this thesis believes they are Close Competitors. The data is found mainly from company webpages and annual reports, or company descriptions. The dimensions require that the company is operating in the Nordic region. In addition, the dimensions include that the companies operate in same industry. However, competition is also across-sectors. The dimensions further include if the company is competing using similar products or services across industries. And finally, the organization numbers must be available in the Wharton Research Data Services - Bureau van Dijk - Amadeus Financials (1995-2017) for Norway, Denmark, Sweden and Finland. Since the variable sector is of significance importance for the research, some data will be excluded and only the private equity backed portfolio companies Close Competitors from the Argentum Centre for Private Equity database will be used.

Sector variables were based on the Argentum Centre for Private Equity data included organizational numbers, also variables such as Sector and investment years. These key variables were of significant importance to conduct this analysis. After receiving the data, the data was updated with extra data from Sweden, Finland and Norway from Argentum Centre for Private Equity with buyouts up until 2016, the recent data from Denmark is not available. However, the historical data for Denmark is used in this research. The sector variables were divided into industry categories such as the (3) Energy Sector, (4) Health Care & Life Science Sector, (5) Industrials Sector, (6) Consumer Sector and (7) ICT Sector. Finally, the (8) Multiple Sectors categorization was done included all the industries. In other words, this means that Multiple Sectors includes the Energy Sector, Health Care & Life Science Sector, Industrials Sector, Consumer Sector, and the ICT Sector all together. Variables such as Cleantech and undefined categories such as Other was not used in this paper for analysis.

This research is measuring the performance of a Large Buyout Portfolio Company using the investment year as a trigger for where performance will be measured from. The data used for the analysis is therefore kept only if in the investment years (1997; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007. 2008; 2010; 2011; 2012; 2013; 2014; 2015; 2016) from the Argentum Asset Management Large Buyout Portfolio Companies. Furthermore, data cleaning is needed when this paper will mainly use consolidated statements if possible, if not available, the analysis will use the unconsolidated statements or performance measurement data available for that given year. The data from this point is ready for analysis and there are 4,353 observation lines used in the analysis below.

This paper has chosen to do the difference-in-difference methodology to do empirical analysis, since it can estimate the changes in mean values. The paper analysis is about the Nordic private equity large-cap buyouts portfolio companies' performance effect on Close Competitors and industry performance. According to (Angrist, J. D., & Pischke, J. 2009), the difference-in-difference idea was pioneered by physician John Snow (1855). It was previously applied to study epidemics in London and examined the changes in treated and control variables. First the difference in the performance measurements are calculated from Year 0 to Year +1, Year +2 and Year +3. Then the difference-in-difference in this paper will therefore be the differences of the mean values of the treated and the control variables, which is denoted by (Diff-in-Diff ATT Mean). The difference-in-difference is a methodology fixed effects estimation using aggregate data. The population difference-in-difference is the causal effect of interest which is estimated using the population means. A formula example is described below:

$$Diff - i - Diff = (EBITDA_{(B,t+n)} - EBITDA_{(B,t)}) - (EBITDA_{(C,t+n)} - EBITDA_{(C,t)})$$

The formula has been previously used when researching private equity in the Nordic region by singular country such as in Norway or Finland by (Bienz, C. 2017), (Friedrich, T. 2015) and (Bakke, G. & Bull-Berg, J. M. 2016). However, this paper will apply the methodology in an analysis of the Nordic region and thus will provide interesting insight to the academic literature of private equity in the Nordic region.

In order to test for the quality of the analysis, some statistical significance measurements and supporting data is collected. For instance, based on a two-tailed t-test, the (Diff-in-Diff ATT Mean) levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively (Aczel, A. D. 1996). Furthermore, standard error (SE) is used in order to see the standard deviation of the samples. In addition, the P-Score  $\Pr(|T| > |t|)$  is used to evaluate the statistical significance of the (Diff-in-Diff ATT Mean) are available in the analysis performance measurement table . The paper also reports these values for readers to make their own conclusions.

## 5.2 Empirical Results

### A. Large Buyout Portfolio Companies Compared to Close Competitors

The empirical analysis will attempt to evaluate the Nordic private equity large-cap buyouts portfolio companies' performance effect on Close Competitors and industry sectors performance. The analysis findings show Large Buyouts perform better compared to Close Competitors in (1) Operating Performance and (3) Wages, Employees and R&D. Furthermore, Close Competitors has better (2) Liquidity and Leverage performance compared to Large Buyouts. Table 4 Performance Measurements of Large Buyout Portfolio Companies Compared to Close Competitors provides lists an overview of the differences in mean results variable (Diff-in-Diff ATT Mean). However, the results show few significant values. The findings are further discussed and interpreted to learn more about the Nordic private equity industry.

**1) Operating Performance** results show more positive performance measurements for Large Buyout portfolio companies compared to Close Competitors. Large Buyout portfolio companies are improving in the short run as seen when  $T = +1$  when compared to Close Competitors. An interesting observation is that Sales is the only performance measurement indicating a negative number and is further decreasing over the three years. The data shows an overall positive effect for the Large Buyout Portfolio Companies regarding Operating Performance also at  $T = +3$ . Statistical significance is observed in year 2 and 3 on the performance measurement Return on Sales, indicating by statistical significant of 10% that the Return on Sales has increased over the investment horizon for a Large Buyout portfolio companies. However, performance measurements such as Return on Assets and Return on Capital Employed have changed into negative numbers. Return on Capital Employed has decreased substantially and is the variable most in contrast to a positive performance for Large Buyout portfolio companies compared to Close Competitors.

**2) Liquidity and Leverage** the results show negative output for Current and Coverage Ratio, which indicates that Close Competitors have better ratios. Results in the first-year show that all performance measurements for Liquidity and Leverage are negative. The ratios are still negative after a few years and it is only the Debt Ratio that has turned into a positive ratio. However, the lower the Debt Ratio is the better, and this indicates worse performance for Large

Buyouts with increasing debt in their books. Coverage Ratio is statistical significant at the 5% level in year 2 and 3, which has decrease significantly.

**3) Employees, Wages and R&D** results shows how Large Buyouts perform better than Close Competitors in the Nordic countries. Alternative measurements used to see the economic value created by Large Buyouts compared to Close Competitors. In this case, there were no observations for R&D. Table 4 Performance Measurements of Large Buyout Portfolio Companies Compared to Close Competitors shows that employees increase at the expense of negative wages when  $T = +1$ . The major changes over the timeframe is that wages have turned positive, while productivity measure Sales/Employees have decreased. The Sales/Employees measurement is at the statistical significance at a 5% level in year 3. The turnaround missions of Large Buyouts may therefore be interpreted to be challenging for employee productivity to adapt into new roles and it can be interesting to learn if the Sales/Employees may improve in the future. Another notable observation is that Employees are still increasing at  $T = +3$ .

**Discussion** is necessary, since the results needs to be verified by scholars or linked with existing literature findings in order to draw any conclusions. The Operating Performance results support that Large Buyout companies perform better than the Close Competitors. The results are consistent with scholars such as (Kaplan, S. N. 1989) using data from 1980 and 1986. In addition, similar results as seen in the US buyouts outperformance of the S&P500 (Harris, R. S., Jenkinson, T. & Kaplan, S. N. 2014). This is also in agreement with Nordic research on singular country performance measurements done by (Friedrich, T. 2015) and (Bakke, G. & Bull-Berg, J. M. 2016). The results suggest that Large Buyouts improve in performance and have spillover effects on Close Competitors on some measurements. The results show that Large Buyouts may therefore create value beyond Jensen's hypothesis (Jensen, M. C. 1986) and also improve Close Competitors performance on some measures such as Liquidity and Leverage. Furthermore, the results are in contrast to (Chevalier, J. A. 1995), since the Large Buyouts generate more value than the Close Competitors, and not increasing the expected future profits of a firm's product-market rivals.

**Table 4 Performance Measurements of Large Buyout Portfolio Companies Compared to Close Competitors**

Mean value in performance measures for Nordic portfolio Companies and benchmark from buyout year (t=0). Part (1) reports the changes in operating performance. Part (2) reports changes in ratios relating to liquidity and leverage. Part (3) reports changes in employees, wages and R&D.

Based on a two tailed t-test, ATT levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively. Treated variables: Large Buyouts. Control variables: Close Competitors.

[illegible]

## **B. Close Competitors Compared to Energy Sector**

Close Competitors performance is compared to the performance in the Energy Sector in the Nordic markets. The analysis findings show Energy Sector perform better compared to Close Competitors in (1) Operating Performance and (2) Liquidity and Leverage. Furthermore, Close Competitors has better (3) Wages, Employees and R&D performance compared to Energy Sector. The results are presented in Table 5 Performance Measurements of Close Competitors Compared to the Energy Sector. The (Diff-in-Diff ATT Mean) results are interesting, but display few significant values.

**1) Operating Performance** measurements therefore provides results indicating that the Energy Sector has better Operating Performance than the Close Competitors. Close Competitors are improving in the short run as seen when  $T = + 1$  when compared to Energy Sector. Values for Sales, Return on Sales, Return on Capital Employed and Return on Equity are missing in this example. However, Return on Assets and EBITDA-Margin are showing negative values, which indicates that the Energy Sector has better performance on these measures. Operating Performance also at  $T = + 3$  illustrates that that the Energy Sector companies are performing better than Close Competitors. Negative EBITDA-Margin values are significant at level 10% in year 2 and at 5% in year 3, which demonstrate a decreasing performance for the Close Competitors and positive performance for the Energy Sector.

**2) Liquidity and Leverage** the results show negative output, which indicates that Energy Sector have better Current Ratios. Liquidity and Leverage performance can give insights into the riskiness of the Close Competitors compared to the Energy Sector. Coverage and Debt Ratio values are missing in this case, while the Current Ratio is available in Table 5 Performance Measurements of Close Competitors Compared to Companies in Energy Sector. The Current Ratio shows a more negative value over the time period for this analysis. However, the values are not significant.

**3) Employees, Wages and R&D** results are estimates that there are mostly increase in Close Competitors compared to the Energy Sector in the Nordic countries. However, there are no significant values in this section. Sales/Employees and R&D were not available in the data for this analysis. The Close Competitors compared to companies in Energy Sector shows positive

values for Employees and Wages growth at  $T = + 1$ . The same results are also for  $T = + 3$ , but with an increase in Employees and Wages. These results illustrate how private equity investments improves job creation and increases wages more for Close Competitors compared to the Energy Sector in the Nordic countries.

**Discussion** is important to improve the academic literature. The Operating Performance measurements results indicate that the Energy Sector has better Operating Performance than the Close Competitors. The results show that the respective industries and Close Competitors are experiencing an increase or decrease in value triggered by the Large Buyouts in the Nordic countries, but again at different performance measurements. The spillover effects contrast the Jensen hypothesis (Jensen, M. C. 1986) that value is mainly from cash flows. The research results are similar to (Bernstein, S., Lerner J., Sørensen, M. & Strömberg, P. 2014), a paper demonstrating that industries where private equity funds have invested in the past five years have grown more quickly in terms of productivity and employment, and these industries appear to be less exposed to aggregate shocks. This analysis also has challenges finding reported R&D measurements (Friedrich, T. 2015). These results are not completely in line with (Chevalier, J. A. 1995), since the Large Buyout product-market rivals are mainly the Close Competitors, and they are not increasing in performance. The results suggesting that there are Large Buyouts spillover effects on Close Competitors and industry sector performance.



### Table 5 Performance Measurements of Close Competitors Compared to Companies in Energy Sector

Mean value in performance measures for Nordic portfolio Companies and benchmark from buyout year (t=0). Part (1) reports the changes in operating performance. Part (2) reports changes in ratios relating to liquidity and leverage. Part (3) reports changes in employees, wages and R&D. Based on a two tailed t-test, ATT levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively.

Treated variables: Large Buyout Portfolio Companies Close Competitors. Control variables: Companies in Energy Sector.

[illegible]

### **C. Close Competitors Compared to Health Care & Life Science Sector**

The analysis gives an insight regarding how Close Competitors perform compared to Health Care & Life Science Sector in the Nordic markets. The analysis findings show Health Care & Life Science Sector perform better compared to Close Competitors in (1) Operating Performance. On the other hand, Close Competitors have better (2) Liquidity and Leverage performance. It is challenging to comment on (3) Wages, Employees and R&D performance, since the results are both positive and negative. The empirical results outcomes are listed in Table 6 Performance Measurements of Close Competitors Compared to Health Care & Life Science Sector. The results can be analyzed when evaluating (Diff-in-Diff ATT Mean) values; however, it is important to keep in mind that there are few significant values.

**1) The Operating Performance** results demonstrate that more increase in values for Health Care & Life Science Sector compared to Close Competitors over time horizon. Close Competitors are improving, with the exception of the EBITDA-Margin in the short run as seen when  $T = +1$  when compared to Health Care & Life Science Sector. The performance measurements on the other hand have developed to more negative numbers in year 3, which can be interpreted as Health Care & Life Science Sector has improved over time in comparison to the Close Competitors. However, there are no significant values.

**2) Liquidity and Leverage** the results show positive output, which indicates that Close Competitors have better Current and Coverage Ratios. Current and Debt Ratio are negative, while Coverage Ratio is positive in at  $T = +1$ . The performance measurements development shows similar observations. The Debt Ratio is negative and decreasing over the three years. This indicates better performance for Close Competitors, since Health Care & Life Science Sector is experiencing increasing debt levels in comparison. The Current Ratio has improved considerably with significant values at 1% for both year 2 and year 3.

**3) Employees, Wages and R&D** results are both positive and negative, which is difficult to interpret. It is important to understand the economic value created by Close Competitors compared to the Health Care & Life Science Sector. Table 6 Performance Measurements of Close Competitors Compared to Health Care & Life Science Sector gives an overview of the performance measurements for this category. There are no significant values in this category.

The first differences at  $T = +1$  are mostly negative, while Employees development is increasing for the Close Competitors. However, the  $T = +3$  Sales/Employees and Employees have decreased, while Wages and R&D have been improved. The value created by Close Competitors is therefore only observed in some of these selected performance measurements.

**Discussion** can lead to a better understanding of the results. Close Competitors can be considered the most positively impacted by a Large Buyout. The results suggesting that there are Large Buyouts spillover effects on Close Competitors compared to the industry sector performance. The spillover effects again contrast therefore Jensen hypothesis (Jensen, M. C. 1986). However, these results are in line with (Chevalier, J. A. 1995), since the Large Buyout product-market rivals are mainly the Close Competitors, and they are increasing in performance.

## Table 6 Performance Measurements of Close Competitors Compared to Health Care & Life Science Sector

Mean value in performance measures for Nordic portfolio Companies and benchmark from buyout year (t=0). Part (1) reports the changes in operating performance. Part (2) reports changes in ratios relating to liquidity and leverage. Part (3) reports changes in employees, wages and R&D. Based on a two tailed t-test, ATT levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively.

Treated variables: Large Buyout Portfolio Companies Close Competitors. Control variables: Companies in Health Care & Life Science Sector.

	Values at T-0		Differences in Relation to T-0														
	T-0		+1					+2					+3				
	Buyout Mean Levels	Control Mean Levels	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )
1) Operating Performance																	
Return on Assets	6.05%	7.00%	0.13%	0.13%	0.00%	0.15	1.00	-3.88%	0.48%	-4.36%	0.13	0.74	-5.15%	0.14%	-5.29%	0.16	0.75
Net Asset Turnover	550.12%	195.78%	34.68%	-38.53%	73.22%	0.99	0.46	-2.65%	-34.88%	32.23%	1.55	0.84	-45.28%	8.57%	-53.85%	1.67	0.75
EBITDA/Total Assets	16.47%	16.40%	5.60%	-0.61%	6.21%	0.23	0.79	0.21%	-0.94%	1.15%	0.03	0.68	0.69%	-2.47%	3.17%	0.04	0.38
Net Cash Flow/Total Assets	12.58%	13.96%	4.25%	-0.23%	4.48%	0.17	0.79	0.38%	0.92%	-0.54%	0.03	0.84	0.92%	0.77%	0.15%	0.03	0.96
Sales	6270000000	4970000000	226000000	88400000	137000000	422000000	0.75	407000000	-24800000	432000000	679000000	0.53	649000000	169000000	481000000	875000000	0.58
Return on Sales	-1112.58%	-29.64%	45.31%	5.15%	40.16%	16.96	0.98	379.71%	11.21%	368.50%	16.73	0.83	370.83%	13.69%	357.14%	21.00	0.87
EBITDA-Margin	1180.16%	1877.79%	-12.67%	114.10%	-126.77%	1.77	0.48	-2.45%	-270.88%	268.43%	2.16	0.22	-15.71%	351.83%	-367.54%	2.90	0.21
Return on Capital Employed	1112.91%	5798.70%	-138.46%	-1166.10%	1027.64%	11.86	0.39	359.14%	-617.00%	976.14%	15.61	0.53	532.39%	1590.68%	-1058.30%	19.88	0.60
Return on Equity	37.04%	27.85%	44.48%	-5.84%	50.31%	1.13	0.66	45.62%	-8.69%	54.31%	1.42	0.70	-5.42%	-4.69%	-0.73%	0.18	0.97
2) Liquidity and Leverage																	
Current Ratio	258.38%	479.44%	-18.35%	99.95%	-118.30%	0.96	0.22	-16.86%	-429.34%	412.49%	1.14	0.00 ***	-25.72%	-582.52%	556.79%	1.33	0.00 ***
Coverage Ratio	4507.94%	2696.07%	780.55%	-21.58%	802.13%	27.47	0.77	951.74%	-36.59%	988.33%	23.25	0.67	1297.09%	-58.44%	1355.54%	28.26	0.63
Debt Ratio	53.59%	43.62%	-2.01%	0.36%	-2.38%	0.03	0.49	-4.28%	-0.59%	-3.69%	0.06	0.51	-7.84%	-1.95%	-5.89%	0.07	0.40
3) Employees, Wages and R&D																	
Employees	7463	3157	-43	-104	61	289	0.83	-78	-81	4	540	0.99	-23	293	-317	736.61	0.67
Wages	26.25	46.23	0.02	0.89	-0.86	1.84	0.64	0.02	-3.26	3.28	3.77	0.39	0.68	-4.18	4.86	5.91	0.41
Sales/Employee	32500000	6239312	-21300000	105038	-21400000	67000000	0.75	-25300000	73079	-25400000	79500000	0.75	-31300000	-124279	-31200000	97100000	0.75
R&D	221000000	232000000	22500000	24100000	-1630318	21100000	0.94	45900000	40800000	5034665	29300000	0.86	78100000	56200000	21900000	34600000	0.53

## **D. Close Competitors Compared to Industrials Sector**

The thesis analysis gives an insight regarding how Close Competitors perform compared to Industrials Sector in the countries Sweden, Denmark, Norway and Finland. The analysis findings show Industrials Sector perform better compared to Close Competitors in (1) Operating Performance. On the other hand, Close Competitors have better (2) Liquidity and Leverage performance and (3) Wages, Employees and R&D performance, since the results are both positive and negative. Table 7 Performance Measurements of Close Competitors Compared to Companies in Industrials Sector highlights the (Diff-in-Diff ATT Mean) results of the empirical analysis. Few significant values are in the results and any conclusions should be verified by more research.

**1) Operating Performance** negative results demonstrate more increase in values for Industrials Sector compared to Close Competitors in the timeline. The Industrials Sector is performing better on Return on Assets, Sales and Return on Capital Employed. Sales is decreasing at statistical significance at 1% level at  $T = + 1$ ,  $T = + 2$ ,  $T = + 3$  at 1% level. The development for  $T = + 3$  shows different performance measurement results. In this case the Close Competitors are performing better on Return on Sales, EBITDA-Margin, Return on Capital Employed and Return on Equity. It is challenging to say which group performs best, but the Table 7 Performance Measurements of Close Competitors Compared to Companies in Industrials Sector provides an overview of the results.

**2) Liquidity and Leverage** results show positive output, which indicates that Close Competitors have better Current and Coverage Ratios. For instance, there are mainly positive values at  $T = + 1$ , and the Debt Ratio is negative. The development over time shows that the Current Ratio is negative with statistical significant at 5% when  $T = + 3$ , and Debt Ratio is close to 0%. However, Coverage Ratios are very positive supporting the results that Close Competitors have better Liquidity and Leverage Performance, but these values are not statistical significant.

**3) Employees, Wages and R&D** results demonstrate Close Competitors perform better than the Industrials Sector. The short run performance shows Employees and Wages have increased (Diff-in-Diff ATT Mean) results, while Sales/Employees together with R&D have experienced

a decreasing change in mean values.  $T = +3$  performance measurements are similar, but R&D changing from negative to positive values. Employees are statistically significant at 1% in the whole-time period used for analysis. The results in Table 7 Performance Measurements of Close Competitors Compared to Companies in Industrials Sector for this category is mainly establishing data supporting that Close Competitors perform better than the Industrials Sector.

### **Discussion**

Close Competitors can be considered the most positively impacted by a Large Buyout when compared to the Industrials Sector. These results supportive with (Chevalier, J. A. 1995), since the Large Buyout product-market rivals are mainly the Close Competitors, and they are increasing in performance. The spillover effects are once more different from the Jensen hypothesis (Jensen, M. C. 1986) underlining that value is mainly from internal cash flows. The results suggesting that there are Large Buyouts spillover effects on Close Competitors and industry sector performance, but on different performance measurements.

## Table 7 Performance Measurements of Close Competitors Compared to Companies in Industrials Sector

Mean value in performance measures for Nordic portfolio Companies and benchmark from buyout year (t=0). Part (1) reports the changes in operating performance. Part (2) reports changes in ratios relating to liquidity and leverage. Part (3) reports changes in employees, wages and R&D. Based on a two tailed t-test, ATT levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively.

Treated variables: Large Buyout Portfolio Companies Close Competitors. Control variables: Companies in Industrials Sector.

	Values at T-0		Differences in Relation to T-0														
	T-0		+1					+2					+3				
	Buyout Mean Levels	Control Mean Levels	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )
<b>1) Operating Performance</b>																	
Return on Assets	6.22%	4.41%	0.06%	1.28%	-1.22%	0.17	0.94	-3.82%	1.10%	-4.92%	0.15	0.75	-5.32%	5.39%	-10.71%	0.19	0.58
Net Asset Turnover	550.76%	114.00%	31.07%	1.41%	29.66%	1.15	0.80	-5.05%	-3.89%	-1.16%	1.81	0.99	-42.75%	-6.77%	-35.98%	2.08	0.86
EBITDA/Total Assets	16.73%	12.49%	5.46%	2.01%	3.45%	0.23	0.88	0.03%	2.34%	-2.31%	0.03	0.40	0.38%	3.68%	-3.29%	0.04	0.38
Net Cash Flow/Total Assets	12.77%	11.06%	4.14%	1.87%	2.27%	0.17	0.89	0.30%	2.32%	-2.02%	0.03	0.43	0.76%	4.10%	-3.34%	0.03	0.31
Sales	5690000000	14800000000	1430000000	1680000000	<b>-1540000000</b>	<b>577000000</b>	<b>0.008 ***</b>	255000000	2800000000	<b>-2540000000</b>	<b>943000000</b>	<b>0.01 ***</b>	454000000	4640000000	<b>-4190000000</b>	<b>1310000000</b>	<b>0.00 ***</b>
Return on Sales	-1042.99%	-580.30%	63.12%	-378.65%	441.77%	22.65	0.85	385.33%	-474.02%	859.35%	23.08	0.71	350.51%	-1.26%	351.77%	32.21	0.91
EBITDA-Margin	1206.87%	1505.48%	2.87%	-180.89%	183.76%	1.91	0.34	-11.76%	-133.50%	121.74%	2.38	0.61	7.48%	-101.00%	108.48%	3.17	0.73
Return on Capital Employe	1621.64%	478.14%	-247.20%	-131.76%	-115.44%	15.64	0.94	299.60%	-403.29%	702.88%	20.76	0.74	658.49%	349.83%	308.66%	26.26	0.91
Return on Equity	37.02%	22.59%	42.02%	-0.63%	42.66%	1.39	0.76	43.54%	-2.52%	46.06%	1.63	0.78	-2.99%	-31.80%	28.82%	0.20	0.15
<b>2) Liquidity and Leverage</b>																	
Current Ratio	243.12%	823.92%	-2.22%	-140.13%	137.91%	1.11	0.21	-52.38%	36.56%	-88.94%	1.35	0.51	-88.00%	268.37%	<b>-356.37%</b>	<b>1.64</b>	<b>0.03 **</b>
Coverage Ratio	4573.43%	732.48%	745.44%	140.41%	605.02%	33.43	0.86	916.90%	-16.57%	933.47%	28.65	0.74	1256.16%	-81.33%	1337.50%	34.08	0.70
Debt Ratio	53.04%	45.71%	-1.89%	-0.05%	-1.83%	0.04	0.67	-4.28%	0.71%	-4.99%	0.06	0.44	-7.22%	-7.22%	0.00%	0.08	1.00
<b>3) Employees, Wages and R&amp;D</b>																	
Employees	3013	65341	15	-877	<b>892</b>	<b>278</b>	<b>0.00 ***</b>	52	-1864	<b>1916</b>	<b>531</b>	<b>0.00 ***</b>	158	-2274	<b>2432</b>	<b>772</b>	<b>0.00 ***</b>
Wages	26.27	43.68	0.05	-0.09	0.14	1.72	0.93	-0.05	0.21	-0.26	3.10	0.93	0.63	0.32	0.31	4.21	0.94
Sales/Employee	31800000	2017280	-20300000	75329	-20400000	89400000	0.82	-24000000	42294	-24100000	110000000	0.83	-29400000	154660	-29600000	149000000	0.84
R&D	162000000	559000000	22400000	25500000	-3170645	24200000	0.90	42400000	53800000	-11500000	34400000	0.74	72700000	65200000	7514589	39700000	0.85

## **E. Close Competitors Compared to Consumer Sector**

The analysis in part (E) gives an insight regarding how Close Competitors perform compared to the Consumer Sector in the Nordic markets. The analysis findings show Consumer Sector perform better compared to Close Competitors in (1) Operating Performance, (2) Liquidity and Leverage, and (3) Wages, Employees and R&D performance. The results are shown in Table 8 Performance Measurements of Close Competitors Compared to Consumer Sector. Even though the results demonstrate few significant values, the analysis may give a better understanding of the private equity industry and the performance measurements in the Nordic markets.

**1) Operating Performance** results for Consumer Sector are better compared to Close Competitors. The results for Return on Assets, EBITDA-Margin and Return on Capital Employed are negative in the short run when  $T = +1$ . There are many changes at  $T = +3$ . Net Asset Turnover, Net Cash Flow/Total Assets and Return on Equity have changed from positive to negative. EBITDA/Total Assets has decreased. Return on Capital Employed changed from a negative to a positive result. Most performance measurements in this category have changed from positive to negative over time horizon used in this analysis, but there are no statistical significant values.

**2) Liquidity and Leverage** results over the timeline indicates that Consumer Sector has better performance, since at  $T = +3$  Coverage Ratio is extremely negative and the Debt Ratio is positive. Table 8 Performance Measurements of Close Competitors Compared to Consumer Sector provides an overview of the (Diff-in-Diff ATT Mean) results. Current and Debt Ratio are increasing over the timeframe. The Coverage Ratio has changed on the other hand to become a negative value at  $T = +3$ . The values for Liquidity and Leverage are not statistical significant values.

**3) Employees, Wages and R&D** results show Consumer Sector performs better than Close Competitors.  $T = +1$  results are mainly positive, but Sales/Employees is negative. The Close Competitors are therefore performing better in these performance measurements. The  $T = +3$  values are somewhat similar, but the Wages have changed from positive to negative values, which means that the Consumer Sector performs better in over the three years. Significant



results are recorded for increasing R&D in year 2 at 10% significance and year 3 at 1% level of statistical significance.

**Discussion** facilitates an opportunity to evaluate the different opinions of the academic scholars. The results demonstrate that the Consumer Sector is most positively impacted by the Large Buyout when compared to Close Competitors. The spillover effects found in the analysis contrast the Jensen hypothesis (Jensen, M. C. 1986). The research results are similar to (Bernstein, S., Lerner J., Sørensen, M. & Strömberg, P. 2014), a paper demonstrating that industries where private equity funds have invested in the past five years have grown more quickly in terms of productivity and employment, and these industries appear to be less exposed to aggregate shocks. However, they are against (Chevalier, J. A. 1995), since she expects that the Large Buyout product-market rivals which mainly the Close Competitors will increase in performance.

## Table 8 Performance Measurements of Close Competitors Compared to Consumer Sector

Mean value in performance measures for Nordic portfolio Companies and benchmark from buyout year (t=0). Part (1) reports the changes in operating performance. Part (2) reports changes in ratios relating to liquidity and leverage. Part (3) reports changes in employees, wages and R&D. Based on a two tailed t-test, ATT levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively.

Treated variables: Large Buyout Portfolio Companies Close Competitors. Control variables: Companies in Consumer Sector.

	Values at T-0		Differences in Relation to T-0														
	T-0		+1					+2					+3				
	Buyout Mean Levels	Control Mean Levels	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )
1) Operating Performance																	
Return on Assets	6.21%	4.32%	0.12%	0.38%	-0.26%	0.19	0.99	-3.70%	-0.30%	-3.40%	0.17	0.84	-4.94%	-0.31%	-4.63%	0.21	0.83
Net Asset Turnover	544.69%	76.76%	30.91%	-5.81%	36.73%	1.34	0.78	-5.17%	0.17%	-5.34%	2.19	0.98	-42.39%	-0.78%	-41.61%	2.49	0.87
EBITDA/Total Assets	16.89%	7.83%	5.56%	-1.05%	6.61%	0.25	0.80	0.26%	-2.25%	2.51%	0.03	0.40	0.69%	-2.88%	3.56%	0.04	0.36
Net Cash Flow/Total Assets	12.95%	6.60%	4.17%	0.62%	3.55%	0.18	0.85	0.46%	-0.87%	1.33%	0.03	0.63	0.90%	1.20%	-0.30%	0.03	0.93
Sales	62400000000	31500000000	2340000000	-6330000000	8670000000	7880000000	0.27	3880000000	-4150000000	8030000000	12400000000	0.517	6380000000	-5330000000	11700000000	15400000000	0.45
Return on Sales	-1046.44%	4.85%	42.74%	1.27%	41.47%	30.65	0.99	355.30%	1.86%	353.44%	29.92	0.91	347.00%	2.56%	344.44%	37.02	0.93
EBITDA-Margin	1235.86%	931.33%	-11.26%	121.25%	-132.51%	2.02	0.51	-18.93%	22.50%	-41.43%	2.56	0.87	0.69%	58.89%	-58.20%	3.34	0.86
Return on Capital Employed	1586.77%	838.07%	-249.21%	9.50%	-258.71%	20.16	0.90	266.59%	113.63%	152.96%	27.14	0.96	658.55%	127.71%	530.83%	33.97	0.88
Return on Equity	37.84%	2.93%	41.34%	0.25%	41.09%	1.55	0.79	42.58%	-1.15%	43.73%	1.84	0.81	-5.61%	-1.41%	-4.20%	0.22	0.85
2) Liquidity and Leverage																	
Current Ratio	262.89%	504.30%	-5.11%	-102.00%	96.89%	1.19	0.41	-43.45%	-132.68%	89.23%	1.43	0.53	-64.26%	-179.88%	115.62%	1.74	0.51
Coverage Ratio	4418.59%	2522.67%	734.78%	-51.78%	786.56%	45.32	0.86	798.44%	3145.14%	-2346.70%	39.91	0.56	1093.66%	3943.83%	-2850.18%	47.43	0.55
Debt Ratio	53.80%	29.26%	-1.39%	-8.48%	7.09%	0.05	0.14	-3.47%	-10.93%	7.46%	0.07	0.30	-6.71%	-14.62%	7.91%	0.09	0.37
3) Employees, Wages and R&D																	
Employees	7478	982	-43	-129	86	350	0.81	-72	-207	135	683	0.84	12	-282	294	983	0.77
Wages	27.05	14.57	0.05	-0.13	0.17	2.17	0.94	-0.05	0.57	-0.62	4.35	0.89	0.62	0.86	-0.24	5.92	0.97
Sales/Employee	30900000	2765382	-19800000	804646	-20600000	121000000	0.86	-23600000	1267532	-24800000	142000000	0.86	-29100000	1477312	-30600000	171000000	0.86
R&D	253000000	19000000	27300000	-2250000	29500000	25100000	0.24	54500000	-1714286	56200000	33100000	0.10 *	91200000	-2666667	93800000	35200000	0.01 ***

## **F. Close Competitors Compared to ICT Sector**

The paper will also provide awareness regarding how Close Competitors perform compared to ICT sector in the Nordic markets. The analysis findings show Close Competitors perform better than ICT Sector in (1) Operating Performance, (2) Liquidity and Leverage performance and (3) Wages, Employees and R&D performance. The analysis results can be found in Table 9 Performance Measurements of Close Competitors Compared to Companies in ICT Sector. The analysis in this section also shows few significant values and the reader may also draw their own conclusions from the results.

**1) The Operating Performance** for Close Competitors are performing better than the ICT Sector. Return on Sales and Return on Capital Employed are the two performance measurements where the ICT Sector is performing better when  $T = + 1$ . The measurements change when  $T = + 3$ . For instance, Return on Assets and Net Asset Turnover changes from positive to negative values, while Return on Capital Employed changes from negative to positive. Statistical significant values which are decreasing are recorded for Return on Sales at 1% level of significance in Year 2 and Year 3.

**2) Liquidity and Leverage** show stronger financial situation for Close Competitors compared to the ICT Sector with a very positive Coverage Ratio values. For instance, there are mainly negative values at  $T = + 1$ . Over the time frame up until  $T = + 3$  shows the values Current and Debt Ratio has decreased substantially in the Table 9 Performance Measurements of Close Competitors Compared to Companies in ICT Sector. Statistical significant values are identified at  $T = + 3$  for the decreasing Debt Ratio at significant level of 5%.

**3) Employees, Wages and R&D** results show that Close Competitors perform better than the ICT Sector. The analysis may deepen the understanding of the value created by Close Competitors compared to the ICT Sector. There is no data available for R&D in this case. The performance measurements are all increasing excluding the Sales/Employees measurement.  $T = + 3$  show similar findings where Employees and Wages have increased, but the Sales/Employees has decreased.

**Discussion** can highlight the different views supporting, or in contrast to the analysis results in this paper. Sometimes it is challenging to say which group performs best and past performance is misleading and presents incomplete information is argued by (Phalippou 2007). Once again, the spillover effects go against the Jensen hypothesis (Jensen, M. C. 1986). The research results are different compared to the research by (Bernstein, S., Lerner J., Sørensen, M. & Strömberg, P. 2014), arguing that industries where private equity funds have invested in the past five years have grown more quickly in terms of productivity and employment, and these industries appear to be less exposed to aggregate shocks. However, the ICT Sector results are supportive of (Chevalier, J. A. 1995) findings, that Close Competitors are increasing in performance.

**Table 9 Performance Measurements of Close Competitors Compared to Companies in ICT Sector**

Mean value in performance measures for Nordic portfolio Companies and benchmark from buyout year (t=0). Part (1) reports the changes in operating performance. Part (2) reports changes in ratios relating to liquidity and leverage. Part (3) reports changes in employees, wages and R&D. Based on a two tailed t-test, ATT levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively.

Treated variables: Large Buyout Portfolio Companies Close Competitors. Control variables: Companies in ICT Sector.

	Values at T-0		Differences in Relation to T-0														
	T-0		+1					+2					+3				
	Buyout Mean Levels	Control Mean Levels	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )
<b>1) Operating Performance</b>																	
Return on Assets	6.35%	-2.18%	0.15%	-0.46%	0.61%	0.25	0.98	-3.64%	0.03%	-3.67%	0.21	0.86	-4.81%	-1.76%	-3.06%	0.28	0.91
Net Asset Turnover	541.36%	118.89%	31.08%	-10.06%	41.14%	1.34	0.76	-4.48%	-18.00%	13.52%	2.11	0.95	-41.66%	-23.30%	-18.36%	2.36	0.94
EBITDA/Total Assets	16.75%	9.15%	5.50%	-0.91%	6.41%	0.28	0.82	0.19%	-0.68%	0.86%	0.03	0.79	0.59%	-0.79%	1.38%	0.04	0.73
Net Cash Flow/Total Assets	13.02%	3.03%	4.18%	-0.43%	4.61%	0.20	0.82	0.44%	-0.59%	1.03%	0.03	0.73	1.05%	-2.56%	3.61%	0.04	0.32
Sales	6300000000	12900000	218000000	5834125	213000000	789000000	0.79	377000000	9564429	367000000	1240000000	0.77	622000000	15500000	607000000	1550000000	0.69
Return on Sales	-620.09%	-16742.65%	-11.62%	2046.61%	-2058.23%	30.63	0.50	-21.65%	13679.83%	-13701.48%	28.69	0.00 ***	5.87%	11771.47%	-11765.60%	36.12	0.00 ***
EBITDA-Margin	1240.05%	540.17%	-5.30%	-26.62%	21.33%	2.82	0.94	-11.70%	-257.71%	246.01%	3.32	0.46	8.32%	-312.50%	320.82%	4.95	0.52
Return on Capital Employed	1623.82%	-1138.22%	-249.76%	95.00%	-344.76%	22.46	0.88	265.61%	127.14%	138.47%	28.95	0.96	668.48%	-305.17%	973.65%	36.60	0.79
Return on Equity	39.37%	-78.49%	40.27%	1.42%	38.85%	2.10	0.85	41.51%	-5.49%	47.00%	2.48	0.85	-4.11%	-39.41%	35.31%	0.29	0.23
<b>2) Liquidity and Leverage</b>																	
Current Ratio	280.43%	68.21%	-9.75%	-7.06%	-2.69%	1.53	0.99	-48.52%	-16.92%	-31.59%	1.85	0.86	-70.98%	-20.10%	-50.88%	2.25	0.82
Coverage Ratio	4466.25%	-42.33%	730.63%	1.88%	728.76%	47.98	0.88	889.30%	4.00%	885.30%	39.94	0.82	1212.90%	8.83%	1204.07%	47.47	0.80
Debt Ratio	51.90%	76.16%	-1.92%	3.65%	-5.57%	0.06	0.39	-4.31%	8.83%	-13.14%	0.10	0.18	-7.89%	11.31%	-19.20%	0.12	0.10 **
<b>3) Employees, Wages and R&amp;D</b>																	
Employees	7318	2777	-46	-53	7	420	0.99	-78	-88	10	808	0.99	2	-71	73	1174	0.95
Wages	26.51	35.72	0.05	-0.32	0.37	1.72	0.83	0.00	-1.61	1.62	3.10	0.60	0.70	-2.42	3.12	4.20	0.46
Sales/Employee R&D	30800000	745981	-19800000	223056	-20000000	121000000	0.87	-23500000	520634	-24100000	142000000	0.87	-29100000	918332	-30000000	171000000	0.86

## **G. Close Competitors Compared to Multiple Sectors**

Close Competitors performance compared to Multiple sector in the Nordic markets is analyzed in this paper. The analysis findings show Multiple Sector perform better than Close Competitors in (1) Operating Performance. However, Close Competitors have better (2) Liquidity and Leverage performance and (3) Wages, Employees and R&D performance. Table 10 Performance Measurements of Close Competitors Compared to Multiple Sectors lists the results of the research. The private equity industry was challenging to analyze, and this is seen when the results show few significant values. The results may on the other hand give an indication on the performance and provide better insights into the Nordic markets.

**1) Operating Performance** results indicate the Multiple Sectors are performing better than most of the Close Competitors performance measurements. Multiple Sectors are performing better on Return on Assets, Return on Sales, Sales and EBITDA-Margin. The results are therefore variable, and a pattern may be challenging to see regarding which group performs best.  $T = + 3$  values Net Asset Turnover, Net Cash Flow/Total Assets and Return on Capital Employed changed from positive to negative. The performance measurements in this list show no statistical significant values. The above-mentioned findings may indicate that Multiple Sectors together perform better than Close Competitors due to the negative values  $T = + 3$ .

**2) Liquidity and Leverage** results show that Close Competitors have a better financial situation than Multiple Sectors with positive Current and Coverage Ratios. Overall the data outcomes show that Close Competitors are less risky. Debt Ratio value is also negative, which indicates that the Multiple Sectors Debt Ratio is higher. Current Ratio increased substantially in values that are significant at 5% at Year 2 and Year 3.

**3) Employees, Wages and R&D** results show positive values for Close Competitors compared to Multiple Sectors. The analysis provides an insight into the value created to the Nordic economics using alternative measures of performance. but the Some performance measurements in this category are decreasing at  $T = + 1$ . The performance at  $T = + 3$  is illustrated in Table 10 Performance Measurements of Close Competitors Compared to Multiple Sectors. Wages changed values from negative to positive values, and Employees increased further at  $T = + 3$ . Statistical significant values were calculated for the Employees increasing

measurement at Year 1, Year 2 and Year 3 at the 5% significant level. Likewise, R&D shows change in increasing (Diff-in-Diff ATT Mean) results from Year 0 to Year 3 at significant level of 1%.

**Discussion** is important to support or challenge the research done in this thesis. Findings for this analysis can be evaluated separately for in each analysis mentioned above, or evaluated as Close Competitors compared to Multiple Sectors. Close Competitors can be considered the most positively impacted by a Large Buyout. These results are in line with (Chevalier, J. A. 1995), since the Large Buyout product-market rivals are typically the Close Competitors, and they are increasing in performance. The spillover effects are different from the Jensen hypothesis (Jensen, M. C. 1986) and this is seen in all the empirical analysis done in this paper. The results suggesting that there are Large Buyouts spillover effects on Close Competitors and industry sector performance, but on different measurements.

## Table 10 Performance Measurements of Close Competitors Compared to Multiple Sectors

Mean value in performance measures for Nordic portfolio Companies and benchmark from buyout year (t=0). Part (1) reports the changes in operating performance. Part (2) reports changes in ratios relating to liquidity and leverage. Part (3) reports changes in employees, wages and R&D. Based on a two tailed t-test, ATT levels that are significantly different from zero at the 1%, 5%, and 10% level are denoted by asterisks \*\*\*, \*\*, and \*, respectively.

Treated variables: Large Buyout Portfolio Companies Close Competitors. Control variables: Companies in Multiple Sectors (Energy, Health Care & Life Science, Industrials, Consumer and ICT).

	Values at T-0		Differences in Relation to T-0														
	T-0		+1					+2					+3				
	Buyout Mean Levels	Control Mean Levels	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )	Buyout Mean Change	Control Mean Change	Diff-Diff ATT Mean	SE(ATT)	P-Score Pr( T  >  t )
1) Operating Performance																	
Return on Assets	6.62%	4.24%	0.04%	0.50%	-0.46%	0.10	0.96	-4.61%	0.46%	-5.06%	0.09	0.55	-6.31%	1.25%	-7.56%	0.11	0.48
Net Asset Turnover	628.59%	131.89%	41.26%	-15.61%	56.87%	0.63	0.36	-2.02%	-16.42%	14.40%	0.99	0.88	-51.17%	-2.55%	-48.62%	1.11	0.66
EBITDA/Total Assets	17.71%	11.87%	6.58%	0.09%	6.50%	0.13	0.62	0.20%	-0.06%	0.26%	0.02	0.86	0.73%	-0.32%	1.05%	0.02	0.60
Net Cash Flow/Total Assets	13.54%	9.38%	4.87%	0.60%	4.27%	0.09	0.65	0.33%	0.71%	-0.38%	0.01	0.79	0.86%	1.19%	-0.33%	0.02	0.85
Sales	6020000000	6730000000	176000000	374000000	-198000000	313000000	0.53	316000000	591000000	-275000000	503000000	0.59	533000000	935000000	-402000000	652000000	0.54
Return on Sales	-708.32%	-2298.45%	8.11%	183.86%	-175.74%	12.38	0.89	-0.44%	1807.05%	-1807.49%	12.23	0.14	5.41%	1772.70%	-1767.29%	15.64	0.26
EBITDA-Margin	1178.00%	1409.11%	-15.51%	40.46%	-55.97%	1.06	0.60	-0.07%	-99.94%	99.87%	1.31	0.45	-22.58%	140.62%	-163.20%	1.75	0.35
Return on Capital Employed	1234.86%	2791.14%	-152.58%	-568.70%	416.11%	8.69	0.63	428.37%	-361.62%	789.99%	11.46	0.49	592.56%	813.96%	-221.40%	14.60	0.88
Return on Equity	44.76%	9.30%	53.23%	-2.39%	55.62%	0.80	0.49	56.50%	-4.93%	61.43%	0.97	0.53	-1.08%	-15.95%	14.87%	0.12	0.22
2) Liquidity and Leverage																	
Current Ratio	212.19%	508.35%	-5.63%	-24.95%	19.32%	0.62	0.75	-13.84%	-175.60%	161.76%	0.74	0.03 **	-36.44%	-194.94%	158.50%	0.90	0.08 **
Coverage Ratio	4986.55%	1765.08%	882.64%	22.92%	859.72%	19.31	0.66	976.04%	420.14%	555.90%	16.48	0.74	1348.88%	516.38%	832.50%	19.83	0.68
Debt Ratio	55.04%	44.93%	-1.95%	-1.22%	-0.73%	0.02	0.77	-4.83%	-1.37%	-3.47%	0.04	0.37	-8.24%	-4.68%	-3.56%	0.05	0.46
3) Employees, Wages and R&D																	
Employees	3090	22409	37	-354	391	172	0.02 **	86	-681	767	329	0.02 **	181	-666	847	469	0.07 **
Wages	25.95	32.85	0.04	0.07	-0.02	0.90	0.98	0.05	-0.89	0.94	1.68	0.58	0.77	-1.07	1.83	2.31	0.43
Sales/Employee	36800000	3864383	-24100000	208350	-24400000	49100000	0.62	-28700000	295572	-29000000	58600000	0.62	-35300000	328139	-35600000	72800000	0.62
R&D	168000000	280000000	29600000	17500000	12100000	18100000	0.51	65600000	32600000	33100000	27000000	0.23	158000000	41900000	116000000	29900000	0.00 ***



## 6. Conclusion

### 6.1. Conclusion

The empirical analysis has attempted to evaluate the Nordic private equity large-cap buyouts portfolio companies' performance effect on Close Competitors and industry performance. The analysis results are consistent with most academic literature implying that Large Buyouts perform better compared to Close Competitors. This is seen in (1) Operating Performance and (3) Wages, Employees and R&D. In contrast, Close Competitors have better (2) Liquidity and Leverage performance compared to Large Buyouts. The findings suggest that there are competitor effects creating value for Close Competitors and Large Buyouts, but at different performance measurements. Since Large Buyouts are often financed using leverage it was also expected that other companies' categories as Close Competitors had better financials when evaluating Liquidity and Leverage.

The (1) Operational Performance efficiency is mainly better for the respective industries in the Energy Sector, Health Care & Life Science Sector, Industrials Sector and Multiple Sectors. On the other hand, Close Competitors have better (2) Liquidity and Leverage performance and (3) Wages, Employees and R&D performance. The Energy Sector, Health Care & Life Science Sector, Industrials Sector and Multiple Sectors have similar output trends. The results show that the respective industries and Close Competitors are experiencing an increase or decrease in value triggered by the Large Buyouts in the Nordic countries, but again at different performance measurements. In summary, the findings suggest that Large Buyouts improve in performance and have spillover effects on Close Competitors on some measurements.

Two outliers to the above-mentioned pattern for the results are the Consumer Sector and ICT Sector, since they do not show same results patterns compared to Energy Sector, Health Care & Life Science Sector, Industrials Sector and Multiple Sectors analysis. The analysis gives two contrasting results when comparing these industries to Close Competitors. The analysis findings show Consumer Sector perform better compared to Close Competitors in (1) Operating Performance, (2) Liquidity and Leverage, and (3) Wages, Employees and R&D performance. On the other hand, the analysis findings show Close Competitors performs better than the ICT Sector in (1) Operating Performance, (2) Liquidity and Leverage performance and

(3) Wages, Employees and R&D performance. The results are indicating that the ICT Sector on all performance measurements performs worse than Close Competitors.

The effect the effect private equity ownership has on the industry where the acquisition takes place is evaluated in the respective sectors and all the sectors together. The results are mainly indicating that the performance measurements of Close Competitors are better. However, almost half of the performance measurements are better for the individual sectors as seen in the analysis. Operating is performing better for most of the individual sectors. Liquidity and Leverage are more frequently better for Close Competitors. Employees, Wages and R&D are also more frequently showing that Close Competitors are performing better. The findings demonstrate that the Large Buyouts spillover effects on Close Competitors and industry sectors, but on different performance measurements. However, the results for all analysis parts with few statistical significant values.

The descriptive statistics results show Large Buyouts activity develop during 1997-2016 in each country starting with Sweden, then Denmark, Norway and Finland. In the same period, it is also demonstrated that the Large Buyouts activity is highest in the Consumer, Energy, Health Care & Life Science and then Industrials sector. The countries and industry examples show that private equity Large Buyouts are very cyclical in the Nordic markets. Furthermore, only been 33 exits so far in the Large Buyouts segment and this will be clearer in the future. Private equity investments are often together with similar investments in the same sectors in the Large Buyouts segment and this is maybe because of the spillover effects they have on Close Competitors or the whole industry. Private equity investments in the Large Buyouts appears therefore to be a collective activity done by several funds together in a specific industry segment. A Large Buyout will often signal to other funds that there are high-value investments in this country or industry sector, attracting more investments for similar Large Buyouts.

Performance measurements have been evaluated since the late 1980s and most academic scholars are finding that private equity investments in general do contribute to increasing performance value. However, private equity impact on the Close Competitors and Industry performance has been a more recent academic field. While most existing academic literature focuses almost entirely on buyouts in the US or other more developed markets, this paper researched the Nordic countries Sweden, Denmark, Norway and Finland. These countries are often researched one by one, but the few Large Buyouts, it is in this paper considered as one

geographical region for research. Academic research rarely focuses on the Large Buyouts segment and this papers therefore attempt to learn more about this phenomenon which occurs more frequently in the Nordics. The size of the deals often results in huge appraisal by stakeholders involved, or sparks political debates impacting the future of the Nordic private equity industry.

To summarize the conclusion, the findings imply that there are competitor effect creating more value for Large Buyouts in performance and innovation than Close Competitors, but this is seen only at some of the performance measurements. Also, this thesis provides results suggesting that there are Large Buyouts spillover effects on Close Competitors and industry sector performance, but on different performance measurements. The industry sectors are experiencing better Operating Performance. This is maybe due to less involvement in the Large Buyouts turnaround missions, when the Large Buyout portfolio companies Close Competitors firms need to use more energy on adapting to the new competitive landscape. However, Close Competitors are creating more value on in terms of better performance in Liquidity and Leverage, and Employees, Wages and R&D. Since innovation is of essential importance, Large Buyouts may create more value through innovation and have an increasing impact on long run performance for the portfolio companies Close Competitors in the Nordic markets.

## 6.2. Limitations

The main limitation in this paper was the number of observations for the research of a region where few Large Buyouts have been recorded. Consequently, most of the results were not statistically significant and any findings are thus required to be verified or researched again on other geographical regions. The research also focuses primarily on Large Buyouts and thus does not evaluate smaller buyout segments. Each Large Buyout is unique, but this paper only analyzed the aggregate performance effect looking at the differences in mean values and mainly addresses the trend of this large group. Selecting the right company identification numbers were also hand-picked for Close Competitors and there may be selection errors, and some data for companies were not even available. Close Competitors were also subjectively picked by the author and there may be alternative competitor identification methodologies that can be tested in the same research. The competitors landscape is highly complex and dynamic, thus the competitors identified may not actually be accurate. In spite of the limitations, the research does provide a foundation of analysis which may provide insights into the Nordic private equity markets and contribute to the academic literature. The reader is also encouraged to draw own conclusions from the data results.

## 6.3. Suggestions for Further Research

More research is encouraged on the Large Buyouts in the Nordic region with the application of different methods, research on other market segments, or evaluating alternative performance measurements that are not used in this paper. The same topic may also be researched on the performance before the buyouts occurred, or the performance when the Large Buyout have exited. Performance can also be explored through the private equity fund returns. Furthermore, the impact between debt ratio and performance in Large Buyouts in the Nordic markets can be explored. As a final remark, it is clear that there are still much empirical research which can contribute to the findings in academic literature.

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## 8. Appendix

### 8.1 Description of Variables Used

**Table 11 Variable Descriptions**

The table provides an overview of the performance variables used when comparing both large buyouts portfolio companies with their close competitors, or large buyout portfolio companies' close competitors with companies within the respective industries. All variable data is from very large, large and medium-sized companies at the Wharton Research Data Services - Bureau van Dijk - Amadeus Financials (1995-2017) for Norway, Denmark, Sweden and Finland.

#### 1) Operating Performance

Return on Assets	<i>Net Income/Total Assets</i>
Net Asset Turnover	<i>Net Sales/Total Assets</i>
EBITDA/Total Assets	<i>EBITDA/Total Assets</i>
Net Cash Flow/Total Assets	<i>Net Cash Flow/Total Assets</i>
Sales	<i>Sales</i>
Return on Sales	<i>Net Income/Net Sales</i>
EBITDA-Margin	<i>EBITDA/Net Sales</i>
Return on Capital Employed	<i>EBIT/Capital Employed</i>
Return on Equity	<i>Net Income/Equity</i>

#### 2) Liquidity and Leverage

<i>Current Ratio</i>	Current Assets/Current Liabilities
<i>Coverage Ratio</i>	EBIT/Interest
<i>Debt Ratio</i>	Total Debt/Total Assets

#### 3) Employees, Wages and R&D

<i>Employees</i>	Number of employees
<i>Wages</i>	Total wage cost
<i>Sales/Employee</i>	Sales/Employee
<i>R&amp;D</i>	Research and development