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Cost Saving Potential within Swedish Health Care Procurement

- A study on applying economic theory to investigate gains of acting as a joint buyer

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Abstract: Public health care is an important social and economic issue in today's society. The government aims to provide healthcare of high quality, which requires that the funds are used efficiently. Health care procurement is a major cost and since procurement is a relatively new area of research it should offer great potential for cost savings, which is in line with our hypothesis. To explore the potential we have conducted a case study including some quantitative elements. The thesis aims to, in a long term lead to an increase in health care quality through reallocation of resources. This is achieved through increase transparency and drawing attention to the issue in order to stimulate a debate and thus put pressure on prioritizing and develop procurement as a strategic function. The study concludes that there are significant cost savings to be made and that a saving in the range of 20 – 30 per cent should be possible.

Key words: Health care, Procurement, Volume, Supplier, Scale Economies

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1 Introduction

1.1 Motivation

Health care is an important social issue in today's society and the Swedish government aims to provide care of highest quality possible. We believe that there is great potential for cost savings within procurement. By realizing the savings potential and reallocate the resources to other areas within health care the quality could be improved.

Every year the Swedish government spends approximately 300 billion SEK¹ on healthcare of which approximately 123 billion² accounts for material and equipment (SHA, 2010). Lately, the size of the health care sector as well as the expenditures as a proportion of public budgets has grown rapidly (Newhouse 2001). At the same time the demographical trend suggests that the Swedish population is aging implying even greater medical costs in the future (Statistics Sweden, 2009). Further since all Swedish citizens have the privilege to take part of the high quality healthcare system it lays in our interest to make sure the funds are used efficiently.

The specific area is designated health economics and was introduced in Sweden in 1980. It is a branch within the economics discipline where economic theory is applied to analyze phenomenon of importance to human health. Economics in general and health economics in particular is about optimizing the use of scarce resources. This implies that cost efficiency is central (Carlsson et al. 2006). We have chosen to focus our studies on this contemporary subject since evaluation of the efficiency aspects is an important research area. We supplement the economic theory with important insights from business in order to take the research further.

Our focus on procurement within health care is based on the facts that; (1) public health care is an important social and economic issue in today's society, and that; (2) procurement is a relatively new area of research and hence should have great potential for cost savings. Previous studies have been focused on procurement efficiency within certain counties. However, we have found the research gap to be larger on the efficiency effects of a nation-wide procurement function.

In chapter two is a more detailed review of the current state of knowledge within procurement in general and health care public procurement in particular.

¹ Figure for 2010 is 318 250 million SEK

² Figure based on estimated proportions in "SMIL, 2007"

1.2 Purpose and Expected Contribution

The purpose of the thesis is to give a picture of how and to what extent health care procurement can be more cost efficient by acting as a joint buyer. Since the annual procurement amounts to approximately 300 billion SEK, small actions can have large effects. In line with the specific goals of health economics we aim to improve the use of scarce health care resources to get more value for money. We want to increase the transparency and draw attention to the issue in order to stimulate a debate and thus put pressure on prioritizing and develop procurement as a strategic function. Thereby we hope that this report in the long-term will stimulate a change in health care public procurement that will eventually lead to an increase in quality through reallocation of resources.

1.3 Research Question and Hypothesis

In order to reach the above stated aim the research question of this thesis is; what is the cost saving potential within health care procurement?

The thesis is based on a volume perspective where the effects of the Swedish state acting as a joint buyer will be studied. Because of the extensive nature of the research question we have composed two subqueries to study; we will first examine; (1) to what extent the procurement volumes can be increased. Based on the answer we will apply economic theory and thus answer; (2) to what extent the volume increase can result in cost savings. Based on the findings for the subqueries we will try answering the main research question.

Our working hypothesis that we assume is that there is significant cost saving potential within health care procurement without impairing the product and performance quality. We believe it will be difficult to estimate accurately, but that by using our key findings, external benchmarking and best practice we will be able to provide a range within which the potential cost saving lies. We further believe that the greatest potential for cost savings results from acting as a joint buyer and hence utilize the nations' full volume capacity and size by centralizing all health care procurement. We therefore base our analysis on a scenario where health care procurement is made by a central function.

1.4 Delimitations of scope

In order to conduct this study, certain limitations have been needed; (1) the study has an overall high-level perspective considering the health care procurement; (2) the study is limited to comprise only Swedish health care procurement; (3) only procurement of material and equipment and hence not services and pharmaceuticals are taken into account; (4) the focus on volume benefits will only be from an economic aspect. A discussion of whether a centralization is political viable within the health care sector is outside the scope of this analysis.

The impact of the law (2007:1091) on the procurement process has been discussed in all interviews and the unison was that the law is positive in any sense and does not seem prohibitive. Following this as well as the scope of the thesis we have chosen not to take further account to this.

We are aware of the complex environment of the health care sector as well as the scope of the issue. Since the above limitations have been made, this thesis is not to provide a comprehensive or accurate picture of health care procurement in Sweden. The conclusions we reach, however, should to a large extent be applicable. This complexity will be discussed further in chapter five.

1.5 Definitions

When referring to an increased volume the actual meaning is to concentrate existing volumes, not buying larger amounts. It refers to the volume increase for every specific product.

When referring to health care procurement we refer to the procurement of material and equipment and hence not services and pharmaceuticals are taken into account.

1.6 Organization of the thesis

After the above introduction, we hope that the reader has an overview of the research topic and understand the choice of focus as well as the importance of raising this topic. In the next chapter is a review of previous research and a theoretical background where the reader can assimilate current research on procurement in general and public procurement in particular. The methodology section that follows sets out the research approach and explains how we have collected the information that the thesis is based on. Following this is a presentation of the results of the thesis where we present the current procurement situation within health care while at the same time applying the literature and theoretical base to analyze our findings. The conclusions will be discussed in chapter five, followed by a final chapter where the main conclusions and answer to our research question is presented.

2 Review of the Literature

This section aims to give the reader an overview of the research area for this thesis as well as provide the theoretical tools which form the basis for the coming analysis. Published research is compiled to give a clear picture of the current state of knowledge which creates a foundation for further research. This is followed by a thorough presentation of the theoretical background.

2.1 Previous Research

We have found the research within procurement to be limited, which is likely due to the fact that it is a relatively new academic discipline (Karjalainen 2009) that was first introduced in 1960 (Carlsson 2006). Also in the area of public procurement (within health care) the research seems incomplete (Knight et al. 2007). This could be partly explained by the challenges of defining and measuring the actual savings, and the risk for under- or over statements of the savings potential is huge (Leenders 1998). Most of the research carried out is focused on the private sector despite the large volumes and amounts spent by the public sector (Johnson 1999). We have found the existing research on the optimization of health care procurement to mainly be focused on one specific area or measure per study and we have not found complete research on the overall picture. As mentioned in the introduction our aim is to reduce this research gap.

2.2 Theoretical Background

This section aims to introduce some of the theoretical concepts that underpin efficiency improvements within procurement. It clarifies the efficiency measures and presents the analytical tools needed to create a thorough base for the coming analysis.

As stated in the introduction, the study is based on a volume perspective since we want to examine the effects of increasing returns to scale on the procurement costs. The starting point within economics is a public-financial perspective where the focus is to reduce costs and exploit increasing returns to scale, preferably within the frame of sustained competition.

To obtain a complete theoretical framework as a basis for the analysis, it seems natural, given the research topic, to complement the economics framework with some aspects from the business field. This part discusses procurement and is largely normative in the sense that it deals with what should be done to achieve optimal effects. The economics perspective then sets the reasoning in a socioeconomic context since it involves the use of public funds. Further, the business theory takes no account to market structure, which in contrast is discussed within the economics theory. It could be said that economics constitute the limits of the range in which it is possible to exploit scale economies before it goes on to having a negative socioeconomic impact. More specifically the economic theory discusses the market structure and particularly the increasing returns to scale as a result of increased productivity.

After having presented the business aspects, we go on to discussing volume as it is the central part of the theory. Then we present a section about specialization, to which opportunity arise as a result of increased volume. From these two parameters a potential problem can be derived in achieving and exploiting economies of scale while maintaining competition. Economists do not want competition-limiting market structure since it is the competition that leads to increased efficiency and productivity.

This leads us to the next area which is globalization. Globalization is treated as a secondary parameter and is thus a prerequisite to both increased volume and specialization being applicable. Finally, centralization is presented as the actual means to achieve the desired goals of each parameter.

2.2.1 Procurement in General and Public Procurement in Particular

Organizational purchasing ultimately has the objective of ensuring operations and its competitiveness and it has thus largely become a must to invest in this new area of management (Karjalainen 2009). It can be estimated that purchasing activities corresponds to approximately 65 per cent of a company's average sales, which indicates the great importance of the discipline as a function of the company's overall performance. Consequently purchasing is a discipline and company function that has gained increased attention lately. Apprehension of the great saving opportunities, cost efficiency and value-adding capabilities of a well functioning purchasing body from managing supply strategically, has been recognized. As a result this part of the business has gone from being an entirely operational function to becoming a more strategic function (Cousins and Spekman 2003).

Purchasing functions has undergone, and are still undergoing, restructuring in accordance with new theories and guidelines to obtain a structure that allows for optimal purchasing processes. Part of the purchasing includes rationalizing with which one suggests that purchasing is about contributing to a competitive company through keeping down the total costs in production, storage, input-prices etc. More specifically the rationalizing part includes buying low-cost products from low-cost suppliers, focusing volumes to few suppliers and achieve internal coordination in order to concentrate the volumes and specializing to achieve buyer power and adapt the product to the specific suppliers (Axelsson and Laage-Hellman 1991). This illustrates that organizational purchasing is a multidimensional effort (Karjalainen 2009).

Certain factors have been identified as being the key to reduce and keep down direct costs. The key factors are to; (1) choose products and suppliers that are cheap; (2) concentrate the purchasing activities to fewer suppliers, who through larger volumes can utilize economies of scale within purchasing, production and distribution, in order to get lower purchasing prices; (3) focus on internal coordination to reach larger volumes; (4) develop and benefit from skilled negotiation techniques, and to; (5) customize the product so that the producer can get lower manufacturing costs through streamlining and thus purchasing prices can be reduced (Axelsson and Laage-Hellman 1991).

This leads to the four key areas; volume, specialization, globalization and centralization, within which some of the leading theories are presented in this chapter.

Purchasing becomes a more complex issue when it is to serve public interest by public procurement since the regulations imply that it must be carried out in a more structured and formal way than within private organizations (Jönsson 2007).

When an authority, such as counties and municipalities are to purchase goods or services the authority is obliged to make a public procurement. Sweden has extensive regulations covering public procurement through Lagen om offentlig upphandling (2007:1091) which covers all EU regulations as well. The purpose of the regulations is to ensure free competition and maximize the use of the funds applied (Fryksdahl and de Jounge 2012). A simple measure of competition is the number of offers submitted in a procurement. This is however only partially a fair measure because participating companies cannot know how many other companies that are tendering due to confidentiality. However, one can assume that it is in most cases know their market and their competitors and adapt their behavior accordingly (Jönsson 2007). It is suggested that competitive approaches to health care are likely to reduce health care expenditures (Hill and Wolfe 1997). The Competition Authority (Sw. Konkurrensverket) is the supervisory to ensure the regulations are followed. In public procurement non-discrimination, equal treatment, transparency, proportionality and mutual recognition are strictly applied (Fryksdahl and de Jounge 2012).

Public procurement is based on a requirement specification and the company providing the best offer based on the requirements is contracted (Fryksdahl and de Jounge 2012). The framing of the requirement specification affects the competition and direction of the procurement to a great extent since comprising the actual product description, allowance to bid, contractual terms and monitoring (Jönsson 2007). During the procurement, absolute secrecy applies which is repealed after closing and all information becomes public. After closing disgruntled companies can retry in court. (Jönsson 2007; Fryksdahl and de Jounge 2012).

2.2.2 Volume

An increased volume is the basis of the theoretical framework. Discussed below are the desirable effects of an increased volume. However, the competitive implications of an increased volume must also be taken into account and will hence be discussed.

Purchasing synergies can according to Faes et al. (2000) be realized and lead to a competitive advantage through economies of scale by standardization, pooling volumes to enforce purchasing power and reducing the number of global suppliers as well as sharing knowhow and resources. Economy of scale often naturally lead to lower prices since suppliers' average and marginal costs decrease as the buyers order size increase (Madsén, 2003). The fact that larger volumes are correlated with lower prices is empirically supported. Already in 1880 there is an empirical example in the US industry that large

buyers can reduce purchasing costs (Schrer and Ross 1990) and during 1930th a study of A&P show that the company managed to reduce purchase prices from pooling their demand into large orders (Schrer and Ross 1990).

When the quantity ordered by one single buyer represent a large portion of the supplier's aggregate sales, the buyer becomes important for the supplier and thus possess buyer power (Lustgarten 1975). When exercising the power in negotiations the buyer can receive better prices (Moser 2007). The concept of buying power was brought to attention by Galbraith (1952) when he argued that prices were decided by large and powerful buyers putting pressure on suppliers (Scherer and Ross 1990). The theory is empirically and statistically supported by Lustgarten (1975), showing the existence of buyer power in the manufacturing industry (Schrer and Ross 1990). Focusing the volumes and coordinate to become one large buyer is an asymmetrical market imperfection called monopsony implying that there is only one large buyer that all sellers must compete about. Monopsony can be interpreted as the opposite of monopoly and leads to buyer power and the buyer being able to reduce the price below the price that would prevail in a competitive market (Chen 2008).

The competition in a market is generally determined by prevailing market conditions such as number of sellers, type of product, barriers to entry and consumer information. Depending on the conditions the competition can vary from being perfectly competitive to purely monopolistic. Monopoly refers to only one firm selling a particular product and economic science examine the economic aspect of this market condition (Lerner 1934).

When a significantly large buyer appears on the market, suppliers tend to aggressively underbid each other since the importance of the contract (Snyder 1998). Snyder (1996) believes that the suppliers' risk of losing a contract due to another supplier settling below the actual market price is a kind of herd behavior that leads to all suppliers lowering their prices. In order to reduce prices further, buyers can tempt each supplier with the prospect of a large order and confronting them with a rival's low price (Lustgarten 1975).

By playing the suppliers against each other in a market with many suppliers the purchase price will become lower quicker since the probability of suppliers under pricing increases (Snyder, 1996). The risk however is to provoke monopoly conditions on the market implies an asymmetrical relationship and the buyer having advantage over the supplier (Kibar et al. 2005).

Economies of scale is a microeconomic model referring to the cost advantages an organization can obtain from increasing production volume. The concept covers much of economists' basic thinking regarding market structure and pricing (Panzar and Willig 1977). Hereby we present the framework based on Pindyck and Rubinfeld (2011). The increasing volume results in the firm's average cost of

production declining to some extent. This decline can preferably be attributed to three different reasons; (1) when an organization operates on a larger scale the possibility of specialization arises and workers can hence focus on the activities at which they are most productive; (2) large scale increases flexibility so that managers can organize the production process more effectively by varying the combination of inputs; (3) large scale provide buyer power and the organization may thus be able to reduce costs for inputs since buying them in large quantities. The inputs might change with the scale if taking advantage of lower-cost inputs.

The definition of economies of scale is when a doubling of output requires less than a doubling of cost. An important recognition when analyzing the relationship between the firm's operations and the firm's costs, is that when input proportions change, the firm's applies, instead economies of scale is applicable.

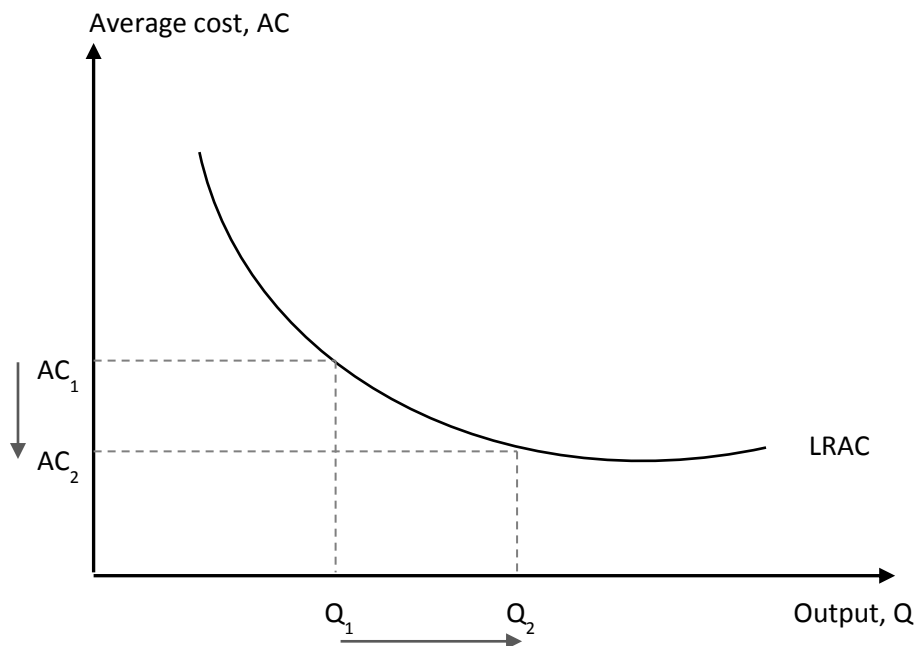
Increasing returns to scale, that is, output more than doubles when quantities of all inputs are doubled, is a concept within economies of scale. Economies of scale is a more general model but it is however important to notice that a firm can enjoy both increasing returns to scale and economies of scale.

Economies of scale can be measured in terms of cost – output elasticity, E_c , where E_c is the percentage change in the cost of production resulting from a one percent increase in output. This gives the following relationship: $E_c = (\frac{\Delta C}{C}) / (\frac{\Delta q}{q})$

By rewriting the above relationship we can illustrate how E_c relates to our traditional measures of cost: $E_c = (\frac{\Delta C}{\Delta q}) / (\frac{C}{q}) = MC/AC$

When marginal and average costs are equal, E_c equals one which implies that costs increase proportionately with output and hence there are no economies of scale. When marginal cost is less than average cost (both declining) and E_c is less than one, economies of scale is valid.

The below diagram is to illustrate economies of scale. When the production quantity increases from Q_1 to Q_2 , the long run average cost of each unit is reduced from AC_1 to AC_2 .



As discussed above monopoly and monopsony are two potential implications arising from an increase in volume, which are not desirable from an economics perspective. A solution to this is globalization, which is discussed later in the chapter.

2.2.3 Specialization

Specialization in this context implies focusing the resources on a limited scope of products to gain deeper knowledge about the specific product category. The opportunity to exploit specialization arises as a direct effect from an increased volume and drives the productivity further.

Arnold (1999) suggests efficient use of available purchasing skills as being a centralization benefit. In line with this McCue and Pitzer (2000), argue that developing purchasing expertise increases efficiency and insures the integrity of purchasing systems so that costs can be reduced. Joyce (2006) and Johnson (1999) point out that centralization often enables companies to assign certain categories of items to specialists who tend to be more efficient because they are able to concentrate their efforts on relatively few categories.

Knowledge is an important cornerstone in successful purchasing (Rosell 2006) and Lustgarten (1975) emphasize the importance of buyer knowledge when negotiating. Rosell (2006) develop this further by explaining that the buyer must possess an even better expertise than the producer in order stay one step ahead. Deep knowledge about for example materials, custom duties and transportations costs give an advantage over the producer. Thus, investing primarily in material and technical expertise will prove successful and increase bargaining power since indicating control over the production process. The supplier is in no position to cheat with production nor can he risk being inefficient or charging unreasonable prices. An informed buyer with deep industry expertise might even be able to act as an advisor to the supplier (Rosell 2006).

2.2.4 Globalization

As a result of the competitive implications arising from an increased volume and specialization it can within economics theory be considered that there is a distant point where it is no longer desirable to increase productivity because it would ultimately have a negative socioeconomic impact. A solution to this is taking globalization into account. With increased free trade the distant point will shift further to reach a point where we can ignore the potential problem as it falls outside what is considered reasonable to account for within the scope of our thesis. Productivity can thus increase without further disincentive for competition at the home market.

Globalization implies the opening of a local perspective to a broader outlook where world-wide markets are integrated. There is a clear trend towards globalization of supply chains within companies (Moser 2007). This development of integrated trade is enabled since of advanced transportation and communication technologies (van Weele 2010). According to Arnold (1999), the establishment of a global supply perspective is to be seen as a benefit from centralization. The globalization has opened for larger markets and new sources of supply (Moser 2007) which can reduce purchasing costs (Moser 2007; Snyder 1998). A cost reduction is realized when the buyer succeed in finding a supplier offering the needed product or service at the lowest total costs on a global scale (Moser 2007). Lee and Wilhelm (2008) refer to theories about trade and location as potential explanations for the choice of production site and why prices vary between different locations. More specifically location theory deals with optimal production sites based on factor costs of production as well as logistics. Trade theory on the other hand deals with characteristics of production sites based on relative endowment of production factors, i.e. comparative advantages in producing one good relative to another (Lee and Wilhelm, 2008).

Price is largely a function of the prevailing competition on the market (Jobber 2009) and hence prices are lowered if procuring globally instead of locally since the suppliers' exposure to competition is

increased (prices equal to average cost) (Snyder 1996). Another logic behind the reduced prices is that buyer bargaining power increases as competition intensifies and more suppliers are competing for the same contract (Axelsson and Laage-Hellman 1991).

Globalization has enabled for organizations to buy as far back as possible in the value chain and hence close to the initial source, which is often low cost countries such as China or India (Moser 2007). By avoiding intermediaries, and buying directly from the producer, the buyer is able to reduce prices (Axelsson and Laage-Hellman 1991).

By considering the globalization aspect, some limitations in terms of inhibited competition within Sweden can be abstracted. This means that the outcomes of the study to the whole need not be affected by a possible negative impact of competition on market structure.

2.2.5 Centralization

Centralization in this context is referred to as the act of concentrating all procurement functions to one joint organization. It is in this study considered the actual mean to realize the desirable effects of the above discussed parameters.

Centralization in general and coordination in particular is considered a natural and essential part of making procurement a professionalized function (Faes et al. 2000). It is said to increase purchasing power and generate synergies resulting in cost savings from the increased volumes (Karjalainen 2009). Madsén (2003) suggests that the public sector because of its size gain purchasing power and thus can reduce purchasing prices if acting as a joint buyer. In line with this, Karjalainen (2009) presents many examples where empirical data shows cost savings as a direct effect of centralizing the purchasing function;

According to Nollet and Beaulieu (2005) it is widely acknowledged that coordination of procurement generate large cost savings. Savings amounting to between 10 and 15 per cent is perfectly acceptable while even greater saving up to between 20 and 35 per cent can be realized for some products (Nollet and Beaulieu, 2003). In a study from 1984 (Cleverley and Nutt) focused on health care procurement the large savings potential is confirmed and the savings for hospital-specific buying are estimated to range between 12 and 25 per cent. Corey (1978) illustrates the savings through a specific example from General Motors (GM); GM spent over \$10 million on approximately 120 000 pairs of work gloves that were used and bought by ten different divisions paying seven different prices for the same item. The prices ranged between \$4.88 and \$5.90 per glove. When carrying out a joint negotiation with six suppliers for only one particular type of glove cost savings on more than 12 per cent were realized.

A successful procurement function that exploit the full buying and bargaining power of the company must reflect the company's overall strategy. It is in particular an issue for management to decide the degree of centralization which is not necessarily an obvious decision. The scientific literature is to a great extent focused on the question whether centralization is a value adding strategy but since this thesis focus on cost savings and assumes centralization of the procurement function advantages and disadvantages of the strategy will not be processed.

3 Methods and Materials

This section aims to explain our research approach used to answer the research question. We describe and motivate our choice of methods and materials followed by a thorough discussion on the credibility and reliability of the collected data which is the basis for the thesis.

3.1 Research Design

As stated and discussed in the previous chapter we have found the research within procurement to be limited due to several facts. Based on the current knowledge and our research question we have adapted the research method to get the best results and to reduce the research gap.

The study is limited to include only procurement of material. The underlying reason is that we wanted to identify a major cost driver where the theory of economics and business is freely applicable and can provide potential for cost savings. When focusing on procurement of materials, we avoid being limited by prescribing right and various patents which would have been an obstacle if we would have focused on for example drugs instead. Further, the study is based on long-term effects and hence it is suitable to focus on procurement of material since the relationships are often long term.

Procurement is typically a branch of business and marketing but we have chosen to carry out this study from an economics perspective. We believe that by using instruments from economic theory this thesis will provide new value-adding insights. In regard to the nature of the research question and the aim of the thesis it is appropriate to use a case study approach complemented by some quantitative elements.

This thesis describe and analyze health care procurement in qualitative, complex and holistic terms which is typical for a case study (Wilson 1979) and the approach is distinguished by what Cronbach (1975) and Shaw (1978) calls "interpretation in context" which is of importance to our thesis. By focusing on one particular field we strive to somewhat illustrate the interplay between the important

factors within procurement. To accomplish this we have used direct observations and systematic interviews which is an additional distinctive of the qualitative approach (Yin 1994).

Further in line with the aim of the thesis the descriptive nature of a case study (Guba and Lincoln 1981) is applicable. However, the extensive picture will be enhanced by presenting the actual impact of the cost saving measures. Hence we have used a triangulation where the qualitative data is combined with some quantitative elements (Kidder and Fine 1987). Thus, the qualitative research seeks to provide deep understanding of the actual situation and problem while the quantitative research quantifies the data in order to enable further analysis (Malhotra 2010).

This thesis uses estimates, expert statements as well as internal benchmarking as a method to quantify the potential savings. Reason being that it has proven difficult to estimate the savings accurately based only on empirical data from the health care sector.

3.2 Selection of Theoretical Background

The theoretical background is compiled to give a clear picture of the concepts that underpin the efficiency improvements within procurement. It is to identify key issues, clarify the efficiency measures and present the analytical tools needed to create a thorough base for the analysis. It seemed natural to apply the economies of scale model from the economic discipline since our hypothesis is based on volume benefits from acting as a joint buyer.

We have chosen to base the theory on a volume perspective within which the economies of scale is central to boost productivity. An increased volume enables opportunity for specialization, driving productivity even further. A prerequisite for these two to be applicable is globalization which is also discussed. Finally, centralization is presented as the actual means to achieve the desired effects in terms of cost savings due to increased volume and specialization.

3.3 Projections

The projections that are presented in the quantitative part of the analysis are based on the interviews, theory and to some extent our own assumptions. The estimations are overall based on the county of Stockholm. This is because Stockholm relative to other counties is a major player and thus has large volumes (Östlund 2012) and a wide range of products (Thörnqvist 2012). It thus seems reasonable to assume that this to a large extent covers the national demand.

Generalizations and assumptions that have been made are clearly stated throughout the thesis and in some cases more through presented in Appendix 1 and the data is mainly collected from the SMIL project (2007), annual reports and government statistics. Our assumptions are the outmost based on

input from experts and practitioners, internal benchmarking and industry standards. We have been careful when estimating quantifications and rather under estimated the figures in order to not exaggerate the results.

3.4 Data Collection

In the choice of method for data collection our research question and aim has been crucial. In order to get a good basis for the analysis we have focused on collecting accurate and comprehensive information. However, we have also taken into account the representativeness and the ability to generalize the data.

A literature review was first compiled to understand the current state of knowledge. On this basis we identified what information was missing. We found that the procurement process within public health care is complex and hence we used depth interviews to research this specific area. Some numbers and general information have been collected from reports and budgets. Finally, we supplemented the information base, the review of the literature, theoretical framework and interview data, where it was defective.

Hereby follows a detailed description of how each type of data was collected.

3.4.1 Interviews with Industrial Experts and Employees at Hospitals

Given the nature and complexity of the thesis, we have chosen to use primarily depth interviews which is a common method of obtaining qualitative data (Malhotra 2010). This method is preferred when it, as in this case, provides more (specific) information at a lower cost than other methods (Dexter 1970). Patton (1984) emphasizes the depth and detailed nature of the information from depth interviews. Comparing it to other methods of data collection interviews provides a good tool to get valid results. Reason being the ability to steer the interviewee in the desired direction, ask for clarifications and to determine the level of the interviewee's knowledge (Guba and Lincoln 1981), which is of relevance to this report where industry expertise is absolutely needed.

The strength of depth interviews is that the researcher exerts little control over the interviewee and on the contrary let him/her somewhat direct the conversation (Laursen 1979). This way the interviews can uncover a great depth of insights (Malhotra 2010).

The interviews have three main functions in this thesis. They describe the current purchase situation including procedures. They provide insight on the rationalization opportunities as well as managerial

implications. Finally, they contribute with important insight into the volumes of procurement and how these are possible the affect.

On the basis of the current state of knowledge we formulated the foundation for the interviews and conducted them to get additional insight which enabled us to take the research further in this thesis. The interview manual (Appendix 3) is to cover all areas but mainly the interviewee has gotten the chance to talk freely. As Patton (1980) suggests we have been natural in our approach to avoid biased answers. The outcomes we have aimed for during the interviews are background data, experience, knowledge and opinions (Patton 1980). The interviews have varied in time but lasted from one hour up to two and a half hours. All interviews have been recorded to maximize the outcome and minimize potential mistakes.

During the data collection ten interviews were conducted with a total of eleven people, as one of the interviews was conducted with two interviewees simultaneously. We have arranged the interviews strategically to first get an overview and then more detailed information. Information about the interviewees can be found in the attached Appendix 2. When needed additional information we have had email and telephone contact with the relevant people.

We have made sure that the interviewees have a high level of knowledge and professionalism to ensure data is reliable. Included in the interview base are industry experts, procurement professionals and physicians in order to get close to the issue. Since there are sometimes disagreements between economists and physicians regarding cost savings and efficiency within health care we have interviewed both parties to not lose important aspects.

The different types of interviews can be said to fulfill different functions and provide insights on different directions. We have mainly descriptive interviews which set out the framework for the analysis but we also have expert interviews that provide valuable information about the optimal purchasing scenarios and also estimates of rationalization opportunities.

3.4.2 Literature Review and Theoretical Framework

The literature review and theoretical framework should to some extent be seen as a complement to the empirical data from the interviews. It comprises scientific findings collected from a number of different sources. The sources are primarily research studies and academic publications but also government reports related to the health care sector in the area of procurement.

3.5 Quality of Research

The characteristics of a case study require that the results are valid, both internally and externally, since of the practical approach (Cronbach 1975). Except from validity several authors within research

methodology brings attention the importance of reliability as being crucial to research quality (Yin 1994; Cronbach 1975; Bednarz 1985). However it is difficult to measure the reliability and validity without studying the components of the thesis. It is however possible to discuss by which instruments have been used (Guba and Lincoln 1981).

Bednarz (1985) argues the importance of reliability for accumulating knowledge and thus enable research progress. Reliability refers to the extent to which the thesis results can be replicated with the same results. The fact that this thesis is of qualitative nature and based largely on interviews becomes an issue since it is difficult to obtain standardized interviews in constant changing environment and hence repeat the study with the same results. We have made sure the interviews are standardized as far as possible by using specific interview questions as a base. However since this is a qualitative study one should rather focus validity than reliability (Guba and Lincoln 1981). Yin (1994) argues that it is impossible to achieve reliability without validity.

The term validity includes both internal validity as well as external validity (Yin 1994). The internal validity refers to the extent to which the study results are actually consistent with what they actually measure (Merriam 1994). Not only had the research method impact on the reliability but also on the internal validity as the risk for false results is large when using a case study. This can be explained by the interviews in which the interviewees' reality is told rather than the objective reality (Yin 1994). However it can be argued that the reality consists of multiple sets of mental constructions implying that high validity can be achieved by carefully considering and interpret the perspectives of the interviewee (Merriam 1994).

External validity or generalization refers to in what extent the findings are applicable to other situations beyond the actual research i.e. if the findings are generalizable (Yin 1994). An underlying requirement for external validity to be of interest is that internal validity must apply (Guba and Lincoln 1981). However, since the thesis has a qualitative approach rather than a quantitative approach the importance of external validity is reduced (Merriam 1994; Yin 1994).

In terms of both internal and external validity to be improved we have used triangulation in some aspects. We have used the same interview questions for several independent interviewees to confirm the results. We have also repeated the same interview settings researching the same phenomenon but from other perspectives by interviewing both professional buyers, purchasing experts and physicians. In addition, all interviews were recorded and transcribed to control the information was correct. Triangulation in the sense of using several researchers, data sources and methods to confirm the findings, is one way of determine validity (Foreman 1984).

3.6 Results

In this section we will provide the analytical framework which sets out the structure in the analysis in order to make it more intuitive for the reader.

After having presented the theoretical framework of optimal procurement strategies and scenarios, the next step is to analyze whether the theories are applicable. Thus, we analyze whether, and to what extent, the desired effects and hence an optimal purchasing function can be achieved. This will eventually lead to the answer of the research question.

To apply the theoretical framework needed first is a discussion of the potential volume increase and following this is a discussion of how to derive a cost saving and also the size of the potential cost saving. Since centralization is the means to achieve the desired objectives, it becomes the natural starting point in the analysis. By creating a centralized unit, the goal of achieving a higher volume per procurement can be realized. Thus, the potential volume increase is analyzed. Hereafter the analysis is further divided into two parts, a preliminary qualitative and a following quantitative. The quantitative part is based largely on what emerges in the qualitative part. The parts are structured in such a way that we first analyze how much volume per procurement may increase and then look at how large cost saving resulting from the increased volume, through centralization, can lead to.

It becomes natural to first look at the suppliers potential cost saving and then look at the potential cost saving for the health care sector. To analyze this, we use the economic model of economies of scale, which arise in the supplier's production. Then we can move on to analyze how much of the supplier's saving the healthcare sector can actually enjoy. Finally, we establish a range within which the health care sectors cost saving is likely to lie, and we thereby reach an answer to our question.

4 Results

Based on the analytical framework this chapter aims to provide a complete presentation of the results of the thesis. The analysis consists of two main parts, first a qualitative part and secondly a quantitative part based on the qualitative results.

Based on the theory of scale economies supplemented by other economic theories we have identified volume as being a crucial factor impacting procurement costs. The theory present evidence that an increased volume leads to lower procurement costs which constitutes the base in the analysis. To apply the model of scale economy needed first is a discussion of the potential volume increase. Thus the results are structured in two subqueries; (1) to what extent can procurement volumes be increased? and; (2) to what extent will the volume increase result in cost savings?

Both the qualitative and the quantitative parts follow the same structure and based on the findings for the two subqueries we will answer the main research question; what is the cost saving potential within health care procurement?

4.1 Qualitative Results

4.1.1 Subquery 1: To What Extent can Procurement Volumes be Increased?

In accordance with the theoretical framework we have identified three cornerstones having impact on the total volume per product category and procurement; coordination, standardization and concentration of suppliers, which are all based on centralization as a measure. Therefore follows a detailed discussion on each cornerstone. The focus on suppliers is based on the economies of scale model being attributable to the actual production process.

To illustrate the importance of focusing volumes, we present two example of how this can lead to large cost savings; in 2005 the county procurement procured geriatric care, specialized care for the elderly, to Bromma sjukhus. This contract covered three different product categories. The largest category was about three times larger than the smallest and was purchased for about 10-15 per cent lower prices than the smallest (Gudasic 2012; Östlund 2012). McKinsey (SMIL 2007) presents a similar example where the prices of material in the category "Anaesthetic and surgical materials", is estimated to be possible to compress by 10-14 per cent, equivalent to 35-50 million by collecting volumes, consolidate suppliers, standardize products and coordinate with other categories of material.

Karolinska Universitetssjukhusets project manager for the purchasing program, Ulf Törnqvist, is convinced that there is great potential for focusing volumes. "There is no doubt that volumes can be focused through increased coordination, standardization and concentration of suppliers "(Törnqvist 2012). This potential appears to be consistent as all interviewees have expressed similar views.

4.1.1.1 Coordination

The responsibility for medical care is according to Hälso- och sjukvårdslagen (1982:763) shared between the state, counties and municipalities. There are 20 counties including the regions Gotland, Hallad and Västra Götaland which have considerable freedom to organize their health care. Within the counties there are both a central procurement function, procuring materials common to many hospitals, as well as separate procurement functions at each hospital, procuring hospital-specific materials (Törnqvist 2012; Wickström 2012). To coordinate the unique needs in existing collective agreements is a major challenge but Törnqvist (2012) says that one can easily focus volumes by formally procuring. As of today, the general consensus among the interviewees is that procurements are not even fully coordinated within the hospitals. Nor is the coordination between the counties extensive. Ölund (2012) says that he only meets buyers from other counties about twice a year via the Swedish Association of Local Authorities and Regions (Sw. Sveriges Kommuner och Landsting).

To show how a county can be organized in regard to procurement we illustrate Stockholm based on the interviews with Törnqvist (2012) and Wickström (2012) since being the largest county. Stockholm County has a group wide procurement function aiming to procure everything that is common for the hospitals in the county. This includes standard materials and equipment crucial to the operation such as bandages, needles and office supplies. In addition, each individual hospital has its own procurement function procuring hospital-specific equipment and material, mainly medical technology. Despite hospitals' different specialization areas a large part of the operation is conducted similarly, implying that the majority of the products used are the same in all. Last year the county spent approximately 44 billion SEK (HSN 2010) on medical care of which materials accounted for approximately 17 billion SEK³ equaling about 90 per cent of the county's total cost (Statskontoret 2011).

All interviewees agree that it would be most profitable to carry out joint procurements and Törnqvist (2012) and Wickström (2012) also emphasize that this requires that someone in a high position takes command and not accept any deviations. The empirical data implies that increased coordination allows for fewer, bigger and thus better procurements. Törnqvist (2012) mentions that at Karolinska Universitetssjukhuset it is currently not uncommon that three separate procurements for the same products are carried out instead of integrating them, which he believes to be a common pattern at other hospitals as well. Consequently a violation of the law (2007:1091) is committed and two unauthorized procurements are carried out. Törnqvist (2012) further explains that this lack of coordination depends largely on the absence of horizons and sustainability which leads to urgent procurements and hence it is rare that several divisions and hospitals have exactly the same needs.

“There is plenty to do in improving coordination of medical technology procurements” (Törnqvist 2012) If coordinating procurements nation-wide it would be easier for hospitals such as Karolinska Universitetssjukhuset, to match their many, within the county of Stockholm unique, needs with other hospitals. Törnqvist (2012) believes that all products are possible to coordinate, this is only partially agreed to among the other interviewees as voices are raised saying some variation will always be needed.

The empirical data reveals a variety of reasons for not already having coordinated the procurement functions through centralization. Almesjö (2012) says that it depends largely on the risk of eliminating all supplier competition on the national market from acting as a joint buyer and hence procuring from only one supplier. Axelsson (2012) on the other hand, brings attention to the political issue since politicians often promotes an efficient business sector and thus ensures the interests of the suppliers.

³ Figure based on proportions from SMIL (2007)

However, based on theory we believe that the risk of deteriorating competition can be minimized by procuring on a global scale instead of a national scale, as today. This will be discussed further later in this chapter.

According to the theory we can assume that acting as a joint buyer would be an obvious advantage to a maximum focusing of the volumes. This way the nations' full capacity in terms of volumes would be utilized. In order to illustrate this we use two examples:

The first example is about one specific procurement at Södersjukhuset when ultrasounds were to be procured. The procurement function took a medical approach where the entire hospital needs were identified during a three-year period after which the product was procured jointly. Södersjukhuset expected to get an offer for approximately 30 billion but the best offer was at approximately 18 billion (Törnqvist 2012).

The other example consists of two pioneers. In Skåne county procurement is a prioritized area and by building a coherent and strong procurement organization large savings have been realized within health care (Dahlgren 2012). Also the county of Gävleborg has developed extensive coordination and thus realized large cost savings and has demonstrably lower prices relative to other counties regarding similar procurements of smaller volumes (Almesjö 2012). They are seen as pioneers within not only health care procurement but public procurement in general (Axelsson 2012).

From the above discussion we can conclude that the current coordination is inadequate within the nation. Only to some extent does it exist within counties and in some cases regions. Consequently the current structure should offer great potential for improvements.

4.1.1.2 Standardization

Today, the general consensus among the interviewees is that there are often many different variations of each type of product which seems to be caused by the physicians' having different personal preferences which are satisfied (Törnqvist 2012; Wickström 2012). The empirical data shows that seemingly simple items such as surgical gloves come in many versions with different features which is the case for most products. "The general thought is that products used at your department are the only products that can be used" (Head Nurse, Infection). A team of consultants at McKinsey (SMIL 2007), who made a report on health care procurement has identified major standardization opportunities in health care and recognizes that it is currently common with expensive over-specification. At S:t Görans Sjukhus the process of standardization has been accelerated since Capios' management as the private health care has a tougher economic pressure (Boijesen 2012). Boijesen (2012) however, is not agreeing with the rest of the interviewees as he believes that the physicians, at least his own co-workers, are adaptable and understand the purchasing situation.

Törnqvist (2012) describes the situation at Karolinska Universitetssjukhuset and says that the large product variation becomes an issue in the use of “manual lines” in the procurement system at. The manual lines are a type of order in free text made by health care practitioners used when the accurate product is not already available in the system. However, overuse due to ignorance and bad information is common. If the descriptions of the articles in these manual lines do not completely correspond, similar products are procured in large quantities. He further explains that items that are today purchased outside contracts can to a large extent be procured through existing contracts with larger volumes. At Karolinska Universitetssjukhuset he estimates that only 2/3 of all procurement is carried out through the purchasing system and the remaining 1/3 thus through the manual lines.

The theory is confirmed by the two procurement experts Axelsson and Kulldorff saying that standardization is key in order to focus and thus increase volumes by which prices can be reduced. They further imply that that from a procurement perspective it is optimal with only having one variation per product. This would give rise to a narrower range of products which creates focused volumes. The empirical data states that this will require consensus between physicians and buyers and in particular that the hospital boards accept less product variation.

The interviewed buyers seems to fully agree to the fact that the main issue with standardization is that health care practitioners want large variety in products whilst the buyers want to cut back on supply and reduce costs (Gudasic 2012; Törnqvist 2012; Wickström 2012; Ölund 2012). ” Hospitals and physicians must agree to cut the tail" (Axelsson 2012). The buyers however recognize that they often lack sufficient knowledge to put up against physicians which they believe to be a nation-wide pattern. Wicktröm (2012) has experienced doctors who may invoke patient safety as reasons for not using new equipment. This is contradicted by physician Boijesen (2012) who says that all equipment on the market is well tested and hence there is no risk in using new variations.

Boijesen (2012) contradicts the buyers and says that standardization cannot be fully implemented since some variation will always be needed. There maybe practitioners or patients who are allergic to certain materials or have other specific needs to observe. Gyllenhammar et al (2012) says that since the products only seek to add value to the process and not be used for B2B or B2C, only quality and price is important, brand and appearance should not be a consideration. Boijesen (2012) agrees to this saying that standardization requires finding evidence of what products are of best quality and this is enabled by documenting all times a certain product or equipment is used.

We can now state that standardization has proven key and we can derive two main benefits. Standardization seems to be a prerequisite for coordinating procurements nationally and it also implies that the variation within each product category can be reduced. Hereby, the volumes will be focused and hence increased. It seems obvious that if achieving a higher degree of agreement loyalty the

volumes will be focused since there will be fewer product variations. This indicates a large potential for standardization effects. It can also be derived that buyers and physicians have different perceptions of the current procurement situation. Further, although the theoretical potential to standardization is extensive certain restrictions limiting the potential have been brought up.

4.1.1.3 Concentration of Suppliers

The supplier issue is complex but the empirical data shows an obvious desire to reduce the number of suppliers while at the same time it is within some product categories necessary with full cover and thus procure at least from two suppliers for every specific area. Dahlgren (2012), Törnqvist (2012) and Gyllenhammar et al. (2012) explains that this is because health care cannot risk being out of a certain type of product.

As discussed in the previous section physicians' individual product preferences reduce the possibility to focus volumes. Törnqvist (2012) describes once again the situation at Karolinska Universitetssjukhuset saying that suppliers often get orders even if not contracted through a proper procurement. One distinct example is the procurement of sutures in which Johnson & Johnson is the market leader. On certain items they charge a price that is more than double compared to competitor B. Brown. Even though the quality is the same, and attempts have been made to switch supplier, the physicians are not receptive. "There was no chance what so ever" (Törnqvist 2012).

Wickström (2012) is backed up by the other interviewed buyers when he describes the current supplier situation which he believes is applicable to the whole nation. As of today the suppliers seem to tie the customers to them by various actions. Part of supplier's marketing is to build relationships with the practitioners and they often visit the hospital for advertising new products which Boijesen (2012) repeatedly has witnessed. It happens that suppliers organize workshops to teach new medical techniques or the use of new instruments. Boijesen (2012) confirms Wickströms (2012) belief that this kind of training could as well be in-house, although emphasizing that it would be difficult to reach the same level of knowledge.

If the suppliers are reduced and volumes focused through standardization the volumes increase further. As theory suggests the greatest volume would be achieved by providing exclusivity to one supplier that produce the ultimate volumes. However it requires a high degree of standardization, a problem that was discussed earlier in the chapter.

An example illustrating the benefits of procuring from a single supplier is when knee and femoral head prosthesis were procured in Skåne County. The practitioners agreed on three types of knee prostheses and one type of femoral head which was open information in the procurement documentation to suppliers. The femoral heads that were procured from only one supplier were purchased at 10-15per cent lower prices than knee replacement from three different suppliers (Dahlgren 2012). The

incentive of health care practitioners to agree on less product variation is based on that Skåne has agreed with the politicians to allow the health care sector to keep the savings to invest in the business (Dahlgren 2012).

In line with the above statements as well as theory it is clear that there are advantages from concentrating suppliers so that each contracted supplier gets greater volumes to produce. There is a great theoretical potential for this, which however is limited in part because of relationships- and standardization issues as well as the need for back up. Due to the suppliers' strategic behavior the health care sector is prevented from acting as a rationale buyer. It is further obvious that concentration of suppliers is close related to standardization in regards to focusing volumes.

4.1.2 Summary of Key Findings

All three identified cornerstones leads to an increased volume by focusing existing volumes. The optimal situation is hence to achieve full coordination, standardization and concentration of suppliers. The theory is yet limited by imperfections of reality and the optimal scenario is not applicable to full extent even though there is large potential for achieving desirable results.

4.1.3 Subquery 2: To What Extent Will the Volume Increase Result in Actual Cost Savings

To take the reasoning to the next level, we assume the findings in subquery (1) and discuss how to derive cost savings from the increased volume. As stated in the chapter introduction this subquery (2) will be presented in two parts. The first part discusses how, and how large cost savings can be derived from the increased volume. In order to measure the potential cost reduction we assume the economies of scale theory which is attributable to the production process and hence the suppliers. In the second part we examine to which extent the health care sector, as a buyer, can benefit from the suppliers' savings.

4.1.3.1 Part 1: How, and How Large Cost Savings can be Derived from the Increased Volume?

By the increased production volume, the supplier benefit from scale economies. Previous research has stated that there are potential cost savings from being able to allocate fixed costs on a larger volume base. The economies of scale model also cover other aspects such as increased productivity and flexibility as well as potential to reduce input costs, also leading to cost savings due to economies of scale.

The framework for economies of scale suggests that if the firm operates on a larger scale, workers can specialize in the activities at which they are most productive. Also scale can provide flexibility. By varying the combination of inputs utilized to produce the firm's output, managers can organize the production process more effectively.

Large volumes also reduce production costs through increased efficiency since producing goods in groups (batches) and not in a continuous stream. Many suppliers have significant switching costs, which are reduced by an effective manufacturing process since they are the same regardless of batch size. Switching costs include adapting tools and machines, checking the first production samples and discarding them if errors (Kulldorff 2012). Not only are these costs lowered but also direct costs, such as material can be lowered; The firm may be able to acquire some production inputs at lower cost because it is buying them in large quantities and can therefore negotiate better prices. The mix of inputs might change with the scale of the firm's operation if managers take advantage of lower-cost inputs. The above statements and along with theory suggests it may be possible for suppliers to reduce costs further. However, in the model we have assumed constant direct labor and material thus we have not taken into account the further cost reduction possibilities in the model since we lack sufficient knowledge about the complete streamlining opportunities for the suppliers.

4.1.3.1.1 Further cost savings through global procurement

In accordance with economic theory we have identified global procurement as a prerequisite for enabling increased volume and specialization. However, it is also an additional way in which costs savings in the product chain can be realized. The main reason we are discussing global procurement is not due to the potential cost savings it most likely to give rise to, but for being a key part in the centralization process of health care procurement since promoting competition. We have not included the potential cost benefits of applying global procurement in our projections regarding the cost reduction possibilities within the health care procurement; however a short discussion of the potential will follow.

As suggested in subquery (1) the choice of suppliers have large impact on the purchase price. Cost savings are realized when succeeding in finding the supplier who provides the best quality product to the best price, it is thus crucial to source on a global scale. This approach is referred to as trade and location theory. Difficulties with global procurement should however not be underestimated, but since the size of the public sector good conditions should apply. Further, as global procurement is not common within the public sector, there should be considerable potential for cost savings (Axelsson 2012).

Public procurements are according to law advertised throughout Europe and are open to all companies to submit offers, including non-European competitors (Törnqvist 2012; Gudasic 2012). However, the offers are limited by the Swedish language requirement, which is at least the situation in Stockholm county. All offers must be submitted in Swedish with the exception of potential product specification that can be given in English (Gudasic 2012; Ölund 2012). Thus it is almost

exclusively offers from Swedish companies that come into consideration but Gudasic (2012) suggests that it is possible to consider offers from global suppliers.

In line with theory and the above suggestions we believe that there is great potential for cost reductions by procuring certain products on a global scale.

4.1.3.2 Part 2: To What Extent can the Health Care Sector Benefit from the Suppliers' Cost Savings?

In the previous section the total cost saving potential in the production chain was discussed. This profit can be captured in different ways but two extreme outcomes suggests that either the supplier retains all profit or the buyer does so and hence get lower purchasing prices by holding the suppliers' profit constant at all times. Reality proves it unlikely that either one of the extremes would be an actual outcome, but the profit is instead more likely to be shared between the two parties.

“Suppliers will most certainly try to keep maximum proportion of the cost saving and does not lower prices unless a must to do so” (Kulldorff 2012).

Based on theory and empirical data three specific factors impacting the distribution of the profit has been identified; Intermediaries, Specialization (knowledge), and Market Structure. Hereby follows a discussion of each factor.

4.1.3.2.1 Intermediaries

The underlying cost savings in the production process are realized by the producing firm; hence it is important for the health care sector to avoiding intermediaries and buying directly from the producer in order to take advantage of the full cost reduction.

Buying through intermediaries in the procurement process is a common feature but the number of intermediaries varies. The three largest suppliers to the health care sector⁴, corresponding to 42% of total procurement costs, are intermediaries and subsidiaries⁵. Many major suppliers have their own sales offices in Sweden, while smaller suppliers have an intermediary or agency in Sweden which becomes the natural counterpart for the buyer. Intermediaries are often a must because of the limitation in terms of the Swedish language requirement for submitting offers. According to theory, it is desirable to turn to a global market and thus reach far back in the production chain to get close to the initial source. By doing this, it is possible to avoid intermediaries.

4.1.3.2.2 Specialization

⁴ Stockholm county suppliers' (Appendix 1)

⁵ Stated by Kulldorff (2012)

To be able to benefit from some of the suppliers profit, the buyer must gain bargaining power towards the supplier. In order to do so it is important to develop specialist competence. A buyer is required to have knowledge and understanding for the entire production chain such as where to produce most efficiently, cost drivers and product knowledge (Kulldorff 2012). It is crucial in order to see where and how purchase prices can be lowered (Törnqvist 2012). The importance of buyer knowledge when negotiating is also in line with the theoretical background.

The buyers at the county procurement and at the hospitals have different backgrounds and experiences. Based on the empirical data the buyers across the nation seems to have various backgrounds although most buyers are educated economists, lawyers or engineers. However the general trend has gone from employing buyer generalists (Wickström 2012) towards employing buyers with medical background, either from pharmaceutical companies or management at hospitals (Törnqvist 2012).

Karolinska Universitetssjukhuset has the largest hospital-specific procurement section within the nation, and hence it is appropriate to use it for illustrating how the structure prevents the possibility for specialization although the size of the section provides possibility. The section is structured by the seven hospital divisions and 70 areas of activity. The procurement section contains a procurement manager, eight buyers, eight procurers, purchasing controller and project manager for the purchasing program (Törnqvist 2012).

Törnqvist (2012) says that the widespread division responsibility among hospitals today must become category responsibility based on experience to enable specialization. Theory suggests that buyers tend to be more efficient when being assigned categories of items since they are able to concentrate their efforts on relatively few categories. Specialization allows buyers to improve their industry specific skills and is often enabled by centralization.

Another important aspect of specialization is that the buyer together with the supplier can make continuous improvements resulting in efficiencies of production and hence cost savings. “The starting point in every negotiation has to be: how can we, together, reduce landed store prices and/or costs?” (Kulldorff 2012). As stated in the theory, an informed buyer with deep industry expertise might even be able to act as an advisor to the producer and thereby help the supplier to improve the streamlining of production and hence lowering direct labor, as well as reducing input prices and hence lowering direct material which was described earlier.

We can now conclude that in order to successfully exploit volume advantages and know where in the world to find the best supplier, it is key to understand the product and the suppliers’ production activity such as raw materials, manufacturing process and distribution. Specialization increases the opportunity to acquire knowledge about the products, industry, cost structure and product chain. These are all external effects of knowledge, but knowledge can also have internal effects by for example

creating legitimacy among physicians. However the internal aspects are outside the scope of this thesis and will not be developed further. To summarize, with starting point in today's relatively low level of specialization the potential for improvements should be reasonably large.

4.1.3.2.3 Market Structure and competition

The market structure plays an important part as it creates an environment for the buyer to take advantage of the suppliers' profit from scale economies. We will discuss market structure including buyer power and competition.

From the empirical data it is obvious that the inadequate coordination of procurements today results in a market with many buyers procuring small volumes. According to the theory this results in a market situation with asymmetrical market power between buyers and suppliers, where each buyer has little power. Thus, suppliers can charge higher prices and their great power within some specific product categories can be compared to monopoly power on the Swedish market.

The optimal theoretical scenario achieved through centralization is another market imperfection, monopsony. An increased volume not only leads to economies of scale but also increased market power for the buyer. If the health care sector were to act as a joint buyer the focused procurements would restrict the suppliers' market and thus result in a market structure similar to monopsony. However, the two market imperfections above are reduced as globalization provides the possibility to procure on a global scale and hence increase competition.

Competition is essential for the buyer to be able to take advantage of its market power. In absence of competition the supplier keep the whole cost savings. "No supplier will cut prices if not absolutely needed" (Kulldorff 2012). It is clear from the theoretical background that competition puts pressure on suppliers and thus increases the buyers' possibility to play off suppliers against each other. Dahlgren (2012) estimates that the cost savings in Skåne from lower purchase prices is to 75 per cent attributable to reduction of suppliers. He however adds that it is important with vitality on the market and giving the suppliers a chance to compete. Amlesjö (2012) also emphasize that in absence of competition both innovation and product development are inhibited and the supplier can raise prices.

At the procurement section in Stockholm county the number of offers varies with the procurements but is typically about five and rarely exceeds ten, which should be representative for the whole nation (Gudasic 2012; Ölund 2012). This suggests that in the existing market structure there is competition, even if somewhat limited.

Törnqvist (2012) says that physicians' individual preferences for items reduces exposure to competition and potential pricing pressure as suppliers know they get the order whatever the price of the offer, at least this is the case at Karolinska Universitetssjukhuset. He describes one

distinct example of a procurement of sutures in which Johnson & Johnson is the market leader. They charge a price that is more than double compared to competitor B. Brown. Even though the quality is the same, and attempts have been made to switch supplier, the physicians are not receptive. "There was no chance what so ever" (Törnqvist 2012). It is a consistent feature that a large company often is the market leader for a product. Törnqvist (2012) further describes the situation at Karolinska Universitetssjukhuset saying that the problem with the lack of competition is that suppliers know the procedure of procurement. They know they can sell their products even if they do not submit an offer and participate in an actual procurement. They view the offering process as unnecessary work. The products are thus procured outside contracts and the price becomes excessively high. Also Wickström (2012) is familiar with this type of proceeding.

Further, the general view among the interviewed buyers is that relationships with suppliers are of great importance since it is very much about service and being able to deliver at short notice. Boijesen agrees and explains that sometimes, for example during an operation an urgent need for a specific product or specific knowledge of the equipment might arise and it is thus important to have good contact with the supplier so that they can arrive quickly. "Sometimes you get surprised by the seemingly infinite resources the supplier have, they have several times taken part in whole surgeries" (Boijesen 2012). According to theory however, the relationships imply imperfections resulting in procurements not being performed optimally. From the empirical data it can be found that there is much more embedded in the purchase price than the obvious product hence it is important to get rid of the relationships to cut prices, but it requires a determined effort from top management (Wickström 2012).

When the health care sector consolidates volumes to less suppliers, it automatically creates competition between existing suppliers and therefore forces suppliers to transform the economies of scale to lower prices to the buyer in order to get contracted. Although there is competition today it seems that exploiting it is to some extent inhibited by the physicians' preferences and supplier relationships. Based on theory we believe that the risk of deteriorating competition can be minimized by procuring on a global scale.

4.1.4 Summary of Key Findings

From the reasoning in the above sections it is obvious that less intermediaries, increased specialization and increased competition are all important factors for fully exploiting the advantages from economies of scale in the production. Since the situation today is far from what the theory describes as the optimal scenario there is great potential for the health care sector to benefit from the suppliers cost savings.

Our key findings in subquery (1) and (2) indicated that there is great potential to first increase the volumes in every procurement and then benefit from the cost saving that the supplier enjoys thanks to economies of scale as the volumes are increased. This thus answers the qualitative part of the research question.

The next step is to quantify the results which follow bellow.

4.2 Quantitative Results

In the previous section a qualitative analysis was presented and discussed by applying the theoretical framework to the empirical data. The qualitative results showed that the health cares' cost saving potential is primarily based on an increase in purchasing volume, from which the supplier can reduce costs by realizing economy of scale. Based on the findings, we will move on to a quantitative analysis of the cost saving potential, first by quantifying the potential volume increase and then determine the level of cost savings the volume increase result in. Certain assumptions had to be done throughout the quantifications, why the results should interpret as indications rather accurate. The assumptions are based on estimations of Thörnqvist, Dahlgren and Wickström (2012), all present or former purchasers within the health care sector or by Kulldorff, purchasing and industry expert, and will be stated along with the calculations. To avoid misleading results due to incorrect assumptions we have taken different scenarios into account and provided results within ranges. Also, the chosen assumptions have been taken with caution, and are many times modest in comparison what we actually believe is a likely scenario.

4.2.1 Subquery 1: To What Extent can Procurement Volumes be Increased?

Supplier reduction, standardization and centralization are all means for the healthcare sector for achieving increased volumes, and the effects of the means will be estimated separately. However, supplier reduction standardization will be regarded as one mean since they are closely related. In order to reduce number of suppliers, standardization must be achieved.

4.2.1.1 Increased Volume by Supplier Reduction

Table 1 shows the quantification of an increased volume as an effect of a supplier reduction. The increase in volume is regarded from the suppliers' perspective and the quantification is presented below. The sources of the figures are presented in appendix.

Table 1 – Increase of Average Suppliers' Volume by Reducing Number of Suppliers by 25 per cent

	Scenario 1	Scenario 2	
Total national procurement	123 066 000 000	123 066 000 000	
Number of categories	12	12	
Sum of procurement per category	10 255 500 000	10 255 500 000	
Number of suppliers per category	200	150	-25%
Sum of procurement divided per suppliers	51 277 500	68 370 000	
Volume increase		1,33	

Table 2 – Volume Increase per Supplier

Suppliers divided per category	100	200	300	400
Supplier reduction of 5%	1,05	1,05	1,05	1,05
Supplier reduction of 15%	1,18	1,18	1,18	1,18
Supplier reduction of 25%	1,33	1,33	1,33	1,33
Supplier reduction of 35%	1,54	1,54	1,54	1,54
Supplier reduction of 45%	1,82	1,82	1,82	1,82

The first scenario in table 1 is using today's figures. Total national procurement and number of categories are collected from SHA (2010) and SMIL-project (2007) and are reported in Appendix 1. Number of suppliers per category is an assumption based on "office material" category from SMIL-project (2007) as benchmark. The second scenario illustrates the effect of a supplier reduction of 25 percent in terms of volume increase per remaining supplier. However, the exact degree of product variation needed by physicians i.e. the extent of standardization is outside our competency. We cannot estimate the exact percentage by which suppliers can be reduced, thus the 25 percent is a pure assumption but taken with caution. It was clear in the interviews with procurers within the healthcare sector, that the possibility to reduce number of suppliers is large, why the supplier reduction is likely to be even larger than assumed in this paper.

Table 2 provides a scenario analysis where the volume effect of different input is shown. The assumption of number of suppliers per category is clearly insignificant, but the reduction of supplier is of importance and the range of to what extent a supplier reduction is possible varies from 5 percent to 45 percent contributing to a volume increase of 1,05 to 1,82 times is taken into consideration for further calculations. A volume increase of 1,33 is highlighted since we use as base of further calculation, where we have assumed a suppliers reduction of 25.

4.2.1.2 Increased Volume by Centralizing Procurement

Centralization is also a mean for increasing volumes. Table 3 illustrates the combined effect of the suppliers' increased volume by a centralization of the health care procurement and by reducing the number of suppliers.

Table 3 – Combined Effect of the Suppliers' Increased Volume Based on Suppliers' Share of National Market* and on a Supplier Reduction of 25 % (15%, 35%)

Share of national market	Centralized procurement	15%	Combined	25%	Combined	35%	Combined
14%	7,1	1,2	8,4	1,3	9,5	1,5	11
20%	5,0	1,2	5,9	1,3	6,7	1,5	7,7
40%	2,5	1,2	2,9	1,3	3,3	1,5	3,9
60%	1,7	1,2	2,0	1,3	2,2	1,5	2,6
80%	1,3	1,2	1,5	1,3	1,7	1,5	1,9
100%	1	1,2	1,2	1,3	1,3	1,5	1,5

Our calculations are based on the county of Stockholm which proportion of the national procurement of medical supply, is approximately 14 per cent (SHA 2010; HSN 2010). If health care procurement would be centralized and supplied by the suppliers of Stockholms county and if Stockholm county's suppliers only supply Stockholm, i.e. no other county, the supplier's volume will be approximately 7⁶ (6.7) times larger nation-wide. However, if the suppliers of Stockholm county, also supply other county's today, their accumulated supplied (produced) volume would not increase, only merger into an unified order. Hence their supplied volume would increase less than the suppliers who today only supply Stockholm county. A likely scenario is that there are some supplier that are market leaders and already supply all Sweden's' counties. Stockholm's 17 largest suppliers (SMIL, 2007) correspond to approximately 62 per cent of Stockholm's total volume of healthcare procurement within materials and products. Top three consist of Apoteket (33 percent), Sodexo (5 percent) and Johnson & Johnson (3.6 percent) which are all large, well-known companies and are likely suppliers of many other counties as well. This implies that their supplied volume would not differ at all if the purchases were to be centralized. The described complexity is referred to as share of national market in the first column of table 3 and based on the lack of information regarding this situation we have identified a range of potential scenarios. 14 percent share of national market would mean that the average supplier only supply Stockholm county today and that the centralization would have an effect of 7.1 times volume increase for the supplier. 100 percent national market share would mean that all suppliers of Stockholm county already supply all counties of Sweden and that a centralization would have no effect on the suppliers supplied volume. The range in between, and the different scenarios effect from a centralization in terms of increased supplier volume is illustrated in the table. The second column show the volume increase resulting from a centralization, while the following columns show the effect of the supplier reduction scenarios and the combined effect in increased volume from the centralization effect and the supplier reduction effect.

20 percent share of national market is assumed to be the average suppliers' share of national market today and is therefore highlighted. Combining that assumption with a possible supplier reduction of 25

⁶ See calculation in Table 3

percent the suppliers volume increase 6.7 times. However, the assumption is unsafe and has a major impact on the estimated volume increase, why we also will consider all stated scenarios in table 3 and use the range of volume increase from 1.2 to 11 times as base for further calculations.

4.2.2 Subquery 2: How Large Cost Savings can be Derived from the Increased Volume?

We have constructed an example in order to demonstrate the theoretical cost savings in the production chain as a result of the 7 (6.7) times increased volume. Since the economies of scale theory focus on the production process, the table is based on the producer. Intermediaries are frequent suppliers to the health care sectors, and have been considered in section 4.2.3.1.

Table 4 – Cost Savings in Production Chain by Increased Volumes

	Scenario 1		Scenario 2		Comments
Revenue	51 277 500		343 559 250		
Volume		y		6.7y	Volumeincrease of 6.7 times
Price		x		x	Assuming constant sales (purchase) price
<u>Variable cost (per unit)</u>	-				
DM	25%	x	25%	x	Assuming constant DM
DL	25%	x	25%	x	Assuming constant DL
Coverage Rate***	50%		50%		Assumption of 50% Coverage rate
<u>Variable costs (total)</u>	-				
DM	12 819 375		85 889 813		
DL	12 819 375		85 889 813		
Sum	25 638 750		171 779 625		
<u>Fixed costs (total)</u>	-				
Fixed cost	20 511 000		20 511 000		Assuming constant fixed costs
% fixed cost of revenue	40%		6%		
Profit	5 127 750		151 268 625		
% Profit	10%		44%		Assuming margin of 10% in Scenario 1
Increase in suppliers profit	146 140 875	} Cost saving potential (for the buyer)			
Percent of revenue	43%				

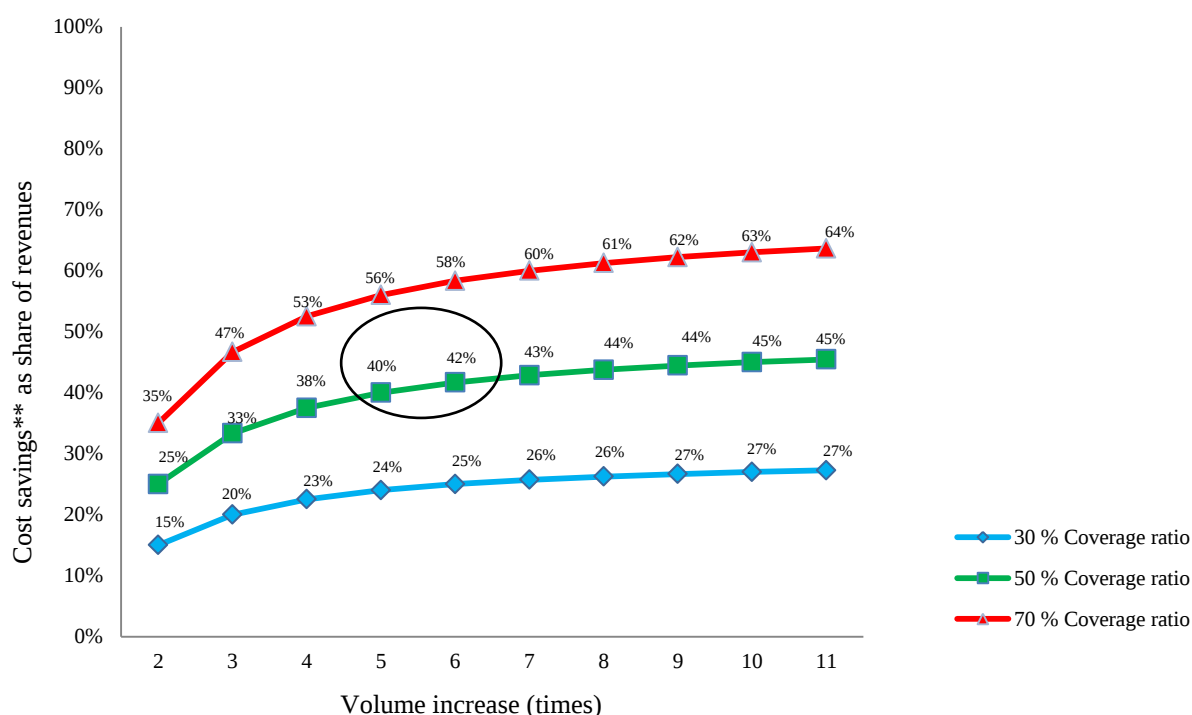
The first scenario aim to illustrate the average suppliers' structure today. The revenue is based on table 1, where revenues were divided per supplier. Assumptions regarding proportions of direct material, direct labor, margins etc. have been made and are stated in table 4. The second scenario illustrates the effect of the increased production volume on suppliers revenue. The 34 percentage point's increase in profit is due to realizing economies of scale – the increased production volume lowers the production

unit cost since the units on which the fixed costs are allocated are 7 times more in the second scenario than in the first.

The assumption of the average suppliers coverage ratio is significant since it has a major impact on the resulting cost saving potential. In table 4 the underlying assumption is a coverage ratio (of the producing supplier) of 50 percent and is based on an experts' estimate. Having studied thousands of suppliers' calculations over the years, Kulldorff (2012) state that the producers within the medical care industry must have a coverage ratio of at least 50 percent. It is only very production orientated companies that in very rare cases have a coverage ratio of 30 percent. It is attributable to organizations with low research and development costs, low overhead costs and a small sales function, which is not likely in the medical care industry.

The assumption was not able to confirm in the health care suppliers' annual report, since a predominately share was intermediates, whose figures are not representable of the producing supplier. The potential cost saving, is shown as a percentage of revenues, and varies depending on the increase in volume and coverage ratio. The correlation is illustrate below in Graph 1. Since the volume increase of 7 times and coverage ratio of 50% are assumptions the graph covers a wide range of different scenarios hedging for possible misleading results.

Graph 1* – Cost Saving Potential in Relation to Contribution Ratio and Increased Volume



*Assumptions in table 4 regarding DM, DL, margins and fixed costs remain

** Cost savings is denoted as a percentage of revenue, and illustrates the cost saving potential for the buyer

The graph illustrates the suppliers cost savings (the potential cost saving for the buyer) as a combined function of different levels of coverage ratio and increased volume. The positive correlation shows that a higher coverage ratio and larger production volumes are associated with larger cost saving possibilities, which is in line with the economies of scale model. By including the different levels of coverage ratio and volume increase we avoid large over- or under estimations from incorrect assumptions⁷.

4.2.3 Summary

The quantitative estimations show that the health care sector has a possibility of increasing the purchasing volume from a range between 1.2 to 11 times. More likely the volume increase has the potential to land at 7 times. Assuming that the average suppliers coverage ratio is 50 percent, the cost saving potential then correspond to 43%. As illustrated in graph 1, the potential cost savings depend on the volume increase and the suppliers' coverage ratio. By taking other possible scenarios into consideration, and avoiding misleading results, the cost saving potential fall within the scope of 15-64 percent.

4.3 Summary of Key Findings

Based on our key findings for subquery (1) and (2) from both the qualitative part and the quantitative part we now have sufficient information to answer the our main research question; "What is the cost saving potential within health care procurement?"

Given today's starting point, we believe that the health care sector has an overall great potential for realizing cost savings within procurement. As illustrated in Graph 1, the suppliers' cost savings range between 15-64 per cent depending on coverage ratio and volume increase. This figure thus covers all possible scenarios. We believe, based on our findings, interviews and expert statements, that this range can be narrowed to 30-45 per cent. Further, based on our findings, the health care sector has to potential of benefiting from the suppliers' cost saving to a large extent. However, this requires a reduction of intermediaries, specialist knowledge as well as optimal market conditions by procuring on a global scale. Branded products and strong suppliers, for example Johnson & Johnson, should be considered limiting in taking part of the cost savings. In line with above reasoning we estimate that the health care sector can reduce procurement costs with 20-30 per cent.

5 Discussion

In this chapter our conclusions are discussed in relation to thesis' research question and aim. We will also discuss managerial implications and suggestions for further research.

⁷ Assumptions are further developed in Appendix 1

5.1 Limitations and Validation of Results

Health care is a very complex environment due to for example a wide range of products within many various categories. Another complex aspect is the organization structure in which procurement is divided among many independent parties which makes it difficult to find accurate information and numbers. A poor follow-up culture (Axelsson 2012; Törnqvist 2012; Wickström 2012) also contributed to the difficulty of obtaining accurate figures. This difficulty is confirmed by the Competition Authority (2011) who refers to procurement statistics from the public sector as deficient. Because of these limitations, the thesis is largely based on estimates, assumptions and generalizations leading to the credibility of our results being questionable to some extent. We have been careful when estimated quantifications and rather under estimated the figures in order to not exaggerate the results.

We concluded that the potential for cost savings in health care procurement reasonably lies within the range of 20 - 30 per cent. Although the credibility of our estimates is questionable as discussed above, we have other evidence suggesting that there is great potential for cost savings within health care procurement which thereby increase the credibility of our results. All interviewees agreed that there are great opportunities for savings. Dahlgren (2012) suggests that it would be possible to reduce procurement costs with at least 20 per cent in most counties. Kulldorff (2012) takes it to another level by suggesting that an average cost saving of at least 25 per cent on a five years horizon, and within some specific categories even up to 50 per cent, could be realized.

Despite the somewhat questionable figures the conclusion shows that there is potential for cost savings, and the experts agree. Not to forget, the study is carried out with a high-level perspective. We have thus obtained evidence for our hypothesis that there is great potential for savings in health care purchases by acting as a joint buyer. In accordance with our aim, we have succeeded in increasing transparency by identifying issues and highlighting shortcomings. We have also discussed how cost savings can be realized. We hope and believe that this thesis, at least to some extent, can stimulate a debate and thus put pressure on prioritizing and develop procurement to becoming a strategic function.

It is clear that a large obstacle to implement centralization is its negative impact on market conditions i.e. the risk of eliminating national competition. This thesis only includes a brief discussion on this and refers to global procurement as a potential solution. In the thesis context this is an important factor and thus needs to be discussed in more detail. Our limited discussion implies that the results thus can be questionable. However, even if centralization is not implemented the thesis covers key factors for cost savings and thus is value-adding.

5.2 Managerial Implications

Managerial implications in this context refers to the practical use of our findings i.e. the extent to which cost savings can actually be realized through the implementation of the proposed efficiency measures. In the result chapter the limitations of reality are considered. We believe, however, based on interviews and external benchmarking that cost savings can be realized, yet it would require a major effort.

Factors limiting the extent to which the theoretical cost savings can be achieved are identified to be in particular lack of incentives, inadequate commitment from top management, inadequate monitoring and finally the lack of using best practice examples as illustrations. These limitations are illustrated below with some quotations;

“The lack of incentives to find and exploit ways to lowering costs is a major problem in many public organizations” (Björn Axelsson)

”The general feeling was; what’s in it for me? and; It’s everyone’s money, hence it’s no one’s money ” (Wickström).

”Standardization requires directions from hospital management, and eventually it would probably work as you learn to use the new equipment” (Head Nurse, ALB)

“Within the county councils and municipalities there are many times a poor impact culture where problems can be identified, but action is rarely taken” (Björn Axelsson)

“In order to implement changes the manager has an important role in setting clear goals and help people relate to them” (Björn Axelsson)

Above all, we believe that the main constraint is the industry’s actual characteristics implying there is no error margin. The health care sector cannot risk that devices don’t meet requirements or that certain products are not in place when needed.

5.3 Suggestions for Further Research

Because of limitations, many important aspects have fallen outside the scope of the thesis and are thus left for further study. These are most certainly areas that would provide value-adding insights by research. As suggested above a study on whether centralization is implementable as well as resulting effects would be of interest. Further, it would be interesting to investigate in greater detail some specific product categories to get a clear quantification of the potential cost savings. It would also be of interest to study the supplier market and their cost structures to more clearly estimate

the effects of economies of scale in production. Regarding suppliers, yet another interesting aspect of research is the price impact of procuring on a global scale.

During our research we found that some countries such as Australia, Finland and Ireland have made considerable progress in the coordination of health care procurement. It would thus be an interesting approach to benchmark the Swedish health care procurement system against these countries.

This thesis is has based on primary research assumed that the quality of care and products is not affected by rationalizing procurement. It would however be interesting to examine whether this is actually the case or if quality is affected, and if so, whether it is positive or negative.

Finally it would be interesting to carry out a study on an actual action plan discussing in detail how to mobilize the efficiency measures from a managerial implications perspective, which we will only superficially discuss below.

6 Conclusions

In this chapter the main findings of the thesis are presented, including answers to our two subqueries; (1) to what extent can procurement volumes be increased? and; (2) to what extent will the volume increase result in actual cost savings? This lead to the answer to the main research question of the thesis; what is the cost saving potential within health care procurement?

Based on the theory of scale economies supplemented by other economic theories we identified volume and thus economies of scale as being a crucial factor impacting procurement costs. The interviews clearly indicated that there is a large potential to focus existing volumes and thus increase purchasing volumes by increasing coordination, standardization and concentration of suppliers. Based on those findings we tried to quantify the potential to increase the purchasing volume. The quantification resulted in a potential volume increase of approximately seven times. However, the quantification required assumptions and generalizations.

The next step was to account for the suppliers cost saving attributable to economies of scale in the production with increased volumes. This part contained qualitative and quantitative elements, both of which to a large extent is based on theory and comments from industry experts - rather than the interviews and case study of how the health care procurement works today. The suppliers cost saving was found to range between 15 – 64 per cent. We further found that in order for the health care sector to enjoy the cost savings they need to use less intermediaries, develop more expertise by specialization and exploit the prevailing competition more. From the qualitative part we concluded that this potential is large and in the quantitative part we estimated that the health care sector in Sweden could potentially enjoy a cost saving in the range of 20 – 30 per cent which equals 25 –37 billion SEK annually. The figure varies manly depending on the suppliers cost structure and the increased

production volume. An important note is that this figure is only a potential long-term cost saving which is fully dependant on the development of the public procurement.

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Appendix 1 – Input values and assumptions

Figures

SEK million; 2003, exkl. MediCarrier

High-level categories within materials and products*

Material och varor**	
Medical	531
Health care material	517
Laboratorie material	247
Data material	162
Food	150
Inoperative	137
Medical Technical	108
Supplies	92
Surgery material	88
Office material	39
PR, print	33
Other material"	74
SUM	2178

Health care costs - County of Stockholm

Services (Verksamhetsknutna tjänster)	451	Million SEK
Materials and products (Material och varor)	2178	Million SEK
Other services (Tjänster)	1621	Million SEK
Sum***	4250	Million SEK

Figures used in the thesis		
Material and products, exkl. drugs, county of Stockholm	1 647	Million SEK
Total	4 250	Million SEK
Share of material and products exkl. drugs****	0,39	Percent
Sum of total health care costs in Sweden*****	318 250	Million SEK
Share of materials and products exkl. drugs*****	123 331	Million SEK
Sum of total health care costs in county of Stockholm*****	44 024	Million SEK
Share of materials and products exkl. drugs	17 061	
*Source: SMIL - report 2007		
**SEK, million, exkl. MediCarrier		
***Figures from 2003, used as proportion, source SMIL report 2007		
****Consistent use of the proportion		
*****Sveriges officiella statistik 2010		
*****318 250 x 0,39		
*****www.sll.se		

Suppliers share of procurement costs

SEK million, 2003, exkl. MediCarrier

County of Stockholm

Materials and products	
Apoteket	453
Sodexo	72
Johnson & Johnson	49
Medtronic	42
Roche Diagnostics	33
Boston Scientific	29
Kronans Droghandel	23
Guidant	22
Abbott	20
Stockholms Produktion	16
Dicamed	16
Statec Medical	15
St. Jude Medical Sweden	14
Stryker	14
Gambro	14
Pharmacia	9
Medtronic Vingmed	8
Övriga	514
Sum	1363
Sum 17 largest suppliers	849
Share 17 largest suppliers*	62%
Share of remaining suppliers	38%
Share of top 3 largest suppliers	42%

*Following proportion is assumed to be representative for health care suppliers

Source: SMIL - report 2007

Assumptions

Coverage ratio

The estimation of a 50 per cent coverage ratio is based on an experts' estimate. Having studied thousands of suppliers' calculations over the year, Kulldorff (2012) state that the producers within the medical care industry must have a coverage ratio of at least 50 per cent. It is only very production orientated companies that in very rare have a coverage ratio of 30 per cent. It is attributable to organizations with low research and development costs, low overhead costs and a small sales function, which is not likely in the medical care industry.

The assumption was not able to confirm in the health care suppliers' annual report, since a predominately share was intermediates, whose figures are not representable of the producing supplier.

Average suppliers of 200 per category

Referens to the estimation is based on the category “Kontorsmaterial” having approximately 310 suppliers (SMIL, 2007).

Appendix 2 – Interviewees

This appendix presents a description of the people interviewed for empirical data collection. Their background and experience are presented to justify them being relevant for this thesis.

Björn Axelsson (04/17/2012) – Sweden's first professor of purchasing at the Stockholm School of Economics

Johan Almesjö (05/04/2012) – Officer at Inköp Gävleborg

Magnus Boijesen (05/02/2012) – Manager and chief physician at the emergency section at the surgical clinic, Capio S:t Görans Sjukhus

Mats Berggren (04/02/2012) – Consultant within purchasing with experience from several counties, former purchaser at IKEA

Mikael Wickström (04/23/2012) – Procurement manager at Skatteverket, former purchasing manager at Karolinska Universitetssjukhuset

Per Dahlgren (05/04/2012) – Purchasing and procurement manager in Region Skåne, former procurement manager in Stockholm County Council

Peter Ölund (04/25/2012) – Purchaser at Stockholm County Council

Stefan Ackerby (04/13/2012) – Deputy CFO, department of finance and control, Sveriges Kommuner och Landsting

Stefan Gudasic (04/25/2012) – Purchaser at Stockholm County Council

Sven-Olof Kulldorff (05/04/2012) – Purchasing expert and advisor in purchasing and logistics, former global purchasing manager at IKEA and deputy CEO for ICA

Ulf Törnqvist (04/24/2012) – Project manager “Inköpsprogrammet”, Karolinska Universitetssjukhuset

Appendix 3 – Interview Questions

Hereby follows the framework that the interviews were based on. It should be noted that the questions have been adapted to the interviewee. This has mainly been done by addressing more general questions to purchasing experts while addressing more specific questions to the buyers and physicians' with current or former experience from the health care sector. Since all interviews were held in Swedish we will present the material in Swedish.

- Hur ser inköpsprocessen ut utifrån följande aspekter;
 - Funktionsstruktur
 - Specialiseringsgrad
 - Samarbete mellan sjukvårdspersonal och upphandlare
 - Standardiseringsmöjligheter
 - Förhandlingar

- Hur ser leverantörssituationen ut utifrån följande aspekter;
 - Lokalisering
 - Antal
 - Konkurrens
 - Mellanhänder
 - Relationer

- I vilken utsträckning samordnar sjukhus och landsting sjukvårdsinköpen?
 - Vilka fördelar har du erfarit av ökad samordning?
 - Vad finns det för möjligheter till ökad samordning?
 - Vad hindrar en nationell samordning?

- Vad finns det för möjligheter till kostnadsbesparingar inom sjukvårdsinköp?

- Vilka är de största problemen?