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The Pursuit of Profit - a study of the relationship between financial performance and education quality in Swedish private schools

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ABSTRACT

Title The Pursuit of Profit - a study of the relationship between financial performance and education quality in Swedish private schools

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Keywords Education, Education Quality, Profit cap, Privatization, New Public Management

Purpose The purpose of this thesis is to assess whether there is a relationship between the financial performance of Swedish private schools and the quality of the education they provide.

Methodology Parametric Tests and OLS-Regression

Theoretical perspectives New Public Management, Public Choice Theory, Quasi-markets

Empirical foundation The sample consist of 740 Swedish primary and secondary schools operated by limited liability companies

Conclusions This study illustrates mainly negative relationships between financial performance and education quality; however, the results are inconclusive and depend on the financial measure used. Another conclusion necessary to highlight is that the lack of causality in the model, which makes interpretations of the results two folded.

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Secondly, we must express our sincere gratitude to our supervisor Niclas Andrén who found the topic just as interesting as we did. Niclas contribution to the thesis and dedication to assist us throughout the process was simply invaluable.

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Introduction

On May the 8th 2017, the results of an inquiry made by the Swedish government tasked with investigating and proposing new regulations for public financing of privately operated welfare service companies was presented by the head of the committee Illmar Reepalu. The investigation that started in March 2015 delivered several conclusions on how to restructure the Swedish welfare system. (Dagens Industri, 8/5-2017)

The investigation yielded several suggestions on how to improve the Swedish welfare. Private companies active in welfare services were to be required to have a permit and outsourcing to companies without a permit would be forbidden to ensure the quality of the services. Some of the suggestions were strictly administrative such as changes in the administration of patient secrecy and management of data for the healthcare and medical services inspection. Furthermore, the investigation suggested that all privately owned companies operating in the welfare services sector were to be required to have a permit from the municipality in which they operate. The most debated suggestion was that private companies within certain welfare sectors were to face a limit on their allowed EBIT/book value of operating capital at 7 percent above STIBOR. (Reepalu et al. 2016)

With the investigation as core the government will, with support from the left party propose a bill to be voted in the Swedish parliament SVT (2018). By doing so, the government is making sure that the restructuring of the welfare and potential limit in returns will be a hot topic in the general election in September 2018 (Sydsvenskan, 3/9-2017).

1.1 Problem discussion

The question regarding a connection between school's financial performance and education quality is a highly debated one. As early as the mid-sixties, a report by Coleman (1966) investigated the differences in quality of education between schools with different levels of segregation and school funding as independent variables.

Since then the topic has been debated in the academic world. Hanushek (1997) performed a meta-study using 377 various studies to assess if they pointed towards any relationship between school resources and education quality. He found that there was no significant relationship between school resources and student performance when analysing the studies on

an aggregated level. Some relationships were found though, but they were minor in contrast to the number of studies used.

An alternate approach to assess the topic was presented by Card and Krueger (1992). They studied the correlation between school quality and the rate of return on education, defined as the economic return given a certain number of years of schooling and education quality. Their result indicated a positive relationship between attending additional years of schooling at schools with higher quality and economic return, implying that students were affected by the number of years and the quality of the school they attended.

Turning back to the Swedish market, the investigation performed by Reepalu et al. (2016) stated that there are currently ten thousand limited liability corporations providing welfare services in Sweden. Furthermore, the investigation indicated that many private schools operated by limited liability companies in Sweden are prioritizing high profits above maintaining high education quality.

The investigation point towards the fact that the Swedish education market is dominated by six players that account for approximately 40 percent of the total revenue in the education sector (primary and secondary school). According to Reepalu et al. (2016), this development poses an obvious risk that the Swedish school market could be heading from a state monopoly to a private monopoly, leading to severely compromised public choice of education. The investigation also targets these players as those liable for the sectors high EBIT results by stating that they account for 70 percent of the total EBIT of the entire private school market. Important to highlight though, is that the investigation and the bill presented by Reepalu et al. (2016) does not have the purpose of limiting costs of welfare services. The sole goal is to make sure that taxpayer funds allocated to welfare services are not used for anything else than yielding services of the highest quality possible. Thereby the bill and investigation do not seek to limit funds to the welfare as much as control the usage of them.

The report was heavily criticised, and according to SVD (7/2-2017) approximately 70 referral responses against the assumptions and suggestions of the investigation had been sent to the government. They also pointed towards the fact that many of the complaints addressed the description of the market meaning that the assumptions were utterly false, while others pointed towards which implications the profit cap would have on the market as a whole. This splits the discussion regarding the Swedish education market into two parts. The first part revolves around whether the assumptions used as a foundation for the bill are correct and the

second discussion revolves around what implications there would be for the approximately 15 thousand (Ekonomifakta, 2018) privately operated welfare service companies. To address these discussion topics, the Confederation of Swedish enterprises (a strong opponent of the investigation and the bill) published two reports with researchers from The Research Institute of Industrial Economics.

The first report is written by Jordahl and Sunden (2016) and was published before the results of the investigation were presented by Reepalu et al. (2018). They used data collected by PwC to analyse the government's motive behind the investigation and also assess how a profit cap within welfare services companies would affect the national economy. Jordahl and Sunden (2016) present several interesting additions to the discussion, the first and most central one is that the leakage of government funds identified in the investigation that serves as a central purpose for the cap was highly exaggerated. According to their estimates, approximately 6 per mille of the taxpayer's funds could be saved by the profit cap. Furthermore, they conclude that the excessive earnings before taxes and interests identified in the investigation do not exist within their sample and that the EBIT margin for their sample is close to 6 percent which is in parity with service peers. A third important conclusion is that they could not determine any relationship between company profits and the quality of the services they provide. These conclusions further ads to the critique of the assumptions of the investigation. To address the second part of the discussion namely which effects this cap would have on the market they conclude that the suggestion would limit the Swedish welfares opportunities to face the challenges they are currently facing due to larger populations and urbanization.

The second report published by Jordahl and Heller-Sundgren (2018) focused exclusively on the Swedish school market. By studying a sample of 252 different schools, they added several interesting points to the discussion from a school perspective. The authors complement Hanushek (1997) results, which illustrated that no relationship could be found between high profitability and low education quality. However Jordahl and Heller-Sundgren (2018) pointed towards that schools with better financial performance provided education of higher quality.

Both of the reports published by the Swedish Confederation of Swedish enterprises has however been met with various objecting opinions. Werne (2018) for instance pointed towards that the results of Jordahl and Heller-Sundgren (2018) were false and that a cap could help the market regarding generating proper incentives for smaller school operators. He

mainly points towards the fact that the Swedish model of private companies being able to distribute profits to their owners generated from taxpayer funds is unique and that Sweden should follow other countries examples by not allowing it.

This brings us to the question that this thesis aims to investigate. Is the assumption that schools with better financial performance also provide education of lower quality correct? Except for students per teacher and financial performance the authors do not expect that the results will show any certain relationship between financial performance and education quality.

1.2 Research question

This study will investigate whether privately-run school's financial performance affects the quality of the education they provide. Financially weaker school companies will be compared with financially strong performing ones to investigate if there is any relationship between financial performance and education quality.

1.3 Research purpose

The purpose of this thesis is to assess whether there is a relationship between the financial performance of Swedish private schools and the quality of the education they provide.

1.4 Contribution

Compared to previous research this study will contribute with a different period as well as a larger sample that includes both primary and secondary school. Also, it will include a book-based measure of financial performance and a broader set of education quality variables to assess if any or all of these variables are affected by financial performance.

1.7 Disposition

Chapter 2 Introduces the theoretical framework and a summary of previous research necessary to conduct a thorough and reliable analysis

Chapter 3 Describes the method of the thesis, from data-collection and variable choice to reliability

Chapter 4 Presents the results of the study, from sample description to statistical outputs

Chapter 5 Analyses the results and based on previous research and theoretical framework

Chapter 6 Summarizes the discussion and results in a conclusion and also provides the reader with suggestions for further research

2 Theoretical framework

In this chapter the theoretical framework for the study is described, this is mainly used to provide the reader with an understanding of the Swedish education sector and the environment that the schools operate in.

2.1. From government to management on the Swedish market

The debate regarding private companies active on the welfare market is a highly debated one in Swedish politics. To provide the reader with an overview of the discussion a brief historical recap is necessary to give a better understanding.

In the end of the 1960s the general faith in the state was reduced among the population and the classic government governance model was thought to be too rigid and insensitive, resulting in inefficient management. The critiques mainly pointed towards the fact that the post-war expansion of the state and welfare systems lacked comparison in modern time, and the size of it had become too great. (Öberg & Widhalm, 2016)

This massive expansion of the welfare also included the Swedish education system. The Swedish primary and secondary education development between the years 1945-1975 was a vital part of the construction of the welfare state, where equal education opportunities were crucial factors in creating a fair and equal society. In 1962 the 9-year comprehensive school was introduced and in 1970 all vocational and academic programmes at upper-secondary level were shaped into one institution called *Gymnasieskolan*. These reforms were characterized by strong state governing and control to secure a good outcome. (Lundahl, 2002)

In the 1970s a more unstable economic and political situation emerged and the first non-socialist government was elected in 1976. This coincided with Swedish schools showing considerable problems in managing their work and delivering education at the level of the children's needs. Education became a key part of the critique against the public sector and was often used to illustrate where the welfare system building had gone wrong. The liberals and conservatives argued that Swedish schools were expensive, rigid, inefficient, and provided people with few alternatives. Due to this critique the largest opposition to the

Swedish social-democratic party the liberal parties and the conservative party made sure to place education and school matters high on their agenda from 1970 and onwards. (Lundahl, 2002)

The first suggestion for large decentralization procedures was put forward by the public committee of "The Inner Work of Schools" (1970-1974). These proposals were not realised, however a new system for allocation of state subsidies to education, more adapted to local conditions was put in place in 1978. This was followed by several further reforms in the 1980s, with high emphasis on local freedom and local responsibilities for school development. Another committee for education governance appointed in 1987 proposed a more clear-cut division of responsibilities between the state and the municipalities and advocated more decentralisation. In 1989 this proposal was the foundation for the decision to transfer employer responsibilities for school personnel from the state to the municipalities, something Swedish teachers violently opposed. (Lundahl, 2002)

In 1991 a non-socialist government was elected, which advocated a neo-liberal policy more aggressive than the previous period of non-socialist rule. The establishment of independent schools was promoted and possibilities to invite tenders in certain subjects were introduced. Furthermore, a decision in 1993 to pay the state subsidies a lump sum to the municipalities was to become crucial in the privatization. The state had relinquished much of its earlier economic steering tools and a quasi-market system had been introduced in the Swedish education sector. And new forms of state control were introduced such as national tests alongside a new grading system. (Lundahl, 2002)

A number of problems remained in the late 1990s and the first years of the 21st century. There were large differences in grades and achievements related to gender, social, geographical and ethnic background. The working environment in schools was increasingly described as problematic and between 1997 and 2000 the number of pupils and teachers reporting high levels of stress rose considerably. However, at the same time further steps were taken in a decentralisation direction such as the abolishment of time-table in compulsory schooling as well as teacher education reforms. (Lundahl, 2002)

The development from 2002 to the launch of the investigation by Reepalu et al. (2016) was also characterised by legislation changes. In 2006 the parliament decided that a municipality was to be accountable for leaving permission to companies to run private schools given that they achieve certain quality requirements. Meaning that if the school in question had

permission and their school was open to all children the municipality were to supply the school with funds. In 2009 these regulations regarding municipality funds were clarified to give municipality governed schools and private schools similar economic conditions. The new coalition government with the conservative and liberal parties had the standpoint that similar economic conditions were an important criteria to enable true freedom of choice of school for parents and students. This standpoint was the foundation of the new school law, which was put in place in 2011. (Reepalu et al., 2016)

Due to the opening for private school operators in the 1990s the market for schools grew a considerably, this combined with the changed school laws in 2011 made school politics an important topic in the general election of 2014. The largest opposition party, social democratic party decided on their congress in 2013 that efforts were to be made to limit profits for private welfare providers but not forbid it. From their perspective the two key reasons for putting this high on their agenda was to remove the "pursuit of profits" in welfare companies as well as making sure that rules of which quality the providers had to maintain were set on a national level. These efforts regarding the question were to lead to the investigation mentioned in the introduction of the paper when the party won the general election of 2014, governing Sweden with a coalition government between the social democratic party and the left party. (Hinnfors, 2015)

On the fifth of March 2015, the civil minister along with the leader of the left-wing party presented the investigation that was to be conducted by Illmar Reepalu, the title was *"Ordning och reda i välfärden*". The sole purpose of the Reepalu investigation was to assure that the taxpayer's money went to providing welfare services rather than profits to the owners of the services. (Reepalu et al. 2016)

2.2 New public management

Below follows a description of the new public management (NPM) framework. The description initially describes the birth of the movement, from traditional governmental public management to new public management, followed by a description of the critical characteristics of new public management. This is followed by a description of the essential characteristics in the framework relevant to this study.

2.2.1 The birth of New public management and its key characteristics

The new public management movement began in the late 1970s and early 1980s and had its origins in public-choice theory and managerialism. The reason for the development of the system was that incompetence, inefficiency, and corruption characterized the traditional public administration system in the United States. However, the first country to initiate NPM ideas was the United Kingdom but the development could also be observed in municipal governments in the US. The success of the implementation in these countries put NPM reforms on the agendas of most OECD countries. (Gruering, 2001)

To give an exact definition of the framework is difficult as the NPM movement is a cluster of ideas "borrowed" from the corporate world and private company's methods for management and government. (Almqvist, 2006) The characteristics of new public management cluster are described in table 2.1 below.

Table 2.1 Characteristics of New public management

Undisputed characteristics (identified by most observers)	**Debatable attributes** (Identified by some, but not all observers)
Budget cuts	Legal, budget, and spending constraints
Vouchers	Rationalization of jurisdictions
Accountability for performance	Policy analysis and evaluation
Performance auditing	Improved regulation
Privatization	Rationalization or streamlining of administrative structures
Customer (One-stop shops, case management)	Democratization and citizen participation
Decentralization	
Strategic planning and management	
Separation of provision and production	
Competition	
Performance measurement	
Changed management style	
Contracting out	
Freedom to manage (flexibility)	
Improved accounting	
Personal management (incentives)	
User charges	
Separation of politics and administration	
Improved financial management	
More use of information technology	

Source: (Gruering, 2001)

2.2.2 Key characteristics of new public management on the Swedish market

According to Almqvist (2006) the three key fundaments of new public management are competition, contract governance and control. In his description he draws several conclusions

based on Swedish studies underlining how important these three characteristics have been for the development of new public management on the Swedish market. In addition to these fundaments a description of public choice theory has been added due to the fact that public choice is one of the main motives for the implementation of new public management in Sweden. (Reepalu et al., 2016) Finally, a section about *the other invisible hand* and *quasi-markets* has been included to enable further depth in the analysis.

2.2.2.1 Competition

The arguments for competition within public management are several. They mainly point towards increased *efficiency* on a market level, *fund distribution and allocation* as well as *product technology*. The main reasons for these arguments being highlighted are that market solutions enable better distribution of talent and funds and therefore efficiency. Furthermore, competition reduces the power of the supplier and transforms the power to the consumer of the service. Efficiency is also believed to increase when the methods of the providers is monitored. Finally, it is argued that the separation of politicians and management reduces the power of the management in favour of the more strategic visions of politicians. (Almqvist, 2006)

There is however a grand critique of the approach. The critics' state that enabling competition can lead to lower costs and enhanced efficiency, they however believe that this will occur with the consequence of lower quality of the services. This they explain by pointing towards the fact that incentives will shift from service quality to generating good returns from the business. (Almqvist, 2006)

2.2.2.2 Contract governance

The arguments for contract governance within welfare services are divided into four subcategories; these are *specialization, market discipline, flexibility* and *cost savings*. (Almqvist, 2006)

Specialty in this case gives the opportunity for a provider of welfare services to focus on their core competencies and outsource other features of the organization to other companies, such as IT, facility management and administrative tasks. (Almqvist, 2006)

Market discipline is a core argument for contract governance, a key part of market discipline is the client/contractor model. It points to the fact that by redefining the roles of the market participants as clients (the government) and contractors (the welfare service provider) the

client focus will be on performance whilst the contractor focus will be on how these services are performed. This structure enables the contractor to focus on providing the service with competitive advantage as core focus, whilst the client gets the privilege of having several options when it comes to contractors. (Almqvist, 2006)

Flexibility is mainly related to the degree of autonomy that the service providers have. The organization should have the possibility of deciding how much that is produced within the organization respective how much that is produced by external contractors. This whilst also having the opportunity to decide on their level of fixed costs, this since the fixed cost of producing the services alone usually are higher than outsourcing them. (Almqvist, 2006)

According to Almqvist (2006) there is severe critique against outsourcing these kinds of services. One obvious issue is that outsourcing requires additional administrative work which in its turn drives up the costs and, in some cases, requires the contractors of the service to focus on administration rather than the service. Furthermore, critic's point on the risk that the client loses the competence to provide the service, which means the learning by doing aspect within the organization, is lost. Another risk is that relations built by contracts can be based on good judgement and dialog first and secondly on objective monitoring. (Almqvist, 2006)

2.2.2.3 Control

The third strategic choice that an organization must consider is the internal governance and control of an organization. This is achieved by implementation of decentralization and management by objectives as administrative governing principles in organisations. Decentralization can be considered a counter-reaction against the centralization, specialization and bureaucracy that the industrialization period brought along. Among the arguments for decentralization of organizations the effect on efficiency as well as the sense of purpose for the individual has been key arguments. (Almqvist, 2006)

There is also an inefficiency part of the argument stating that there is no purpose for a highly paid manager to micromanage an organization due to the simple fact that it is not cost-efficient. Another important argument for decentralization is that an organization with centralized decision-making tends to be slower to adapt to market trends and therefore inefficient compared to more decentralized peers. It is also necessary to highlight that decentralization must be combined with control and governance in order for the organization to work properly. The control mostly associated with decentralization is management with objectives. This basically means that the members of an organization are aware of the

organizations goals and also continuously measures the goals to make sure that they live up to them. (Almqvist, 2006)

2.2.2.4 Public choice theory

Public choice theory is as stated above a large part of the foundation in the reforms towards NPM. According to Bailey (1993) the development of the public choice theory is mainly due to simple forms of representative government are becoming increasingly inadequate in representing the increasingly diverse multicultural society with divergent socioeconomic conditions in ensuring public choice and accountability.

The key aspect of the public choice theory is that it argues an alternative perspective to the traditional public management. The public choice perspective implies a preference for multiple solutions provided by competitive or pseudo-market agencies in place of monopoly provisions by local government. It also implies a fundamental change of organizational form, the separation of the specification and delivery of services (client versus contractor model as described above). (Bailey, 1993)

Devolution of responsibilities to individual service production units and allowing both these units and service users to opt out local government control represents functional decentralization (also mentioned in the NPM theory as a core aspect of the transformation). However, it is essential to separate functional decentralization compared to general political decentralization as has been done on several European markets. The functional decentralization is intended to increase individual citizens' choices regarding the package of service consumption as distinct from local collective choices. (Bailey, 1993)

According to Bailey (1993), the core outcome of the public choice initiative is that it is to reduce the dominance of public paternalism; it is no longer assumed that the state knows better than the individual in all aspects of welfare planning.

2.2.2.5 Other Invisible Hand

According to Le Grand (2007), there are many possible interpretations as to what constitutes a good public service. He argues that five basic attributes constitute a good public service. Those five attributes are *quality, efficiency, responsiveness, accountability,* and *equity*.

Good public service should be characterized by sufficient staff with the right qualifications and experience as well as reasonable classroom sizes and good facilities. A high number of children reaching their degree with good academic results are another indicator of what

constitutes a good public service. The presence of wasted and misused resources should be kept to a minimum to ensure an efficient service with the highest possible quality and quantity given certain resources. It should also be characterized by a balance between responsiveness to customers needs and taxpayers demand for accountability of their tax money. Access to the service should also be equitable in that regard that income, social class or ethnicity should not affect the service provided. (Le Grand, 2007)

Le Grand (2007) argues that there are four different models to attain the aspects mentioned above. These are *trust; targets; performance management;* and *choice*. To achieve a good public service, the choice model combined with competition is considered most suitable. The choice model depends on users' choice, where they can choose from different contractors who compete with each other for customers. If contractors know that unsatisfied customers can exit and choose another contractor, they will have a real incentive to improve their service.

2.2.2.6 Quasi-markets

The Swedish primary and secondary education sector is operating in what is called a quasi-market. This is described by Le Grand and Barlett (1993) as a market that the government previously had a monopoly on, but that has been deregulated and now is served by more producers, including both public and private companies.

In a quasi-market, not every company necessarily has the goal of maximizing their profit as compared to a free market. For example, a government-run school does not have profit as their purpose. Another difference with quasi-markets is that customers do not have to pay for the products and services that they choose, as with the Swedish education sector some services are subsidized by the government with a set amount of money that is supposed to cover the service at any of the approved producers. (Le Grand & Barlett, 1993) The Swedish education sector is operating within what Harman (2011) call the *customer choice model* where producers are subject to the government's approval, but then it is up to the customers to determine which school they prefer their children to attend.

Le Grand and Barlett (1993) argue that the success of a quasi-market should be assessed by four goals, which are efficiency, responsiveness, choice, and equity. The efficiency of a quasi-market is mainly concerned with minimizing the costs and could both refer to that producers minimize their costs regardless of the effect on quality and quantity or that producer’s reduce their costs given a certain quality and volume. The responsiveness goal

measures the ability of the personnel to listen to the customers and work towards making it as good as possible for them. While choice reflects customer's opportunity to choose producer and service. The last goal, equity, refers to the fact that access to a particular service should be based on a customer's need instead of factors such as income, status, etc. (Le Grand & Barlett, 1993)

To fulfil the requirements above – and have a functioning quasi-market – Le Grand and Bartlett (1993) points to five aspects that need to be considered, these are market structure, information, transactions costs, motivation, and cream-skimming.

The *market structure* should be exposed to competition and there should be several producers and customers. It should also be easy to enter and exit the market for producers and the costs associated with it should be low and the price should be based on the supply and demand. The *information* aspect refers to the fact that both producers and customers should have easy access to information regarding price and quality. *Transaction costs* are divided in ex-ante and ex-post. Ex-ante is costs that come before a transaction such as; planning, sales, negotiating etc. Ex-post expenses come after a transaction and include; overseeing operations, etc. *The motivation* of the producer to exist on the market should at least partly be economical and a driven to maximize profits. (Le Grand & Barlett, 1993)

Cream-skimming is a real problem on quasi-markets and to achieve equity on the market customers need to be able to access the service they need. However, if it is possible for producers to choose which customers they should serve there is a risk that they will want to serve only the most profitable (lowest cost or highest revenue). Le Grand and Bartlett (1993) suggest that a contract should be established to avoid this behaviour.

2.3 DuPont formula

The DuPont formula is a financial equation that breaks down a company's return on assets into two parts, where the asset turnover represents the first and EBIT margin the second. This breakdown of a company's return on assets is interesting since the asset turnover ratio show how effective the company is in using its assets to generate revenue. While the EBIT margin measure the company's efficiency in transforming revenue into profit. Soliman (2008) This equation is used to interpret the results for the different groups divided by financial performance.

2.4 Previous research

This chapter summarize the previous research in the field; this is done to present the reader with the critical aspects of the subject such as method, key variables, used sample sizes, etc. For a more in detail description of the research see appendix 1.

Table 2.1 - Previous research

Author/Authors	Purpose	Sample & location	Included Variables	Results
Jordahl, H. & Heller Sundgren, G. (2018)	Investigate if there is a connection between financial performance and education quality	252 different schools operated by limited liability companies in Sweden	Financial Variable: - EBIT margin Quality variables: - Grades and national tests - Skolenkäten[1]	No negative correlation between financial performance and education quality
Werne, K. (2018)	Assess if the consequences of a welfare cap presented by the Confederation of Swedish enterprises are in fact true	The majority of the data were collected from "Skolverket" as well as SCB. The study is limited to the Swedish market.	Financial variables studied: - Sales - EBITA Quality variables: - Student/teacher ratio Note: No statistical analysis is conducted, but rather comparison of means between different school operators. High emphasis on the large groups.	The implementation of a cap on profits would not threaten the public choice of education but instead act as driving force for schools that are not operated with profit purpose
Jordahl, H. & Sunden, H. (2016)	Analyse the governments motive and directives regarding the welfare investigation presented by Reepalu et al. (2016)	18 477 welfare service companies operated by limited liability companies in Sweden	Financial variable: - EBIT/Book value of operating capital Quality variables: - The Swedish board of national health and welfare quality measures for eldercare facilities	The study concluded that several of the assumptions in the investigation regarding the welfare market in Sweden were incorrect. They also failed to find a relationship between profits and quality of service
Reepalu et al. (2016)	Purpose actions (on behalf of the Swedish Government) to ensure quality and reduce waste of taxpayer funds in the Swedish welfare	10 000 privately operated welfare service companies operating in Sweden	Financial variables - EBIT margin - Return on Assets - Return on operating capital Note: No statistical analyses are conducted, but instead mean comparison between different school operators. High emphasis on the large groups.	4600 companies in Sweden received 70 % of their income from taxpayer funds, approx. 10 % of the sample accounted for 75 % of the earnings The distribution of Earnings is

[1] Skolenkäten is a Swedish poll in which students and parents of students answer questions regarding school quality

				uneven and a cap is suggested as a solution to "even this out"
Hanushek. E 1997	Assess whether there is a relationship between school resources and student achievement	Meta-study using 377 studies performed on the area in the United States	Most commonly used performance measures - Resources of the classroom (teacher education, teacher experience and teacher/pupil ratios) - Financial aggregates of resources (expenditure per student and teacher salary) - Other resources in school (specific teacher characteristics, administrative inputs and facilities	No strong relationship between school resources and student performance only 15 % of the studies pointed towards increased student performance due to teacher/pupil ratio
Card, K & Kreuger, A. 1992	Assess potential correlation between school quality and the rate of return on additional years of schooling	The sample consisted of 279-441 thousand men pending on which time-period, all born in the US	Financial variables: - Economic return on additional years of schooling Quality measures: - Pupil teacher ratio - Averaged Term length - Teacher pay	Men educated in the states with higher quality schools earn higher economic returns for their additional years of schooling

2.4.1 Key findings from previous research relevant for the thesis

A primary conclusion based on previous research is that the topic is highly inconclusive and that the Swedish market has been examined from different angles in recent years. However, several aspects differ between the studies performed on the Swedish market, the underlying assumptions and method used as well as results.

The study by Reepalu et al. (2016) as well as Werne (2016) both heavily criticize the uneven distribution of profit on the market, pointing that large school groups poses a great challenge for Swedish education. The challenge is mainly that these companies utilize economies of scale with the consequence that the education quality suffers, hence a profit cap is necessary to ensure the quality of the education. None of the studies perform any relationship analysis instead they use means and medians to interpret the profit situation on the market.

To counter these conclusions both of Jordahl and Heller-Sundgren (2018) and Jordahl and Sunden (2016) points towards that a relationship between quality and financial performance does not exist. In the first, the school market is addressed, whilst the second focus on

eldercare facilities. Both of the studies contain statistical analyses, which make them more credible and therefore relevant for this thesis.

The other studies performed by Hanushek (1997) and Card and Kreuger (1999) both indicate relationships between education quality and financial performance. These studies were performed during other time periods on other markets but are still of relevance due to the usage of similar methodology and variables.

2.4.2 Critique against previous research

It is important to highlight that four of the studies included in the previous research is not academic research. Reepalu et al. (2016) is an investigation performed on behalf of the Swedish government, and thereby the investigations impartialness cannot be guaranteed. Reepalu et al. (2016) had to be included in the thesis because it is the very core of the problem discussion.

It is also important to mention that the studies that were done on account of the Confederation of Swedish enterprises, namely Jordahl and Heller-Sundgren (2018), as well as Jordahl and Sunden (2016), cannot be seen as impartial in their research since the research was funded and presented by a strong opponent of the policies of the government who mandated the investigation. However, the studies had to be included and used as the foundation for this thesis for the sole reason that they are the most recent studies on the topic with the largest sample as well as similar methodology.

The other research is conducted on other markets than the Swedish ones and is older than the ones mentioned above but still hold relevance concerning selection of the method. In light of this, the thesis includes a meta-study (Hanushek, 1997) conducted on several articles discussing the topic however on less relevant markets to widen the perspective and increase potential for a better analysis. The thesis will discuss and compare the results of this study with previous research and then critically discuss which implications might arise when analysing the results.

3 Method

Below follows a description of the methods applied to the thesis to answer the purpose. As this subject is rather unexplored this thesis takes an explorative approach in an attempt to provide a basic understanding of the relationships between the various financial and quality variables and what might drive the relationships.

3.1 Research variables

The purpose of this thesis was to investigate if there were any connection between financial performance and education quality. To measure the financial performance, this study used the variables *EBIT margin*, *Return on assets* (ROA) and *Sales*. These variables were used because they complement each other in capturing different aspects of a company's financial performance. The EBIT margin highlights the efficiency of a company's operations in relation to its revenue while ROA highlight the profitability of a company compared to its assets and how efficient it is in generating earnings. Together these variables capture aspects of both the income statement and balance sheet. These variables were also supported by the use in previous reports in this field by both Jordahl and Heller (2018) and Reepalu et al. (2016).

In this study, the quality variables that were used to approximate school quality were *grades, student per teacher ratio, complaints* and *university performance.* These variables were chosen because they cover different aspects associated with school quality and grades and student per teacher have also been used in previous reports to approximate school quality. Complaints to Skolinspektionen were included to explore a new variable and widen the analysis.

3.2 Independent samples T-test

To determine if there were any connection between financial performance and education quality this study compared those companies that performed in the top third with those in the bottom third regarding EBIT margin and ROA. Several parametric T-tests were then used to test for differences in means between the two groups for both primary and secondary schools.

Table 3.1 Summary of performed tests

Grouping variable	Quality variable
EBIT margin	Grades
EBIT margin	Student-teacher ratio
EBIT margin	Complaints
EBIT margin	University performance
Return on assets	Grades
Return on assets	Student-teacher ratio
Return on assets	Complaints
Return on assets	University performance

For the result from the T-test to be relevant the quality variables were tested for normality. This was done by investigating the Jarque-Bera result for when unmodified as well as when transformed using Log 10 and Square root to find the most suitable form of the variable (see chapter 4.1.1 for more details). While investigating the normality, one outlier was identified for the Student per teacher ratio; this observation was double-checked against the database to eliminate the risk of being an input-error from the authors. This was not the case, and the observation was evaluated as an error and was thus eliminated because the unreasonableness of the data and because the outlier affected to normality considerably.

3.3 Model control for OLS-regression

To control for the prerequisites for the OLS-regression, several statistical tests were performed. These tests are presented in table 3.2 below.

Table 3.2

Condition	Test
Non-linearity among independent variables	Ramsey's RESET
Normal distribution of error term	Jarque-Bera
Heteroscedasticity	White
Multicollinearity	Correlation test Variance Inflation Factor

Because the study assumed heteroskedastic data, it utilized a Huber White Hinkley adjusted OLS regression to account for heteroscedasticity consistent standard errors and covariance.

3.3.4 Variable inputs

This study performed regressions with four different dependent variables that represented education quality. The quality variables were inserted in two different models (except for university performance, since data was not available for primary schools) to highlight differences between primary and secondary education. Every regression model used three financial variables as independent along with one dummy variable, controlling for if the schools were part of one of the six big school groups that are mentioned in Reepalu et al. (2016). The financial variables that were used included the EBIT margin, ROA, and sales with the motivation that they represent different aspects of a company's financial performance as explained in chapter 3.1. The selection of these variables corresponds well with previous research as Jordahl and Heller-Sundgren (2018) and Reepalu et al. (2016) used EBIT margin and ROA as a financial performance variable in similar studies. The different regression models that were used in the study are presented below.

Secondary education

(1) Grades 2016 = $\boldsymbol{\beta 0}$ + $\boldsymbol{\beta 1}$ EBIT margin 2015 + $\boldsymbol{\beta 2}$ Return on Assets 2015 + $\boldsymbol{\beta 3}$ LOG Sales 2015 + $\boldsymbol{\beta 4}$ Part of group (dummy variable)

(2) Students per teacher 2016 = $\boldsymbol{\beta 0}$ + $\boldsymbol{\beta 1}$ EBIT margin 2015 + $\boldsymbol{\beta 2}$ Return on Assets 2015 + $\boldsymbol{\beta 3}$ LOG Sales 2015 + $\boldsymbol{\beta 4}$ Part of group (dummy variable)

(3) Complaints 2016 = $\boldsymbol{\beta 0}$ + $\boldsymbol{\beta 1}$ EBIT margin 2015 + $\boldsymbol{\beta 2}$ Return on Assets 2015 + $\boldsymbol{\beta 3}$ LOG Sales 2015 + $\boldsymbol{\beta 4}$ Part of group (dummy variable) (4) Students University performance 2016 = $\boldsymbol{\beta 0}$ + $\boldsymbol{\beta 1}$ EBIT margin 2015 + $\boldsymbol{\beta 2}$ Return on Assets 2015 + $\boldsymbol{\beta 3}$ LOG Sales 2015 + $\boldsymbol{\beta 4}$ Part of group (dummy variable)

Primary education

(5) Grades 2016 = $\boldsymbol{\beta 0}$ + $\boldsymbol{\beta 1}$ EBIT margin 2015 + $\boldsymbol{\beta 2}$ Return on Assets 2015+ $\boldsymbol{\beta 3}$ LOG Sales 2015 + $\boldsymbol{\beta 4}$ Part of group (dummy variable) 26

(6) Students per teacher 2016 = $\boldsymbol{\beta 0}$ + $\boldsymbol{\beta 1}$ EBIT margin 2015 + $\boldsymbol{\beta 2}$ Return on Assets 2015 + $\boldsymbol{\beta 3}$ LOG Sales 2015 + $\boldsymbol{\beta 4}$ Part of group (dummy variable)

(7) Complaints 2016 = $\boldsymbol{\beta 0}$ + $\boldsymbol{\beta 1}$ EBIT margin 2015 + $\boldsymbol{\beta 2}$ Return on Assets 2015 + $\boldsymbol{\beta 3}$ LOG Sales 2015 + $\boldsymbol{\beta 4}$ Part of group (dummy variable)

3.4 Data collection

A list of all privately-run schools was retrieved from Skolverket.se. The financial data for these companies were collected from Valu8's database using their industry classification. In some circumstances, this data was compared to Allabolag.se to increase the reliability. The data collected includes Sales, EBIT, and Total Assets, which was used to calculate the companies' EBIT margin and ROA. Final grades for students in year 9 and third-year high school students, as well as student per teacher ratio, was collected from Skolverkets database SIRIS. The number of complaints from different schools was collected from Skolinspektionen. See table 3.2 below for a summary of the various sources and data types.

Table 3.3 - Source and data type

Database	Type of data
Valu8	Sales, EBIT, Total assets
Allabolag.se	Sales, EBIT, Total assets
Skolverket SIRIS	Final grades, teacher ratio
Skolinspektionen	Complaints

The choice to base the sample on 2015 and 2016 was to increase the generalizability of the results and 2016 is also the last year with available data. To our knowledge, there was no other study at that date that had investigated this field with a similar method. The period ends at 2016 since that was the last year with available data regarding financial and qualitative performance. The data include both privately and publicly held limited companies that primarily operate primary and secondary schools.

A school year runs from August to June the following year, while most of the company's financial reporting follows the calendar year. In this study, the financial performance of 2015 is thus compared with the qualitative performance ending in June the year after. For the schools that are a part of the six largest groups, the financial performance of the group has been used, because of the lack of financial transparency.

The initial sample of active limited liability companies in the primary and secondary school sector included 968 schools. After excluding all companies whose focus was not education and eliminating those with missing data the final sample consisted of 830 schools of which 474 were primary schools and 356 were secondary schools. The exclusion of all other business types than limited companies was necessary to access financial data for those

companies. The purpose of the study also made it important to exclude companies with a different focus than education.

Table 3.4 Sample criteria's

Criteria
✓ Privately operated
✓ Limited company
✓ Publicly or privately held
✓ Active in Swedish primary or secondary school
✓ Not involved in schools for those with learning disabilities
✓ Focus on education
✓ Active 2015 or 2016

3.5 Method discussion

There are two concepts that are important to consider when it comes to determining whether a study is relevant: validity and reliability. These two concepts illustrate whether studies investigate what it is going to investigate, and whether the result can be reproduced using the same method (Lundahl & Skärvad, 1999).

3.5.1 Validity

In an investigation, the absence of systematic measurement errors is desired and this can be defined by the term validity. Lundahl and Skärvad (1999) distinguish between internal and external validity, where the internal validity is useful if the measuring instrument measures what it should measure, in this case whether financial performance and education quality correlate. In this case, previous studies (e.g. Jordahl 2018) have used the same method and measuring to investigate the correlation between financial performance and education quality. Internal validity is further strengthened as all data is collected from recognized and reliable databases. According to Lundahl and Skärvad (1999), external validity can be defined as the generalization of a study's results against other situations or contexts. However, the result of future studies may differ from between different time periods.

3.5.2 Reliability

According to Lundahl and Skärvad (1999), reliability is measured by the absence of random measurement errors. A study with solid reliability can be carried out by other persons and under different circumstances without affecting the measurement themselves, and there are

few occasions, or random errors that affect the outcome. Should other authors wish to answer the same question and purpose as this study intends to answer, it is possible to choose alternative measures, and in that case, they would be able to achieve other results. There are other measures than those used in this study to determine the financial performance and education quality, but the choice of variables has been based on previous research.

Secondary data was downloaded from Valu8, which is an established database. It has also been supplemented and in some cases cross-checked with data from Allabolag, in cases where the data was misleading and thus enhanced the reliability. Furthermore, all education quality was collected from Skolverket and Skolinspektionen, which is considered as trustworthy and credible source of information.

4 Results

This chapter presents the empirical findings from the performed study. It begins with descriptive statistic concerning the quality aspects for the different groups based on their financial performance. After that several t-test are presented. Lastly, a regression analysis is presented to explore specific relationships between financial performance -and education quality variables.

4.1 Descriptive statistics

To give an overview and increase the interpretation of the results table 4.1 present the average EBIT margin for the primary and secondary school in this sample as well as the EBIT margin for companies in the welfare sector and service sector as presented in previous reports.

Table 4.1 EBIT margin

	Primary education	Secondary education	Primary school (Jordahl, 2018)	Welfare sector (Reepalu, 2016)	Service sector (PwC, 2016)
EBIT margin	3,95%	5,40%	4,48%	5,70%	5,80%

Table 4.2 and 4.3 presents an overview of the samples financial performance for the two years divided in the primary and secondary education sector. It shows that the average EBIT margin for companies in the primary education sector were 3.95 percent. For companies active in the secondary education sector the corresponding figure were 5.4 percent. It also shows that the primary education sector had a ROA around 12.4 percent, while the secondary education sector had 10.2 percent.

Table 4.2 Financial overview primary education

	Sales	EBIT Margin	ROA
Average	1 638	3,95%	12,4%
Median	60	6,0%	10,1%
Max	8 611	34,7%	98,2%
Min	0,00	-962,2%	-124,0%

Source: own (Data: Valu8)

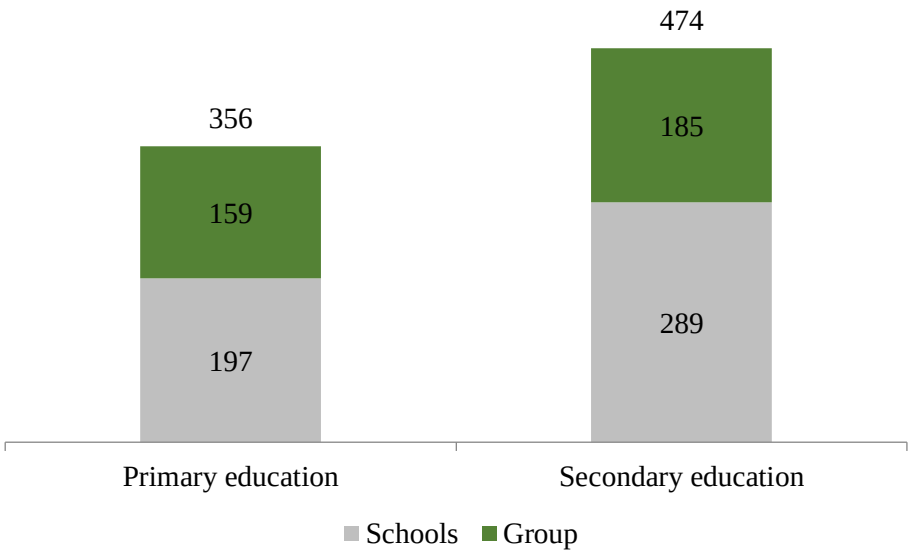
Table 4.3 Financial overview secondary education

	Sales	EBIT Margin	ROA
Average	3 531	5,4%	10,2%
Median	466	6,2%	7,5%
Max	8 611	28,6%	166,9%
Min	0,00	-98,7%	-387,2%

Source: own (Data: Valu8)

Graph 4.1 illustrates the share of schools belonging to one of the six major school groups in Sweden. It shows that for primary education those part of these groups constitute 45 percent and in secondary education, the corresponding figure is 39 percent of the sample.

Graph 4.1 – School grouping



To provide an overview table 4.4 presents the averages for the samples quality variables divided by primary schools and secondary schools. This is done to improve the interpretation of the results when divided by financial performance in table 4.7 and 4.9. The table illustrates that the number of students per teacher is slightly higher in secondary school, which is illustrated by their slightly higher EBIT margin since fewer students per teacher drives down costs. Primary schools also appear to receive more complaints on average than secondary schools.

Table 4.4 - Quality overview

	Grade	Students per teacher	Complaints	University performance
Primary school	242,2	13,15	3,28	N/A
Secondary school	13,57	13,81	2,04	64,34

4.1.1 Transformations of quality variables

To increase normality of the quality variables some were transformed, this contributed to significant increase of proximity to normality for eight of the different variables and groupings. Were especially the transformations of grades for secondary school achieved big improvements and higher probability of normality. All the performed transformations and the Jarque-bera score's before and after the transformation, as well as the change in probability of normality are presented in table 4.5 and 4.6 below.

Table 4.5 - Transformations primary school

Group variable	Quality variable	Transformation	Original JB- score	Original probability	Transformed JB-score	Transformed probability
EBIT	Grade	None	86	0,000	N/A	N/A
EBIT	Student ratio	None	80	0,000	N/A	N/A
EBIT	Complaints	Log 10	84	0,000	12	0,002
ROA	Grade	None	202	0,000	N/A	N/A
ROA	Student ratio	None	84	0,000	N/A	N/A
ROA	Complaints	Log 10	402	0,000	13	0,001

Table 4.6 - Transformations secondary school

Group variable	Quality variable	Transformation	Original JB- score	Original probability	Transformed JB-score	Transformed probability
EBIT	Grade	Log 10	6	0,046	0	0,984
EBIT	Student ratio	Sqrt	22	0,000	11	0,004
EBIT	Complaints	Log 10	184	0,000	10	0,006
EBIT	University performance	None	172	0,000	N/A	N/A
ROA	Grade	Log 10	10	0,006	1	0,674
ROA	Student ratio	Sqrt	50	0,000	6	0,041
ROA	Complaints	Log 10	210	0,000	10	0,006
ROA	University performance	None	42	0,000	N/A	N/A

4.1.2 Primary schools

The quality variables for primary schools are presented in table 4.7, which show the averages for the two groups. When sorted on EBIT margin all the quality variables for the top third show inferior results compared to the bottom third. Sorting the variables on ROA instead, the results show that both grade and complaints are better, while teacher ratio is still showing worse results. The connection between financial performance and education within primary schools is thus contradictory and varies depending on which financial performance measure that is used.

Table 4.7 – Primary school

EBIT margin	Top 1/3	Bottom 1/3
Grade	240,5	246,4
Student ratio	13,4	12,6
Complaints	3,09	2,59

ROA	Top 1/3	Bottom 1/3
Grade	240,2	236,6
Student ratio	13,2	12,7
Complaints	3,27	3,32

As shown in table 4.8 three of the six tests show a statistical significance for companies in the primary education sector. Grouped by EBIT, all quality variables are significantly different between the top third and the bottom third. The results indicate that a higher EBIT margin is correlated with a lower grade and more students per teacher as well as more complaints. The remaining three tests do not show any significance, which suggest that ROA does not have any correlation with education quality within primary school in the used sample.

Table 4.8 – T-test primary school

Group variable	Quality variable	Top 1/3	Bottom 1/3	T-value	Significance
EBIT	Grade	240,5	246,4	3,90	0,000
EBIT	Student ratio	13,4	12,6	-2,32	0,021
EBIT	Complaints	0,377	0,295	-1,76	0,081
ROA	Grade	240,2	236,6	-0,06	0,956
ROA	Student ratio	13,2	12,5	2,23	0,026
ROA	Complaints	0,37	0,39	0,44	0,662

4.1.3 Secondary school

For the secondary school, table 4.9 shows that the top third has a slightly lower average grade sorted on both EBIT margin and ROA. Like the primary school, the student ratio for

secondary school also shows more students per teacher for the top third compared to the bottom third. Besides, the table show contradictory results regarding the number of complaints depending on which financial variable the schools are sorted after. The results for university performance also show contradictory results, where the top third sorted by ROA show a much higher average than the bottom third.

Table 4.9 – Secondary school

EBIT margin	Top 1/3	Bottom 1/3
Grade	13,3	13,5
Student ratio	13,7	13,4
Complaints	2,18	1,89
University performance	68,1	68,4

ROA	Top 1/3	Bottom 1/3
Grade	13,4	13,5
Student ratio	13,8	13,6
Complaints	2,00	2,10
University performance	71,8	57,2

The only test that shows a significant difference for secondary schools is that of university performance when sorted by ROA. This indicate that students attending schools with high ROA perform better at a university level than those that attended schools with low ROA. The other tests do not show any statistical significance, which indicate that there is no correlation between financial performance and education quality for secondary schools in this sample.

Table 4.10 – T-test secondary school

Group variable	Quality variable	Top 1/3	Bottom 1/3	T-value	Significance
EBIT	Grade	1,12	1,13	-1,048	0,295
EBIT	Student ratio	3,66	3,62	0,696	0,487
EBIT	Complaints	0,26	0,20	1,181	0,240
EBIT	University performance	68,1	68,4	-0,073	0,942
ROA	Grade	1,13	1,13	-0,084	0,933
ROA	Student ratio	3,67	3,65	0,339	0,735
ROA	Complaints	0,21	0,23	-0,288	0,776
ROA	University performance	71,8	57,2	4,589	0,000

4.2 Regression

This section describes the results of the seven different regression models performed with the purpose of analysing specific relationships between financial performance –and education quality variables.

Table 4.11 - Regression output primary school

Dependent variable	Grades		Students per teacher		Complaints	
Observations	145		277		122	
	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
EBIT margin	73,40	0,526	-2,40	-0,516	3,92	0,841
ROA	21,06	1,209	1,44	1,166	-0,81	-0,732
LOGSales	9,37	0,926	1,75	2,918***	-0,73	-1,075
Part of Group	-37,62	-3,108***	-0,91	-0,991	-0,70	-0,782
R-Square	0,062		0,053		0,026	
Adjusted R-Square	0,035		0,039		-0,007	
Jarque-Bera	59		28		160	

*** Significant at 1 %

**Significant at 5 %

*Significant at 10 %

Table 4.12 - Regression output secondary school

Dependent variable	Grades		Student/teacher		Complaints		University Performance	
Observations	140		189		52		33	
	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
EBIT margin	0,304	0,194	4,075	0,621	1,010	1,244	55,378	2,003*
ROA	-0,071	-0,171	-0,198	-0,333	-0,117	-0,240	-6,421	-1,457
LOGSales	0,162	0,582	1,160	1,309	0,419	1,435	-0,835	-0,385
Part of Group	-0,960	-2,486**	1,022	0,794	-0,444	-0,879	n.a.	n.a.
R-Square	0,054		0,064		0,034		0,227	
Adjusted R-Square	0,026		0,044		-0,049		0,147	
Jarque-Bera	0,307		38,300		141,626		2,079	

*** Significant at 1 %

**Significant at 5 %

*Significant at 10 %

The first relationship observed in the study is a negative statistically significant relationship between primary schools being part of a group and their average grade, indicating that being part of a group has a negative impact on average grade level.

Furthermore, the study could identify a similar relationship between the variables when the same study was performed on secondary schools, and this relationship was also negative but with a lower coefficient.

The third finding is a positive statistically significant relationship between students per teacher in the primary schools and the sales from the year before. This indicates that schools with higher sales and thereby larger size tend to have fewer teachers per student than schools with lower sales.

Lastly, the fourth relationship the regression models illustrate is a significantly positive connection between EBIT margin and university performance. However this result has to be interpreted with caution due to the fact that there are very few observations. For full model output se appendix 2.

4.2.1 Regression model diagnostics

In this section, the study briefly discusses if critical assumptions for the data of the study has been fulfilled or not. The most central assumptions are normal distribution as and that the data is homoscedastic.

The data is assumed to be heteroscedastic and in order to account for this; the White-Huber-Hinkley adjustment was made to the OLS-regression. Furthermore, the models have been tested for linearity as well as multicollinearity. Below follows some brief comments on the results from the tests, for a full presentation of the diagnostics see appendix 3.

4.2.1.1 Normal distribution

The normal distribution of the sample has been assessed by analysis of skewness, kurtosis, histograms as well as a Jarque-bera test. It is possible to conclude that the data is not normally distributed in the majority of the regressions only by studying the skewness and kurtosis of them; the Jarque-bera result underlines this assumption. This has to be kept in mind when drawing conclusions based on the model.

To address this issue, the sales variable was transformed by using the logarithmic function, to reach a more normally distributed variable. The fact that the multiples are not normally distributed can be explained by several factors. One of the main reasons could be that the sample of schools was selected purely based on the financial database regarding only including the schools that Value8 could produce financial data for.

4.2.1.2 Multicollinearity

The multicollinearity of the data has been assessed by studying correlation matrixes as well as the variance inflation test for the data. Here the study concludes that there is no multicollinearity between the variables. It is, however, necessary to point out that there is some correlation between the part of group dummy variable and the log sales variable. For correlation matrix and VIF tests see Appendix 3.

4.2.1.3 Endogeneity problem

The endogeneity problem occurs when many important explanatory variables in developmental models of contextual intelligence are partly determined or influenced by the actions of individuals, whose development is being studied. (Duncan et al. 2011)

This is relevant to highlight in this study since causality in the models will be hard to address. The thesis set the model so that the financial variables used was the ones from the year before the performance variable was measured, this to get some causality. However, due to endogeneity, the study cannot assume causality in the models, and this has to be kept in mind when interpreting the results.

4.2.1.4 Robustness of regression model

In the regression-models, several different versions of the model were tested to attempt to increase the robustness. First and foremost, performing an aggregated regression model for primary as well as secondary schools were attempted, in which the grades were recalculated to the same level. This did however not increase the R-Square or the relationships to a significant extent.

The models were also retested without one of the financial variables to see if the outcome was affected by using variables as similar as ROA and EBIT margin. This did not have any significant impact either.

4.3 Result summary

Below follows a brief summary of the significant results obtained from the different statistical models.

Table 4.13 - Significant result summary

Statistical test	School	Determining variable	Education quality variable	Effect on quality variable
T-test	Primary	EBIT-Margin	Grade	Negative
T-test	Primary	EBIT-Margin	Students per teacher	Negative
T-test	Primary	EBIT-Margin	Complaints	Negative
T-test	Primary	ROA	Students per teacher	Negative
T-test	Secondary	ROA	University performance	Positive
Regression	Primary	Part of group	Grades	Negative
Regression	Secondary	Part of group	Grades	Negative
Regression	Primary	Sales	Students per teacher	Negative
Regression	Secondary	EBIT-Margin	University performance	Positive

6 Analysis

This chapter analyses the results of the various statistical models applied to the data to answer the purpose of the study. The chapter has been structured by the education quality variables and will discuss the outcomes of the T-tests as well as the OLS-regression along with assessing which implications might occur when drawing conclusions based on the results.

This thesis explores the relationship between financial performance and education quality on the Swedish education market, which is truly unique in its kind. This in combination with the lack of research on the subject, existing theories are not especially adapted, which make them less suitable to analyse the results and more suitable for providing a background of the environment. However, they provide somewhat of a foundation to base part of the analysis of.

6.1 Grades

The results from the t-tests and regressions are very contradictory between the different samples and groups, which make it hard to draw any general conclusions. However, the result indicates that within the primary education sector companies with higher EBIT margin correlate with lower average grades. This opposes findings of Jordahl and Heller-Sundgren (2018) who indicated that financial performance and strong education quality goes hand in hand.

One explanation might be that the schools with higher EBIT margins simply invest less in the education quality, as suggested by Reepalu et al. (2016) and Werne (2018). However, it is necessary to highlight that the lack of causality of the model makes it very hard to draw clear conclusions based on the result. The thesis cannot illustrate if the lower grades are driven by strong financial performance or whether strong financial performance is a result of reduced quality, which lead to lower grades. Assuming that the relationship is not related to lack of investments in education quality would open up for several other interpretations. For instance schools performing financially well might feel less forced to lure with higher grades and thus able to require more for certain grades and thereby not reducing quality but rather expecting more from the students.

Changing perspective the relationship could also be explained by factors not covered in the model. For instance, including socioeconomic factors by including school area and such might add interesting results to the discussion. This since schools located in more urban areas have a larger target-groups regarding students. This benefit in its turn makes it easier for schools to fill their classes and thereby get more funds from the government to educate them. On a secondary school level, this aspect is also highly relevant since a larger target group presses the grade average to get accepted to various schools up. By accepting students with higher grade-averages to the schools, it is easier for the school to operate more efficiently and create more profits with lower costs (i.e. fewer teachers or fewer investments in facilities), something Werne (2018) pointed out those private schools in general and especially those parts of larger groups tend to do.

The study also observes an interesting relationship between grades and the part of group variable in the regression analysis. As this variable has not been investigated in previous research, this study is unable to compare it to previous results. The result indicates that grades are significantly negatively correlated with the part of group variable (being a school in one of the six large private school groups in Sweden). Once again it is very important to point out that this relationship is two-sided and lack causality. One possible explanation could be that those schools that belong to a larger group have more monitoring regarding grade distribution pushing the average down. Regardless it is a very interesting finding since several critics of the current education system, for instance, SVD (2013) points towards the fact that larger school groups tend to give higher grades than other schools for efficiency purposes.

Another important factor to consider when drawing conclusions based on this relationship is what the grade variable represents. It is a weighted mean of the grades that the student from the school in question received. There are standardized grade criteria's which all of the teachers within the Swedish school system has to consider when grading a performance. However the variable has to be considered severely exposed to the human error factor. This due to the fact that the grade is heavily exposed to the teachers own assessment of the level of knowledge delivered in the performance, and the image varies from teacher to teacher. Thereby caution has to be taken when interpreting the result, as a majority of the top financially performing school might have higher standards on what is required to reach a grade and vice versa.

The fact that no relationship was found between the financial variables and education quality in the regression is in line with what Jordahl and Sunden (2016) concluded, namely that there is no relationship between financial performance and quality. This study was however performed on markets with different welfare services and is thereby not fully relatable with this study.

Summarizing the results the study indicates a significant negative relationship between EBIT margin and grade levels. The reason for significant findings within EBIT margin and lower grades and not ROA also has to be highlighted. This could have its explanation in the Du-Pont formula pointing towards those differences in the measurements is explained by capital turnover. Furthermore, the study illustrated a significant negative relationship between primary and secondary schools grade level that was a part of one of the large six school groups in Sweden and grades.

6.2 Students per teacher

The study's results regarding the students per teacher relationship with financial performance ads to the conclusions of Hanushek (1997), that use the same variable, as well as Jordahl and Heller-Sandgren (2018) who both indicated that the number of students per teacher is correlated with financial performance. The study also finds a statistically significant relationship between the sales of the primary schools and the number of students per teacher. These results are in line with the ones that Hanushek (1997) present where 15 percent of the studies included in his meta-study point towards a relationship between financial situation and students per teacher. This relationship has to be assumed to be highly related to efficiency and competition factors. By maintaining better capital efficiency, schools can capitalize better on the staff they have and thereby reducing the need for additional teachers.

The relationship between student ratio and financial performance is logical since teacher wages could be assumed to constitute a large part of a school's total costs. However, it is hard to say anything about its implications on education quality, since it does not take into account the teachers qualifications, which according to *the other invisible hand* theory is one part of what constitutes quality. Highly profitable schools could for example be better at attracting and recruit better teachers that can handle more students. It could also be so that highly profitable schools attract high performing students with favourable backgrounds and because of that; they get away with more students per teacher. A third explanation could be that

private schools are better at exploiting economies of scale with centralized functions to administer and plan the education. However, the results could also be interpreted in line with what Werne (2018) argue, that private schools lower the education quality by having more students per teacher. It is not unreasonable either that schools in their hunt for profit offer teachers lower salaries and thus receive less qualified teachers, which would affect the education quality negatively, especially in combination with more students per teacher. Even though the results of this study show that more profitable schools have fewer teachers per student, it is not possible to say anything about the causality between the variables. Thereby it is hard to draw conclusions on the regression results since it is not possible to know which variable that drives the relationship.

6.3 Complaints

The complaints factor is very interesting to examine since it gives a good proxy on the school environment in which the education is provided. The results from this study show one significant relationship between company's financial performance and the number of complaints. This relationship indicates that stronger EBIT margin correlates with the amount of complaints, and thereby the study concurs with Hanusheks (1997) findings, namely that strong financial performance can in some cases affect education quality negatively.

One explanation for the result might be that a higher EBIT margin is achieved through cutting costs thereby making the educational environment worse. This is something that Werne (2018) also highlighted, but with a slightly different model approach.

As with all the other results obtained the lack of causality of the model has to be considered. One explanation could be that the number of complaints are depends on other factors such as; geography, socioeconomic background, parent's education level, etc. It is fairly easy to imagine a connection between the number of complaints and certain geographical locations with low socioeconomic status that is plagued by high unemployment rates and widespread crime. Thereby adding a socioeconomic explanatory variable and analyse how this affects complaints could add much weight to the variable. However, the socioeconomic effect on the variable could be two-dimensional. On one hand schools in areas with more issues could have a higher rate of complaints. However, it is also not unreasonable to imagine a connection between schools with students from more advantageous circumstances and the number of complaints, since well-educated parents could be more prone to speak up and file complaints.

Another variable that most certainly would help establish a relationship with complaints is amount of students. This relationship would illustrate how well larger schools with more students manage to maintain a good education environment despite having larger amount of students.

As a final note, it should be considered that the study experienced a rather big data loss due problems with matching the complaints with the correct companies, which may have affected the results, or lack thereof. Another consideration to take into account is that this variable has not been used in previous research and therefore the suitability to investigate education quality based on the complaints variable can be questioned.

6.4 University performance

This study concurs with the findings of Jordahl and Heller (2018) which points towards the fact that financial performance and education quality goes hand in hand. The results from the t-tests show that higher ROA is significantly correlated with higher university performance. While the regression shows a statistically significant positive relationship between university performance and the previous year's EBIT margin.

The lack of causality makes it impossible to determine the reason for this relationship, but one explanation could be that more profitable schools are better at attracting high performing students. By offering high-performing programs such as those entirely in English, schools are cream-skimming the market for high performing students, which needless resources and are most likely to perform well at a university level. As a final note it is important to highlight that this study only had a small sample for one year with university performance, which makes it hard to draw any wider implications from the results.

7 Conclusion

Below follows a brief summary of the results obtained from the study and the analysis conducted. Furthermore the section addresses the purpose of the study and provides a conclusion on what the study might add to the highly debated subject of profit versus education quality in Swedish private schools.

7.1 Summary and conclusion

The purpose of this study was to assess whether there is a relationship between the financial performance of Swedish private schools and the quality of the education they provide. The study can illustrate some relationships between financial performance and education quality. For instance the study observes that there seem to be a negative correlation between schools EBIT margin and education quality, but no relationship with ROA. Thereby the study opposes with the findings of Jordahl and Heller (2018) who stated that financial performance and education quality go hand in hand. A pattern can also be observed in the results in the sense that among the significant results strong financial performance in the variables included often indicated a negative effect on education quality. It is important though to interpret these results with great caution, for instance the models selected by the study cannot explain the causality between the variables.

It is also interesting to highlight that the usage of student per teacher as an education quality variable might be misleading, since having more students per teacher does not necessarily mean that the education quality is compromised. This is illustrated by the fact that the selected sample illustrates that the high performing schools (in terms of EBIT margin) tends to have students with lower grades but who manages university studies better.

Schools operated for profit has been highly debated in Swedish politics, and both the government and the public have expressed opinions about limiting company's ability to generate profit. This is mainly based on the notion that company's lower the education quality in their hunt for higher profits. In this dataset the results point towards a negative relationship between mainly EBIT margin and education quality, but the results is not conclusive, and there is no evidence of a negative relationship between return on assets and education quality, which is more related to what the investigation by Reepalu et al. (2018) proposes to limit. The investigation object to the fact that large school groups have a higher share of the profit of the market compared to their share of the revenue, but this is precisely what economic

theory predicts, namely that economies of scale will generate higher profits. The authors believe instead that the focus should be on guaranteeing a certain level of education quality regardless of how it is achieved or how much profit the company is making. Even though this is associated with several difficulties regarding both the implementation and upholding, the authors believe it to be a more appropriate approach.

On a general level, a profit limit as suggested by the Reepalu investigation would collide with the *motivation* aspect, which is central for the quasi-market. By removing company's economic incentive they would have no reason to improve besides from their potential drive to deliver high quality. This thesis has indicated that there are several issues with blindly trusting the image of the Swedish welfare painted by Reepalu et al. (2016) and Werne (2018). Their analysis of the market and conclusions regarding the market appears to be highly affected by the political institutions they both represent. As former Swedish minister of finance Kjell Olof Feldt famously when describing how he reasoned regarding decentralization of governmental power:

> *"My position in this question was decided based on the function of profit in Economics. The purpose of profit is not just to be an indicator on the degree of efficiency in different ways to utilize economic resources. The profit interest is the sole pure monitoring function that resources are used efficiently. In order for this monitoring to work there has to be a group of actors in the society, whose sole goal and purpose in life is to maximise the earnings in the company they own" (SVD 21/05-2018)*

The study illustrates that no significant connection can be found between generally strong financial performance and weak education quality, indicating that the school system in terms of the given topic is functional, an image clearly opposing the previous opinions on the topic from Reepalu et al. (2016) as well as Werne (2018)

As a final note, this study has provided a basic understanding that future research can build upon when trying to gain a more conclusive picture of the relationship and causality between financial performance and education quality.

7.2 Future research

Due to the fact that general data availability and previous research on the topic is quite limited on the topic, there are several interesting aspects that could be addressed in future research.

First and foremost, the key issue to truly address the topic of privately operated versus municipality operated schools is the lack of financial data from municipality operated schools. Here it would be very interesting to attempt to locate key ratios from both sides such as spending per student, teacher salary ratio, etc. and match this with quality variables such as grades and university performance. This is similar to what Hanushek (1997) did, however, data availability and time limitations made it impossible to perform in this study.

Another issue to address in future research is that quality variables for students learning are extremely hard to find. Here it would be an interesting niche to get the results from Swedish SATs in order to get a standardised indicator of knowledge and then compare this where the sample in question were educated.

A final suggestion would be to investigate how geographical location on a detailed level affects financial performance and education quality. This would incorporate several interesting features previous studies on the Swedish market has missed, most importantly socioeconomic background.

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Appendixes

Appendix 1. Previous research

1.1 Jordahl, H. 2018 "The correlation between profit and quality in Swedish primary Schools"

Purpose & limitations

The purpose of the paper was to analyse whether the quality of education in privately run schools differ between schools with different profit margins. The analysis was exclusively conducted on schools operated in limited company form, leaving out the schools operated under a trust or by the government. This limitation was mainly due to lack of data on schools that are not listed as a limited company in Sweden.

Data & sample

Data were collected from the Swedish school authority's websites. As mentioned above in limitations, schools operated under limited company form (private or public) are the only ones included in the sample to due data availability reasons. The final sample after these limitations extended to 252 different schools that were operated by 123 limited liability companies. The profitability measures were collected for the academic year 2015/2016 and the quality data was matched to this particular academic year or a later one.

Method

To represent school quality the author used grades, results from the national tests as well as results in "*Skolenkäten"*[2]. Grades were calculated as the Swedish *meritvärde* which means calculating the sum of the grades for the students 16 best results. The results from the "national tests" were simply an average of the grades received. The variable "Skolenkäten" used the Swedish school inspection authority's index based on the answers on the assumptions given in the form.

To represent the school's profitability the EBIT -margin was used. The authors used the following formula to calculate it:

[2] Inquiry answered by pupils and parents grading school quality

$$EBIT\ Margin = \frac{(Operating\ Income - Operating\ Costs)}{of\ Sales}$$

The data was collected by using the SNI coding system (using code 85.2 representing Elementary school). The data was collected from PWC, who conducted a similar study that will be described below. It is also important to underline that the authors measured the EBIT-margin on a corporate level; hence the variable can represent an operator of one up to 28 different schools.

Result

The result of the study pointed towards that no negative correlation could be found between lower profitability and low outcome on the quality variables. The authors claim to have identified the inverse relationship in some cases indicating that there is a positive correlation between higher profitability and high scores on the education quality variables. They also claim that this correlation is found in the student's attitudes towards the quality (Skolenkäten) as well as in hard measures such as grades as well as the national testing result.

1.2 Werne, K. (2018) "Skolindustrin: Hur mångfald blev enfald"

Purpose & limitations

The purpose of the study was to assess if the consequences of a welfare cap presented by the confederation of Swedish enterprises are in fact true. The author exclusively analyses data from the Swedish market.

Data & sample

The data used is mainly collected from SCB, Ekonomifakta as well as the Swedish school authority. As the study does not include a relationship analysis sample size is hard to determine.

Method

The method used by the study is mainly to analyse the median and average of financial variables in order to assess how a profit cap would affect them. The financial variables used to analyse the schools financial performance was mainly sales as well as Earnings before interest taxes and amortisations (EBITA).

EBITA was calculated as follows:

$$EBITDA = Sales - Operating\ Costs - Depreciation$$

The study also mentions student/teacher ratio. It is important to mention that no statistical analysis was conducted, but rather mean comparison between different school operators. High emphasis was put on discussing the various risks with having few large private school operators.

Result

The implementation of a cap on profits would not threat the public choice of education but rather act as driving force for schools that are not operated with profit purpose. The author also concludes that Sweden is unique in the sense that tax funds are allowed to be distributed as profits to owners of welfare companies. As other systems work in other countries the author points towards the fact that a cap would have mild impact on the market as a whole.

1.3 Jordahl & Sundén (2016) "Limitation of profits within the welfare"

Purpose & limitations

The purpose of the study is to analyse the governments motive and directives regarding the welfare investigation, this whilst also assessing how a profit cap within welfare would affect the national economy. It is important to notice that this study differs from the others highlighted in this thesis in the sense that it focuses on additional welfare services as well as school.

Data & sample

The data used in the investigation is mainly collected from the report carried out by PwC, which will be discussed below in the thesis. The authors do however put intense focus on other financial measures than the ones highlighted in the PwC report.

Method

The paper focuses heavily on studying the EBIT margins of various welfare companies to assess how a profit cap would affect these companies. The method of the paper is to a great extent linked to first mapping the multiple purposes of the investigations of the cap and then use data from the PwC report to address the suitability of the presented solution and the investigation versus its purpose.

Result

The authors conclude that there are three primary motives for the investigation and legislation proposal put forward by Reepalu and the government in 2016, these are:

1. Allowing returns from privately operated welfare companies enables leakage of taxpayer funds, meaning that all the funds are not used to perform the service
2. Companies active in welfare services in Sweden perform well and generate a high return, what is labeled as *övervinster* in the *Ordning och reda I välfärden* investigation
3. The purpose of generating returns cripples the quality of welfare service companies, especially those making high profits

The author's points towards several exciting findings based on the PwC report to counter these purposes and incentives used as a foundation in the governmental investigation put forward by Reepalu.

The first important finding is that the "leakage of government funds" identified in the government report is very low according to Jordahl and Sundén, somewhere around 6 per mille could be saved in government funds by setting the profit cap. Secondly the authors identify the "övervinster" as highly exaggerated in the report; they claim that the average EBIT margin of the sample is located around 6 percent which is entirely acceptable and in parity with peer industries. The reason for the weak EBIT margin the authors believe to be linked to inefficiency among private welfare service providing companies.

The third and for this thesis most relevant point is that the authors do not find a link between the companies profits and the quality of their services. They argue that there is a theoretical opportunity that the private companies can make sure to reduce quality in favor of profits, however there is no empirical proof for this standpoint. It is however important to highlight that this analysis was performed on healthcare service companies within welfare and not on schools.

2.1 PwC 2016 Avkastning på bokfört operativt kapital I välfärdsbolag

Purpose & limitations

The purpose of the study conducted by PwC was to provide an assessment of the suggestions of profit limitations in *the "Ordning och reda i välfärden*" investigation conducted by

Reepalu et al. in 2018. The study was conducted for *Svenskt Näringsliv*. The proposal from the government was to limit the EBIT/book value of operating capital to Stibor + 7 percent, the study's sole purpose was to assess if this was feasible looking at welfare companies as well as the service sector as a whole

Data & sample

Data was collected from SCB as well as Swedish house of finance. The sample contains 18 477 welfare companies. PwC concluded that usage of the service sector as a peer group is not comparable to welfare companies, mainly due to the different asset base of the typical service provider within the welfare vs service company.

Method

The variable studied in the analysis was as mentioned the EBIT/Book value of operating capital. PwC used the following formula to calculate the multiple for the sample:

$$\frac{EBIT}{/Book\ value\ of\ operating\ capital}$$

$$= \frac{EBIT}{/Total\ assets - Financial\ assets - Cash\ \&\ Cash\ Equivalents - operating\ debt}$$

PwC mentions briefly that this measure is applicable to companies with a lot of tangible assets as it measures the return on the purchase of these assets. However, for companies with a limited amount of tangible assets the usage of the multiple appears less logical.

Using the multiple PwC then assesses what the suggested limitation would yield in for the companies in the sample.

Result

First and foremost, PwC concludes that the multiple utilized in the investigation would be more fitting for capital intense companies, using the multiple on smaller companies active within welfare yields in *unreasonabl*e results. The investigation also states that the usage of the service industry as a peer market is inaccurate due to the different asset structures of the companies. The suggestion by the Reepalu investigation would according to PwC yield in a ban on running profitable companies within the welfare sector which would in its turn have severe consequences on the welfare. The main conclusion from PwC is that if the bill were to

be voted through the Swedish parliament the abilities of many welfare companies provide services and operate in a good market would be very limited.

2.2 Reepalu et al. (2016) "Ordning och reda i välfärden"

Purpose & limitations

The purpose of the study was to find solutions to ensure the quality and reduce wasting taxpayer funds in the Swedish welfare on behalf of the Swedish government. Thereby the investigation is limited to the Swedish market. Note that only parts of the investigation relevant to this study will be presented due to the length and the depth of the investigation.

Data & sample

The data used was collected from SCB covering approximately 10 thousand limited liability companies providing welfare services on the Swedish market. The time period for which the data was collected was 2013-2015.

Method

The method conducted in order to attempt to find solutions was mapping of various financial performance ratios of Swedish welfare service companies and compare them to the overall service market. The financial ratios used was the following:

$$BIT\ Margin = \frac{(Operating\ Income - Operating\ Costs)}{of\ Sales}$$

$$Return\ on\ Assets = \frac{Ebit}{Total\ Assets}$$

$$\frac{EBIT}{Book\ value\ of\ operating\ capital}$$

$$= \frac{EBIT}{Total\ assets - Financial\ assets - Cash\ \&\ Cash\ Equivalents - operating\ debt}$$

Result

The study found that out of the approximately 10 thousand welfare services companies in Sweden, 4600 of them received 70 % of their income from taxpayer funds. The investigation also pointed towards a very uneven distribution of earnings, indicating that approximately 10 % of these companies accounted for 75 % of the total Earnings of all the companies studied. The solution presented to this problem of profit distribution was a limitation of profit for companies within the sector in order to distribute them better among all the companies on the market.

1.4 Hanushek, E. 1997 "Assessing the effects on school resources on student performance"

Purpose & limitations

The purpose of the study is to assess whether there is a relationship between school resources and student achievement. The study is geographically limited to the United States.

Data & sample

The data was collected from a wide selection of previous studies in the matter. Of the 377 studies used 282 used a standardized test while 95 used another measurement. Given the vast amount of studies the collection of data is impossible to describe other than to refer to the studies used to conduct the analysis. The sample contains studies done on schools located in the United States.

Method

The article reviews the available educational production literature including close to 400 related to the relationship. The paper is a meta-study including a lot of previous research on the matter. Hence educational performance has been measured in several different ways, the most commonly employed measures were:

1. Real resources of the classroom (teacher education, teacher experience and teacher-pupil ratios
2. Financial aggregates of resources (expenditure per student and teacher salary)
3. Tests of other resources in schools (specific teacher characteristics, administrative inputs and facilities)

Result

The first and most crucial result according to the author is that there is no strong relationship between school resources and student performance. This does not necessarily mean that the schools and teacher parameters described above do not vary a lot among the studies, it only points towards that there are significant differences in the employed measures. These differences are however according to the author not related to teacher salaries or student expenditure. According to the author only 9 percent of the studies used in the analysis found a positive relationship between teacher's education and student performance. Of the studies

used in the paper, just 15 percent found that the teacher pupil's ratio influences student performance.

1.5 Card, K. & Kreuger, A. 1992 Does school quality matter? Returns to education and the characteristics of public school in the United States

Purpose & limitations

The purpose of the study is to assess whether there is a correlation between schools quality on the rate of return to education. By rate of return on education the authors mean additional years of schooling for the studied group. The study was limited to students in the United States.

Data & sample

The study was conducted in the US on men born between 1920 and 1949. Majority of the data was collected from the US Office of education. The samples for the different time periods varied between 279 thousand to 441 thousand men.

Method

The method used by the authors was to study how school quality impacts the return on additional years of schooling. School quality in the investigation was measured with three various variables:

1. Pupil/teacher ratio
2. Averaged term length
3. Relative teacher pay

Result

The study indicates that men who are educated in states with higher quality school systems earn higher economic returns for their years of schooling. The authors state that school quality appears to have a substantial effect on labor market performance. Finally, the authors conclude that the findings illustrate a definite link between school quality and economic returns to education which should give a pause to those who argue that investments in the public school systems lack benefits for students.

Appendix 2 Regression output

Primary schools

Grade as dependent variable

Variable	Coefficient	Std,Error	T-stat	Prob,
C	215,02	18,86	11,40	0,00
EBITM 15	73,40	139,65	0,53	0,60
ROA 15	21,06	17,42	1,21	0,23
LOGSales15	9,37	10,12	0,93	0,36
Part of group	-37,62	12,11	-3,11	0,00
R-square				0,06
Adjusted R-square				0,04
Jarque-Bera				58,97
Observations				145

Student/teacher ratio as dependent variable

Variable	Coefficient	Std,Error	T-stat	Prob,
C	9,70	0,92	10,54	0,00
EBITM 15	-2,40	4,65	-0,52	0,61
ROA 15	1,44	1,23	1,17	0,24
LOGSales15	1,75	0,60	2,92	0,00
Part of group	-0,91	0,92	-0,99	0,32
R-square				0,05
Adjusted R-square				0,04
Jarque-Bera				28,04
Observations				277

Complaints as dependent variable

Variable	Coefficient	Std,Error	T-stat	Prob,
C	4,58	1,16	3,96	0,00
EBITM 15	3,92	4,66	0,84	0,40
ROA 15	-0,81	1,11	-0,73	0,47
LOGSales15	-0,73	0,68	-1,07	0,28
Part of group	-0,70	0,90	-0,78	0,44
R-square				0,03
Adjusted R-square				-0,01
Jarque-Bera				160,31
Observations				122

Secondary schools

Grade as dependent variable

Variable	Coefficient	Std,Error	T-stat	Prob,
C	13,84	0,48	28,87	0,00
EBITM 15	0,30	1,57	0,19	0,85
ROA 15	-0,07	0,42	-0,17	0,86
LOGSales15	0,16	0,28	0,58	0,56
Part of group	-0,96	0,39	-2,49	0,01
R-square				0,05
Adjusted R-square				0,03
Jarque-Bera				0,31
Observations				140

Student/teacher ratio as dependent variable

Variable	Coefficient	Std,Error	T-stat	Prob,
C	11,29257	1,586205	7,119238	0
EBITM 15	4,08	6,56	0,62	0,54
ROA 15	-0,20	0,59	-0,33	0,74
LOGSales15	1,16	0,89	1,31	0,19
Part of group	1,02	1,29	0,79	0,43
R-square				0,06
Adjusted R-square				0,04
Jarque-Bera				38,30
Observations				189,00

Complaints as dependent variable

Variable	Coefficient	Std,Error	T-stat	Prob,
C	1,24	0,48	2,61	0,01
EBITM 15	1,01	0,81	1,24	0,22
ROA 15	-0,12	0,49	-0,24	0,81
LOGSales15	0,42	0,29	1,43	0,16
Part of group	-0,44	0,51	-0,88	0,38
R-square				0,03
Adjusted R-square				-0,05
Jarque-Bera				141,63
Observations				52,00

University performance as dependent variable

Variable	Coefficient	Std,Error	T-stat	Prob,
C	75,50	2,55	29,66	0,00
EBITM 15	55,38	27,64	2,00	0,05
ROA 15	-6,42	4,41	-1,46	0,16

LOGSales15	-0,84	2,17	-0,39	0,70
R-square				0,23
Adjusted R-square				0,15
Jarque-Bera				2,08
Observations				33

Appendix 3 Regression model diagnostics

Normal distribution tests

School	Independent variable	Skewness	Kurtosis	Jarque-Bera	Probability
S	Grades	-0,1137	2,9695	0,3071	0,8576
S	Student/teacher	0,7889	4,5408	38,2997	0,0000
S	Complaints	2,2913	9,6608	141,6260	0,0000
S	University performance	0,3025	4,0706	2,0794	0,3536
P	Grades	-1,2660	4,8302	58,9702	0,0000
P	Student/teacher	-0,6550	3,8445	28,0413	0,0000
P	Complaints	1,9336	7,0721	160,3092	0,0000

Specification test

Independent	Ramsey reset test T-test prob.
Grades	0,6400
Student/teacher	0,0430
Complaints	0,2795

University performance	0,3168
Grades	0,3160
Student/teacher	0,1020
Complaints	0,4204

White test for heteroskedacity Primary school

Variable	**Grades as independent variable**	**Student teacher ratio as independent variable**	**Complaints as independent variable**
F-statistic	3,6143	1,2921	0,3428
Prob value	0,0001	0,2229	0,9791

White test for heteroskedacity secondary school

Variable	**Grades as independent variable**	**Student teacher ratio as independent variable**	**Complaints as independent variable**	**University performance as independent variable**
F-statistic	1,2119	3,6895	0,2828	2,1113
Prob value	0,2819	0,0001	0,9888	0,0716

Correlation tables for primary and secondary school independent variables

Primary school independent variable correlation

	LOGSALESGS15	EBITMGS15	PARTOFGROUP	ROAGS15
LOGSALESGS15	1,000	-0,018	0,366	0,129
EBITMGS15	-0,018	1,000	0,117	0,599

PARTOFGROUP	0,366	0,117	1,000	0,236
ROAGS15	0,129	0,599	0,236	1,000

Secondary school independent variable correlation

	EBITMGYM15	ROAGYM15	LOGSALESGYM15	PARTOFGROUP
EBITMGYM15	1,000	0,398	0,230	0,243
ROAGYM15	0,398	1,000	0,079	0,199
LOGSALESGYM15	0,230	0,079	1,000	0,719
PARTOFGROUP	0,243	0,199	0,719	1,000

Variance inflation factor (VIF) test for multicollinearity primary school

	Grades as independent variable	**Student teacher ratio as independent variable**	**Complaints as independent variable**
EBITM15	1,380	1,353	1,578
ROA15	1,481	1,412	1,626
Lg Sales 15	1,328	1,249	1,267
Part of group	1,338	1,291	1,215

Variance inflation factor (VIF) test for multicollinearity secondary school

	Grades as independent variable	**Student teacher ratio as independent variable**	**Complaints as independent variable**	**University performance as independent variable**
EBITM15	1,201	1,245	1,137	1,355
ROA15	1,181	1,215	1,166	1,440
Lg Sales 15	2,213	2,147	2,214	1,094
Part of group	2,253	2,178	2,290	n.a.