Transfer Pricing in Hospitals

Investigating the Need and Possible Methods of Transfer Pricing in Norwegian Hospitals

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in Health Economics, Policy and Management

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Preface

This master thesis is the final work of a joint 2-year European Master's degree program in Health Economics and Management (EU-HEM) at the University of Oslo, Norway, and the Management Center Innsbruck, Austria.

The thesis aims to discuss the need for transfer pricing, and the choice of transfer pricing methods, in Norwegian hospitals. The background for my choice of research topic was a personal wish to gain more knowledge of financing mechanisms and costing methods applied in Norwegian hospitals.

Without the interview objects it would not have been possible to investigate the research questions of the thesis, and I am thankful for the welcoming attitude of the interview objects. The way the Chief Financial Officer of the local hospital trust showed interest and knowledge about the topic was important for my motivation and the execution of the research project. I would also like to thank my supervisor Professor Oddvar Martin Kaarbøe who provided valuable guidance in the beginning of the project, as well as constructive feedback towards the end of the work process.

Finally, I am thankful for support and advise provided by family and friends during the work on this master thesis project.

Abstract

The aim of this master thesis is to investigates if there is a need for transfer pricing in Norwegian hospitals, and which transfer pricing methods should be considered if such a need exists.

As divisions in Norwegian hospitals are not always committed to reimburse goods or services provided by other divisions, some divisions have the opportunity to increase production, and potentially improve their operating profit, without compensating other divisions taking part in production. As internal firm inefficiency may result, this serves as the background for the thesis work.

The thesis first builds a theoretical framework from literature findings on transfer pricing to identify both potential advantageous, and disadvantageous arguments of transfer pricing. In addition, the thesis identifies and discusses available transfer pricing methods.

A qualitative research design is chosen, and semi-structured interviews used to explore the theoretical framework and choice of transfer pricing method.

Three potential advantages of transfer pricing are identified; a more well-functioning internal market (the economic argument), improved quality (the organizational argument) and improved monitoring and control due to increased quality of data (the evaluational argument). One potential disadvantage of transfer pricing is identified: the cost of developing, implementing and operating the transfer pricing system (the functional argument).

The main conclusion of the thesis is that the decision to implement a transfer pricing system in a hospital will depend on the sum of the relevant advantageous and disadvantageous arguments of transfer pricing, and that the advantageous economic argument and disadvantageous functional argument are the main arguments affecting this decision. In addition, it is concluded that a transfer pricing system must involve a mechanism that secures the longevity of the economic argument. Last, the thesis concludes that actual cost or standard cost should be the preferred transfer pricing method in the investigated hospital, but that the choice of transfer pricing method is less important than securing the longevity of the economic argument.

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List of Abbreviations

ABF - Activity Based Funding

CFO - Chief Financial Officer

DRG - Diagnostic Related Group

IGF - Internal Governance Failure

IMF - Internal Market Failure

ISF – Innsatsstyrt Finansiering

KPP – Kostnad Per Pasient

NPM - New Public Management

OECD - Organization for Economic Co-operation and Development

PPS - Prospective Payment System

RHA - Regional Health Authority

UiO - University of Oslo

UiS - University of Stavanger

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1. Introduction

This chapter presents the background of the thesis topic, the research question the thesis aims to answer, and provides an overview of the structure of the thesis.

1.1 Background of Thesis Topic

Norway have, like other countries, experienced increasing expenditures in health care. As a consequence, an increasing number of measures for cost-containment and cost-effectiveness have been introduced. Changes to Norwegian health care have followed the lines of development in New Public Management (NPM). Some of the implemented changes have been decentralization of hospitals organizations into divisional structures, and development of prospective payment systems (PPS) for reimbursement. Reported costing data have increased in both amount and detail, and in 2016 work is underway to introduce patient-level costing in Norwegian hospitals by 2017.

Divisions in Norwegian hospitals are not always committed to reimburse goods or services provided by other divisions. As a consequence, some divisions have the opportunity to increase production and profits without compensating other divisions taking part in production. Though this arrangement generates some debate, the phenomenon is often considered to be part of a zero-sum game. However, some hospitals have established transfer pricing mechanisms.

As patient-level costing is introduced by 2017 more exact data on the cost of individual patients and use of services becomes available. Improved cost data will enable managers to identify transfer costs more precise than before.

By exploring advantages and disadvantages of transfer pricing, and investigating potential effects from different transfer pricing methods, this thesis aims to answer whether transfer pricing should be considered or not, and which transfer pricing method should be selected.

The subject is explored by the help of three different health trusts in a Norwegian Regional Health Authority (RHA) which all have a similar divisional structure, but different experiences with the use of transfer pricing systems for goods and services provided between divisions.

1.2 Research Question

This research question this master thesis aims to answer is:

> *"Should, and how should services be priced in a situation where increased production in one division leads to increased use of services provided by a second division?"*

The thesis will try to answer this research question by studying the following question in more specific:

> *"Is there a need for transfer pricing of goods and services in Norwegian hospitals?"*
>
> *and*
>
> *"Which pricing methods should be considered by Norwegian hospitals wishing to establish transfer pricing?"*

1.3 Structure of the Thesis

Chapter 2 presents the organizational structure and current financing mechanism of Norwegian hospitals. Recent and future developments in costing and reimbursement methods are also presented.

Chapter 3 provides a theoretical framework for answering the thesis research question. The chapter is divided into three sections.

- The first section presents different costing methods. Top-down, bottom-up, gross and micro-costing methods are reviewed.
- The second section discusses the general function and purposes of transfer pricing, and reviews potential advantages and disadvantages of transfer pricing.
- The third and last section gives a review of available methods for transfer pricing. A pragmatic approach is applied as the effects of transfer pricing methods observed in practice is the primary focus of the review.

Chapter 4 give a review of the methodological framework of the study. Choice of research design and methods of data collection and analysis are explained.

Chapter 5 presents the data obtained from the study, and discusses the findings of the thesis work. Data findings are reviewed in accordance with the theoretical framework developed in chapter two.

Chapter 6 includes a discussion of the study's findings in more detail. The most relevant advantages and disadvantages of transfer pricing are identified, and together these provide a foundation for discussing whether a transfer pricing system should be implemented or not. This chapter also discusses which transfer pricing method should be the preferred method of choice.

Chapter 7 summarizes the key finding of the thesis. Limitations of the thesis are discussed, and directions for future research on the topic is suggested.

Chapter 8 includes references.

Chapter 9 presents the appendix.

2. Institutional Framework

The first two sections of this chapter presents the organizational structure and the main goals of the Norwegian health care system. The last two sections present the financing mechanism, as well as the background and expected future development of reimbursement and costing methods used in Norwegian hospitals.

2.1 Organizational Structure of Regional Health Authorities (RHA's) and Health Trusts

RHA's were established in Norway as a result of a 2002 health care reform where the ownership of the Hospitals was shifted from the counties to the governmental level. The originally five RHA's were from 2007 reduced to the currently four RHA's of Southern and Eastern, Western, Central and Northern Norway. A regional RHA owns the regions Health Trusts which operates the hospitals, as well as other trusts (Figure 2.1.). The Norwegian government owns the RHA, and The Ministry of Health and Care Services administers the four RHA's.

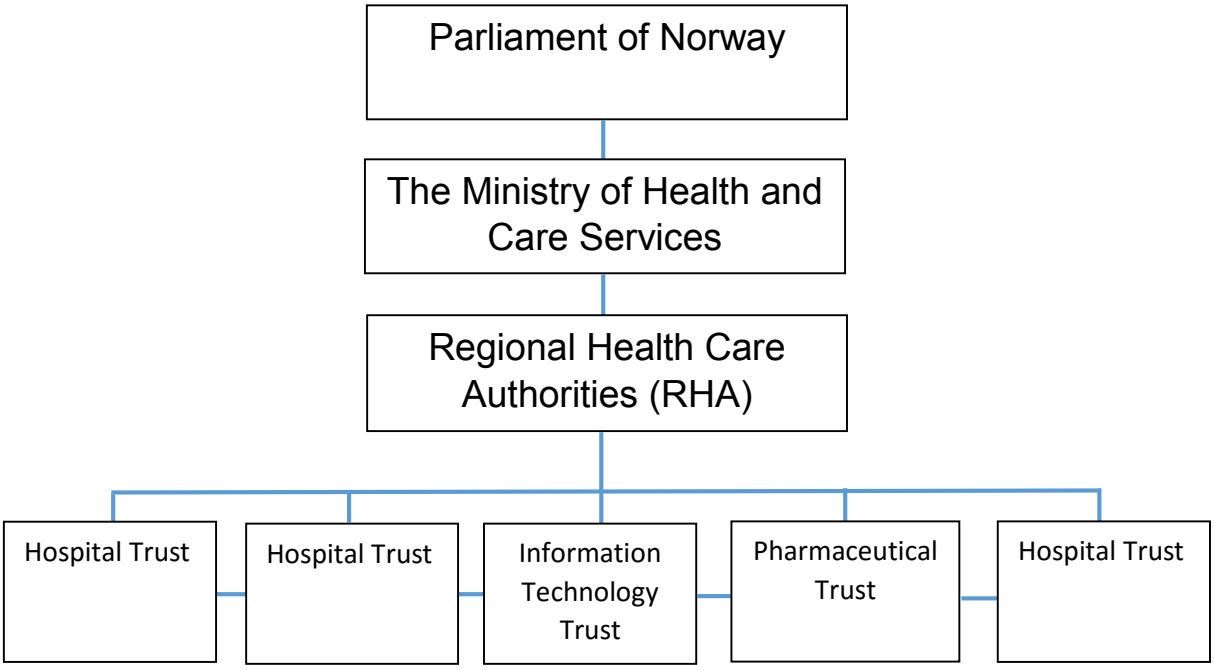


Figure 2.1. Organization of RHA's and health trusts, rewritten (Organiasjonskart, Helse-Vest 2016)

2.2 Goals of the Norwegian Health Care System

The Norwegian Directorate of Health is the executive agency and professional authority under the Ministry of Health and Care services. Every year the Directorate of Health provides guidance regarding national goals and prioritizations in health- and care-services and public health in Norway (Helsedirektoratet 2015a).

In the 2015 report the goal of a safe service of good quality for every citizen is presented first. Second, it is emphasized that the whole country should have equal opportunities to receive health- and care-services independent of diagnosis, location, personal economy, sex, ethnicity and life situation. Third, it is a goal that services should be of high quality and safety, be accessible, provided efficiently and have short waiting lists (Helsedirektoratet 2015a).

2.3 Financing Mechanism of Norwegian Hospitals

Financing of Norwegian hospitals consists of a fixed sum (lump sum / block funding / block grants, basisbevilgning) of transfers from the Regional Health Authority (RHA) and a variable sum dependent on activity (production).

The fixed sum is dependent on size and limits set by the yearly Governmental budget which is allocated to the four RHA's depending on indexes of costs and needs of the different regions (population, demographic composition etc.). A "Document of tasks" (oppdragsdokument) from the Ministry of Health and Care Services specifies monetary transfers and describes which goals and services are expected. Every RHA allocates this lump sum between hospital trusts in its yearly budget for the region, and guide the production of each hospital trust via a yearly "Document of order" (bestillerdokument).

Different hospitals have different processes when budgeting. Part of the fixed sum stays centrally to cover costs in service departments (administration, etc.).

The variable sum is made up of activity based funding (ABF, activity based financing, innsatsstyrt finansiering (ISF)) which is administered by the help of the diagnosis-related group system (DRG-system). Currently (2016) ABF aims to represent 50 % of the hospitals financing of activity (Helsedirektoratet 2015b).

Estimated ABF corresponding to the production described by the yearly “Document of order” and “Document of Tasks” is referred to as the “budgeted activity based funding” (budsjettert ISF), and in the Governmental budget this is an estimated on account transfer.

As for any production, production beyond budgeted activity is reimbursed only by 50 % of the total DRG-sum (42081 NOK in 2016). The remaining costs of production must be covered via the yearly lump sum which is unaffected by increased production (Helsedirektoratet 2015b).

Income generated by activity usually stays in the division of production, but here there are differences between hospitals. The stay in the department generating the highest DRG-value becomes “main stay” (bærende opphold) when the DRG-value for an admission involving several departments is calculated (aggregering av sykehus-opphold) (Helsedirektoratet 2015b). Usually procedures done during “main stay” ads to the hospital stay, while procedures done during stay in other departments are as a rule not added (Helsedirektoratet 2015b).

From this, we understand that any production requiring services from more than one division have the potential of being inaccurate represented in the budgets of the divisions involved. Second, we see that production beyond budgeted activity (at some point) will generate increases in costs beyond what the originally lump sum and additional ABF will cover. Other resources must cover these extra costs, and this potentially involve changes in allocation of the lump sum between divisions. Figure 2.2. illustrates the way Norwegian hospitals are financed.

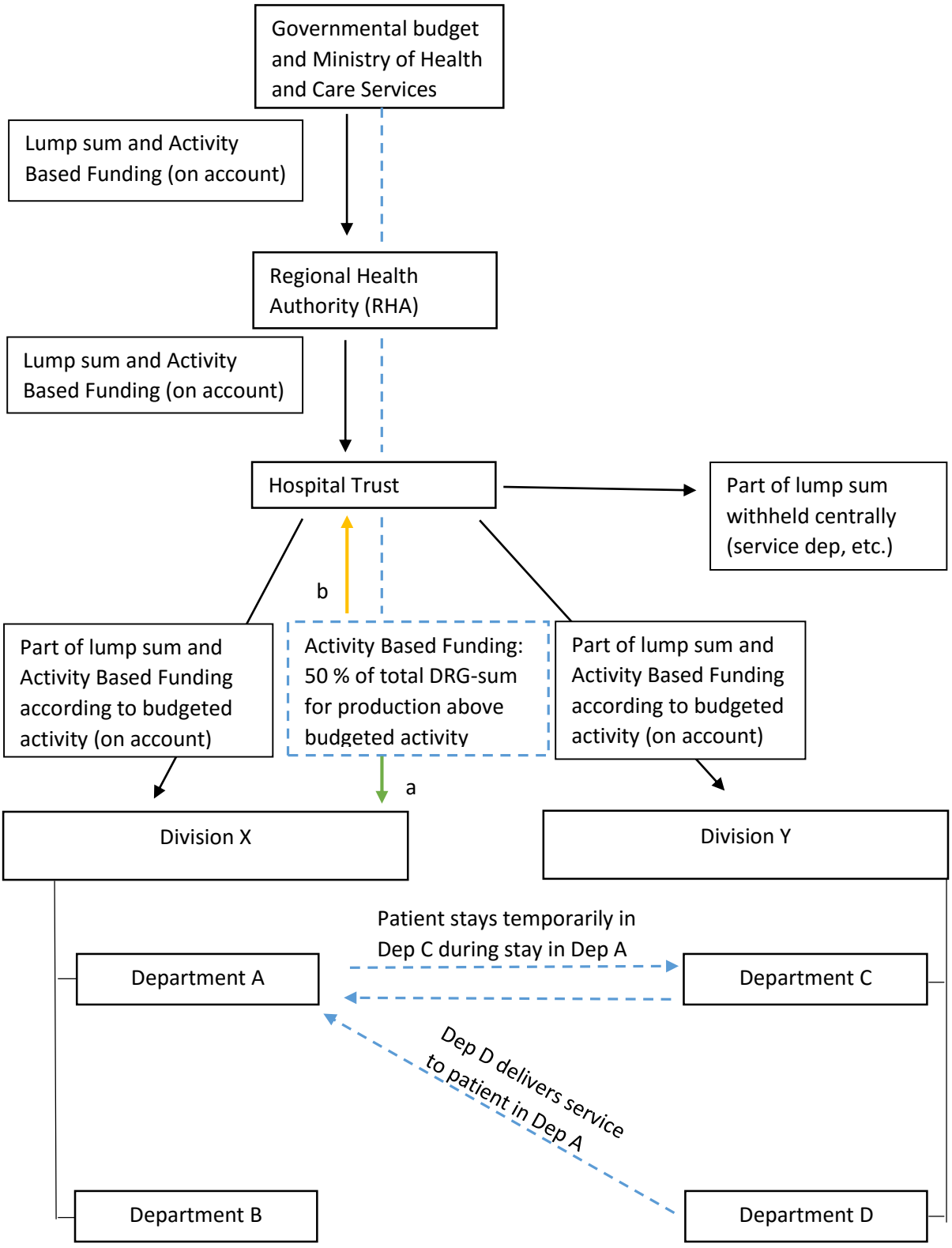


Figure 2.2. Illustration of the financing mechanisms of Norwegian Hospitals. Solid boxes and arrows (black) describe the normal situation within budgeted activity. Dotted boxes and arrows (blue) describe a situation of production beyond budgeted activity where production requires services from other divisions. The reimbursement of production beyond budgeted activity can stay in the division of production (a, green arrow), or be withheld centrally in the hospital trust (b, yellow arrow).

2.4 Background of Reimbursement and Costing Methods Used in Norwegian Hospitals

For the last two decades we have observed use of increasingly advanced costing systems in Norwegian hospitals. This development has been influenced by New Public Management (NPM), and innovation in costing methods and systems have followed the development observed in many other western countries. There is no precise definition of NPM, but in essence NPM reforms promise that the introduction of principles known from the free market economy increase the efficiency and quality of public services. Examples of such principles can be to use incentives or rationalize production to improve efficiency, and frequently involves increased quantification to demonstrated changes in efficiency or quality, and to hold responsible managers accountable (Lapsley 1999). In hospitals this commonly involve a change from financing with lump sum into prospective payment systems (PPS). The Diagnostic Related Group (DRG) system represents a PPS as it categorizes patients into diagnostic groups were the reimbursement rate is decided by previously reported data on the cost of treatment for the given diagnosis. For hospitals these changes were first introduced in hospitals in the USA in the 1980s (Fetter et al. 1980). Use of a pre-determined payment like this follows the philosophy of NPM as it will function as an incentive to increase efficiency of production.

Lack of cost and activity data may have contributed to game-situations between hospitals and their owners during the 1980s and 90s, and this was probably the primary factor driving development of NPM and the introduction of the DRG-system in Norwegian health care (Pettersen 1999). Long waiting lists in hospitals, and a wish for increased efficiency may also have contributed.

Activity Based Funding (Innsatsstyrt finansiering (ISF)) was introduced by the help of the DRG-system in Norway July 1997 (Store norske leksikon), and after this, Norwegian hospitals have been partly financed by a lump sum (50 percent lump sum) and a variable sum dependent on production of DRG (50 percent ABF).

From the beginning of 2017 Norwegian hospitals will be required to report patient-level cost data (Cost Per Patient, Kostnad Per Pasient (KPP)) (Helsedirektoratet 2012). In this model a patient stay in hospital will be considered a work process

consisting of several sub processes. Each sub process encompasses a medical service that can be unambiguously connected to the patient, and the model also requires that the use of drugs and other goods can be attached to the patient. For a surgery, as an example, it is recommended to link duration of surgery and number of personal to the diagnostic code to estimate the cost. The cost per patient can then be calculated as the sum of sub processes. By introducing patient-level cost data the quality and precision of reported activity and cost data is expected to be improved. It will become easier to uncover high complication rates or other sources of inefficiency (high cost), as well as efficiency and low complication rates (low costs). Collected data can help establish average costs for budgeting processes, and help compare performance of hospitals when changes in production or new functions are planned. At a national level, reported data on cost per patient can improve the accuracy of the DRG-system (Helsedirektoratet 2012).

To summarize, this chapter described the institutional framework that Norwegian Health Care organizations operate within. The organizational structure, goals and financing mechanism of the Norwegian health care system, and the RHA's and their health trusts, were described first. Discussions on the background and expected future development of reimbursement and costing methods in Norwegian hospitals were provided in the last part of the chapter.

3. Theory

In the first section of this chapter different costing methods are presented. In the second section the general function and purposes of transfer pricing is discussed, and potential advantages and disadvantages of transfer pricing identified. The last section provides a review of available methods for transfer pricing.

3.1 Different Costing Methods; Top-down, Bottom-up, Gross- and Micro-costing

The DRG-system described above has a top-down design as data are collected from an aggregate source by reporting on a regular basis, and the average sum becomes the reimbursements. The alternative is bottom-up reporting which is achieved when resource use is reported at the patient level as patient specific unit cost. It can also be helpful to separate between gross-costing at an aggregate level (e.g. inpatient days only) and micro-costing (all relevant cost at the most detailed level).

It has been studied whether top-down or bottom-up costing methods should be applied. One study concludes that bottom-up costing should be considered for technologies with “a large component of staff input or overheads, significant sharing of staff or facilities between technologies or patient groups and health care costing systems which do not routinely allocate cost to the intervention level” (Wordsworth et al. 2005).

A second study separates between gross-costing and micro-costing, which both can be applied in a top-down and bottom-up way. The conclusion from this study was that reliable cost estimates are likely to result if bottom-up micro-costing is applied to costs with a great impact on total costs (e.g. labor, inpatient stay) (Tan et al. 2009).

Last, a third study concludes that micro costing should be used for cases with a high cost variation (Swindle et al. 1999).

If reimbursement in the DRG-system represents actual costs of treatment or not, have been researched (Skeie et al. 2002) and debated in Norway (Mishra et al.). A report from the Norwegian Directorate of Health concluded that the cost of producing a DRG increased more than the actual reimbursement of a DRG, but that this was

covered by increases in the lump sum allocated to the health trusts (Helsedirektoratet 2011).

To summarize, this literature review recommends bottom-up costing as the preferred method of costing in situations where costs have a high impact on total costs (e.g. labor, technology), where there is a high input of overheads or significant sharing of staff or facilities, and when a high cost variation exists. It is noticed that many of these characteristics are recognized in Norwegian hospitals.

3.2 General Function, Advantages and Disadvantages of Transfer Pricing

After reviewing recent and future development of costing systems in Norwegian hospitals in chapter 2, and discussing differences between “top-down”, “bottom-up”, gross- and micro-costing above, this sections turns to a discussion of the general function, advantages and disadvantages of transfer pricing.

3.2.1 The General Function of Transfer Pricing

Decentralized or divisional structures develops when an organization reaches a certain size or stage in its life cycle (Heflebower 1960; Mintzberg 1989). Decentralization becomes a natural solution at the time the enterprise is considered a group of teams bound together by the top management and common objectives (Heflebower 1960), more than common products. As the length of the line of communication and the number of executives involved increases, the efficiency of the organization and it’s acting in the external market can become affected. Intuitively, moving decisions closer to the source of primary information by divisionalization becomes a natural option (Heflebower 1960). This gives top leadership more time to do other tasks, and can also serve to improve training and recruitment of future leaders. Divisions become “quasi-firms” as they are not fully autonomous, but required to take guidance and decision of upper management into consideration.

In decentralized organization divisional leaders sometimes maximize divisional profits at the cost of the organizations total profit. A non-existing or low transfer price may result in increased production of one division at the cost of the company’s overall interest. Use of transfer prices can make divisional leaders aware of the externalities

they evoke in profit maximization. This is referred to as improved goal congruence (Young 2008) or as the coordination function (Schuster 2015) of transfer prices.

The subject of pricing services and products that are purchased or sold within a company mostly concern companies with a decentralized structure where division are classified as profit or cost centers. Without a mechanism for transfer pricing the manager of the production center will be in control of his divisions production and resulting profit, while the manager of the cost center will not have this control, and experience revenues that are independent of production.

3.2.2 Advantages of Transfer Pricing

Transfer pricing can be considered to serve five sets of purposes (McAulay, Tomkins 1992; Schuster 2015). These purposes are presented as the five arguments of transfer pricing.

- **The functional argument of transfer pricing** – transfer pricing becomes necessary to measure profit in an organization with profit centers responsible for costs and revenues.
- **The economic arguments of transfer pricing** – the importance of allocating resources efficiently and avoiding internal market failure.
- **The organizational argument of transfer pricing** – using transfer pricing to improve integration and differentiation within the organization.
- **The strategic argument of transfer pricing** – the reciprocal relationship between accounting mechanisms and strategy which can both influence each other.
- **The evaluational argument of transfer pricing** – transfer prices can, together with budget and profit measures, be seen as an instrument to control divisional leaders.

Below, potential advantages and disadvantages of transfer pricing will be discussed for each of the five arguments presented.

Functional Argument of Transfer Pricing

In theory, transfer pricing is a functional necessity as any company that wish to evaluate true divisional profit will need to establish transfer prices (Heflebower 1960).

In real life, the existence of decentralized organizations operating without transfer pricing systems may balance or contradict this theoretical assumption.

For completeness, it should be mentioned that transfer pricing is a functional necessity for multinational companies in relation to taxation of goods and services. Speculation in tax minimization or disadvantages of double taxation can emerge if transfer prices are not well regulated. This aspect of transfer pricing will not be investigated further as it is of less relevance to hospitals, though it is a highly researched topic in business literature, and regulated among members of the Organization for Economic Co-operation and Development (OECD) by The OECD Transfer Pricing Guideline (Organization for Economic Co-operation and Development 2010).

Economic Argument of Transfer Pricing

As discussed above, a low transfer price may result in increased production, and divisional interests of profit maximization taking precedence over a company's overall interest. Vining presents a framework that enables discussions of the internal firm inefficiency resulting from this, and separates between firm inefficiency resulting from Internal Market Failure (IMF) at the level of individual employee transactions, and inefficiency resulting from Internal Governance Failure (IGF) at the managerial level (Vining 2003). Vining considers firm inefficiency analogous to other kinds of market failures, as there, theoretically, should be no difference between firm inefficiency due to internal market failure and market failure observed in normal markets.

- ## Internal Market Failure (IMF)

IMF results from (a) a failure to supply internal public goods, (b) oversupply or undersupply of internal goods (with negative and positive externalities, respectively), (c) internal information asymmetry, (d) internal monopoly supply and from (e) uncertainty and risk born by organizational members.

a) Firm Inefficiency from Failure in Supply of Internal Public Goods

A public good is both non-rivalrous and non-excludable. An organizational development intervention can be non-rivalrous as all employees may benefit from changes to the organization without reducing the benefit of other employees. An example of market failure exists if the departments expressed attitude (marginal

benefit) to a project is more positive (negative) when the amount of resources (marginal costs) the department need to allocate to the project is lower (higher).

A refurbishment of the workplace is non-excludable as there is no easy way to exclude employees benefiting from it. However, when the use of a service is rivalrous and the service is provided in a non-excludable way (e.g. for free) market failure develops. In economic terms; for consumption where marginal cost exceeds marginal benefit, the consumer surplus will be reduced at the cost of the organization.

Following the framework of non-rivalrous/rivalrous and non-excludable/excludable, Vining describes the four traditional groups of public goods for which internal market failure may exist.

- Rivalry, excludability: goods or service sharing characteristics with private goods. Should be efficient if functioning as a perfect market, but inefficiently if a rivalrous good is provided in a non-excludable way as described above.
- Non-rivalry, non-excludability: an impressing achievements of a person that improves the reputation of the organization and benefits all employees. Non-rivalry and non-excludable goods are likely to be undersupplied.
- Non-rivalry, excludability: in knowledge-intensive organizations some colleagues may be excluded from learning, even though knowledge in non-rivalry. When this is the case knowledge is underutilized and inefficiency results.
- Rivalry, non-excludability: these are goods that are rivalry in character, but where exclusion is very difficult. Secretarial functions or technical support serve as examples.

b) Firm Inefficiency from Oversupply or Undersupply of Internal Goods

An internal externality occurs when a transaction affects a third-party. Externalities can be seen both in production and consumption, and be both positive and negative. Market failure results when there is oversupply and internal negative externalities, or undersupply and internal positive externalities.

c) Firm Inefficiency from Internal Information Asymmetry

Arises when employees consider it too costly to provide efficiency-providing knowledge to executives or colleagues, or when employees withhold or distort information.

d) Firm Inefficiency from Internal Monopoly Supply

If only one employees or team can supply a service monopoly power will develop. In this situation supply will fall and prices will be higher than marginal cost.

e) Firm Inefficiency from Uncertainty and Risk Born by Organizational Members

If payment or promotion depends on productivity and results, employees may hesitate to involve in innovative initiatives that carries a risk of falling productivity and worsening results if unsuccessful.

- ## Internal Governance Failure (IGF)

Vining separates between IMF resulting from individual employee transactions, and internal governance failures (IGF) resulting from managerial action. Vining considers IGF to be the result of direct self-interest or indirect collusion with internal interest groups; in both instances achieving private managerial goals such as personal power or compensation causes IGF. IGF causes market failure by the same mechanism as described for IMF, but Vining argues that distorted internal prices or rewards for specific activities is the most prevalent cause of IGF.

Vining emphasizes that it is difficult to distinguish between IMF and IGF, but that it is important to identify which failure causes market failure as corrective managerial action can improve IMF, but cause IGF.

Organizational Argument of Transfer Pricing

The organizational (or behavioral) argument of transfer pricing attains its relevance on the basis of research suggesting that the most successful firms are those that achieve the best balance between differentiation and integration (Lawrence, Lorsch 1986). It is also indicated that only those firm who achieve both differentiation and integration can be successful (David J. H. Watson, John V. Baumler 1975).

Watson and Baumler argues “that the transfer pricing mechanism enhances differentiation” (David J. H. Watson, John V. Baumler 1975) as it “helps separating and pinpointing responsibility for different aspects of the firms functioning”.

Second, they argue that the transfer pricing mechanism also can be used to “(…) facilitate organizational integration”, though they acknowledge that “In other cases, integration will be a major organizational problem” (David J. H. Watson, John V. Baumler 1975). Regarding the organizational argument, it should be noticed that the task of integration is considered to becomes more difficult as differentiation increases.

Strategic Argument of Transfer Pricing

In some aspects the work and views on the relationship between strategic arguments and transfer pricing relates to organizational arguments discussed above. It is argued that what can be accomplished by a transfer pricing method depends on the organization structure (Spicer 1988), and this direction involves a deeper understanding of the organizational context in which the firms and the transfer pricing mechanism operates. While traditional economical models focus on sub goals and global goals of profit as main organizational goals, the direction of strategic arguments acknowledges that an organizations mandate, history, strategy or operational goals may be absolute and superior to goals of profit.

Evaluational Argument of Transfer Pricing

Along with budget and profit measures transfer prices can also serve as an instrument to control divisional leaders. By using transfer pricing the true profit of a division is revealed and made available for managers when performing budget planning and strategic activities. Choosing correct transfer prices can help align production to the company’s strategy.

3.2.3 Disadvantages of Transfer Pricing

Potential disadvantages of transfer pricing are categorized into the same five sets of arguments presented when discussing advantages of transfer pricing above.

Costs of designing and operating a transfer pricing system is the most obvious problem at the functional level of the organization. In addition, conflicts may arise if a

transfer price is not perceived as fair. Especially, a system of negotiated transfer prices will provide opportunities for discussions and be prone to conflict.

Regarding economic arguments, it may be impossible to design an internal market that mimics an external market as there are few providers in an internal market. In addition, if the transfer pricing mechanism depends on intervention from top management, there is not an invisible hand at work, and by economic reasoning full economic efficiency cannot be achieved. On the other hand, in should be noticed that lower marketing costs, improved information and lower profits from transactions are potential advantages of internal to external markets.

In the case of organizational arguments wrong transfer pricing, together with asymmetrical distributed information, can play a greater role in real life than expected from models on internal pricing (Schuster 2015). The result can be accelerated and uncontrolled divisional differentiation.

Regarding the strategic argument of transfer pricing conflicting objectives may arise. If a change to the transfer price makes the divisions change production to maximize profit at the price of the organizations strategic goal, there is a conflict between transfer pricing and the strategic plan. Strategic goals may be undermined by a high transfer price that induce supply, and lowers supply of other goods and services.

Last, conflicting objectives may also occur for the evaluation argument. If a transfer price is set to high, it may distort accounting data used in budget planning when allocating resources to that same division (Schuster 2015).

Table 3.1. summarizes this review of potential advantages and disadvantages of transfer pricing. A transfer pricing system should only be established if advantages outweigh disadvantages, and in theory, advantages must outweigh disadvantages of the internal market to defend the existence of divisional organizations over independent companies.

As the developed framework is deduced from general literature on transfer pricing, it may be criticized for being too general and not sufficiently adjusted to the research question it aims to answer. Similarly, it can also be criticized that the framework is derived from general economic research, and therefor may be more suitable for

answering research questions concerning businesses in the private sector, than research questions concerning publicly provided services of hospitals.

As an example, chapter 2.2 describes numerous goals of the Norwegian Health Care system that do not correspond very well to the functional arguments exclusive focus on profit. In fact, goals of the Norwegian health care system (safe service, good quality, equal opportunities, accessibility, efficiency and short waiting lists) may be closer associated or overlapping with other arguments presented by the framework. Goals of quality, safety and efficiency are related to the organizational argument where differentiation is considered to improve quality. Goals of equal opportunities, accessibility and short waiting lists are connected to the strategical argument.

However, as discussed in depth in chapter four, it was expected to be a distance between theoretical modelling on transfer pricing in literature, and the knowledge and experiences with transfer pricing in the hospitals investigated in the study. First, it was considered that a framework too theoretical and intricate would not be able to answer the more practical research question asked. Second, it was considered that a more unstructured framework, disconnected from theory, would make it more difficult to explore and link the knowledge and experiences of interview objects with the theoretical framework.

By developing a categorical, but explanatory and understandable framework, it was hoped that relevant information could be derived from all investigated organizations independently of interview objects previous knowledge or experience with transfer pricing.

To conclude, the theoretical framework on transfer pricing can be explained and understood without too much effort (table 3.1.). However, some of the frameworks functionality may come at the price of unnatural categorization and rigidity.

Arguments	Advantages	Disadvantages
Functional	- ability to estimate true divisional profit (- Taxation of goods and services in multinational companies)	- cost of designing and operating - conflict due to transfer price and negotiations
Economic	- firm inefficiency due to internal market failure • Failure in supply • Over/undersupply and negative/positive ext. • Internal information asymmetry • Internal monopoly supply • (Inefficiency from uncertainty and risk)	- difficulties in designing a well-functioning internal market - increased inefficiency from managerial intervention and no invisible hand at work
Organizational	- enhanced differentiation and quality - enhanced integration	- reduced or uncontrolled differentiation due to transfer price
Strategical	- transfer prices to achieve the company's strategic and operational goal	- production deviating from strategy due to transfer price
Evaluational	- use of transfer prices to control divisional leaders and production	- Distortion of accounting and budgeting data due to transfer price

Table 3.1. Advantages and disadvantages in the use of transfer pricing.

3.3 Methods of Transfer Pricing

This section presents literature findings on the most commonly used transfer pricing methods in divisional organizations.

It should be emphasized that the sets of arguments of transfer pricing described above hold two different types of characteristic. Arguments regarding function and economics are quantitative, while arguments of organization, strategy and evaluation are qualitative. Quantitative research on transfer prices often make assumptions regarding exogenous conditions, while qualitative studies acknowledge the need for a wider perspective on exogenous factors influencing transfer pricing mechanisms.

The observed tendency of mathematical quantitative models to fall short in solving the problem of transfer prices, and the development of qualitative studies with a number of exogenous variables, corresponds to the persistent problem of making transfer pricing work in practice. Vancil (Bettis 1980) has been quoted in expressing his frustration with transfer pricing, saying "…the issue remains a perennial puzzle for academics, while practitioners continue to cope. I wish the best of good fortune to the next researcher to tackle this problem".

In this section the perspective is not solely quantitative, nor qualitative. Instead, a short description of the relevant transfer pricing method is provided before a more pragmatic view on the potential benefits and drawbacks of the method is presented. This perspective was chosen to help facilitate later interviews of professionals working in the field, and was also considered needed to delineate the thesis work.

The theoretical framework on transfer pricing presented here is highly influenced by the books of Schuster (Schuster 2015) and Young (Young 2008), and the review article on contemporary transfer pricing by McAulay and Tompkins (McAulay, Tomkins 1992).

A transfer price is a value placed on the goods or services which are traded between divisions of an organization (McAulay, Tomkins 1992). The different methods of transfer pricing available are the three groups of market-based, cost-based and negotiated transfer prices. It should be noticed that these three methods of transfer pricing are not mutually exclusive. As an example, a negotiated price will to some degree be influenced by knowledge of both cost and market price.

3.3.1 Market-based Transfer Prices

Transfer Prices Based on Intermediate Market Price

Investigation of transfer pricing by modelling (Hirshleifer 1956) identifies intermediate market price as the optimal transfer price resulting in the highest global profit for the company. By intuition, we can imagine a company where division B buys a good or service from division A or in the free market. If the market price is x, we can easily understand that division A would prefer selling its goods in the intermediate market if market price is higher than x, and that division B would prefer buying in the intermediate market if division A sets the price above x. We see that market price helps both divisions maximize profit and the resulting global profit of the company.

However, the example described above corresponds to a perfect market and requires conditions that are seldom fulfilled in practice. As emphasized by Schuster there must be a fully functioning market for the product and a situation where market price is not influenced by transactions of the division or by volume or discounts (cut-price offers to establish relationship with customer) (Schuster 2015).

In practice, market-based prices are often considered attractive as it is considered an objective measure that is not affected by asymmetric information or other factors. A functioning market is of course a prerequisite to define the given market price. If there's no given market price, or it's not an option for the company to allow participation in the external market, purchase orders may be used to establish market price. Purchase orders risks to identify the wrong price if low prices are offered to win the contract, and market price may also be affected by the organizations order due to the volume of the order and economics of scale.

If there are synergies in the organization, market price may be too high and limit synergies. A high number of transactions will be more likely to have an impact on the market prices if the market is imperfect, and therefor market price is probably better suited for goods or services of low volume.

Transfer Prices Based on Modified Market Price

If the problems described for market price above are considered significant, a solution can be to establish a modified market price. This could be to use the

marginal price of the supplying division or the marginal cost of the buying division as transfer price. The costs of selling the good or service in the external market (e.g. marketing, transportation) is subtracted from the market price of the intermediate product, and the cost of selling the product to a different division added, so that the resulting transfer price is the marginal price of the supplying division (Schuster 2015). Alternatively, by adding the omitted procurement cost of the buying division, the resulting transfer price will correspond to the marginal cost of the buying division (Schuster 2015).

In practice, another option could be to use a modified market price that allows the supplying and buying division to share the benefits of omitted costs in sales and procurement. In practice, using the marginal price of the supplying division results “in a relatively low transfer price with which the buying division gains a rather large leeway for price setting, which typically is favorable from the perspective of the company as a whole” (Schuster 2015).

3.3.2 Cost-based Transfer Prices

Transfer prices based on actual costs or standard costs (budgeted cost)

Deriving transfer price from actual cost gives the supplying division full compensation of its costs, but gives risks to the buying division if full costs are not known at time of transfer. If standard costs (budgeted cost) are used, this risk (cost variance) is shifted to the supplying division and may provide the division with an incentive for efficiency (Schuster 2015).

In theory, the purchaser will be able to control the cost variance if it relates to volume of production, and this may be an argument for choosing actual costs instead of standard costs. It is a disadvantage for the purchasing division that full cost is not known at the time of purchase as it may not be able to fully compare alternative ways of production. Asymmetrical information is likely as the supplying division have more knowledge of the cost function, and a standard cost set by central management may be wrong and introduce market failure.

Transfer Prices Based on Marginal Cost

Models shows that using marginal cost can result in profit maximization under certain conditions (Hirshleifer 1956).

In practice marginal cost is seldom used as a transfer price (Schuster 2015). The most obvious problems with this method is the supplier and buyers' possibility of affecting the marginal price. The buying division becomes a monopolistic customer as its volume of production will affect price paid to the selling division and both divisions profit (and for the supplying division a deficit can result). The selling division can be able to manipulate its cost function, especially if it produces multiple products. The selling division may also delay investments in new technologies to avoid changing the relationship between fixed and variable costs (Schuster 2015). Marginal cost relates to the short term function, and does not recognize divisions need for planning, development and investments in the long run.

Transfer Prices Based on Full Cost

In this system supplying division are fully compensated on average, and this results in a situation where the supplying division will not experience deficits or gain profits (Schuster 2015). The full cost reimbursement can be calculated on the basis of variable costs alone, or include overhead costs as well. Sometimes a combination system is established where full cost reimbursement corresponds to market price where there is one, and full costs are reimbursed where no market price exists.

The advantage of full-cost based transfer prices is that it is easy to operate from available data on cost accounting. As described for other transfer pricing methods above, volume of production can affect the cost function and full-cost transfer price as well.

If the transfer price only includes variable costs, goods and services may appear less expensive than they are, while inclusion of fixed cost may induce cost awareness (Schuster 2015).

Alternative Cost-based Methods Used in Transfer Pricing

- **Multi-Tire Transfer Pricing**

This solution represents a two-part tariff where the buying division is charged a single amount each period, and a marginal cost for purchased products. The single amount can be seen as a fee for reserving the supplying divisions capacity in the given period, or as covering fixed costs of the supplying division. Where there are several divisions each division would cover its share of the single amount depending on its proportion of use. This method is seldom used (Schuster 2015).

- **Full Cost Plus in Transfer pricing**

When full cost plus is used a profit is allowed in addition to covering the supplying divisions costs. In the supplying divisions perspective this would seem natural, especially if the division also sells its products to external customers. In this situation profit and organizational synergies are shifted from the buying division to the supplying division. The added profit can be estimated from profits in the external market, as an interest or percentage of full cost, or from negotiations between divisions (Schuster 2015). The profit may lead the supplying division to produce goods and services that yields a high divisional return, but not global profit.

- **Dual Transfer Pricing**

In this method different transfer prices are used for the supplying and buying division. The selling division receives a compensation for its products while the buying division pays a transfer price. The difference between the transfer prices becomes a loss balance centrally, and this makes comparison of division by profit more difficult and dual transfer pricing a seldom used method (Schuster 2015).

3.3.3 Negotiated Transfer Prices

Negotiating transfer prices enables divisions to be autonomous. When autonomy is increased problems of asymmetric information is less likely to occur, but reduced cooperation and divisional profit maximization at the cost of overall profit can result. If divisions are to agree on transfer prices from negotiations, it must be decided

whether discussion should be on an ad hoc basis, or if a general rule should be developed to handle individual transfer pricing problems.

In negotiations there must be a possibility of profit for both participants. The negotiated agreement must provide an advantage compared to the best alternative to a negotiated agreement (BATMA), and this demands that there exists a bargaining range or zone of potential agreement (ZOPA) where both participants can achieve a profit (Schuster 2015).

The first and most commonly recognized problem of negotiating transfer prices is that it's time consuming, and that negotiations often results in conflict. Conflict can be avoided if divisional or top management have a plan for handling emerging conflicts. A way to reduce number of conflicts could be to instruct divisional leaders to negotiate prices close to the middle of the ZOPA, but here an unknown range of the ZOPA resulting from asymmetrical information could be a problem (Schuster 2015). Second, if a well-functioning external market does not exist, power is shifted and negotiation made impossible if refusal and external purchase is not an option. A marked with monopoly power can result. Third, external offers may be limited if a purchase only happens occasionally (Schuster 2015).

Independent of the selected mechanism, simplicity and acceptability is advised. It needs to be decided who determines the price, what duration the transfer price have, and under which circumstances renegotiation can be called for.

To summarize, this literature review finds that both the intermediate market price and marginal cost, under certain conditions, will be the optimal choice of transfer price that reduces internal firm inefficiency. From a more realistic viewpoint, we observe that perfect markets seldom exist, and therefor market price may not be the best solution to transfer pricing problems. In the case of marginal cost, literature described it as a complicated measure seldom used in real life. Among other cost based methods actual cost or standard cost were described as commonly used, and in addition full cost and three seldom used cost-based methods were discussed. In the end, use of negotiated transfer prices were reviewed.

Table 3.2. presents and summarize the most relevant characteristics, advantages and disadvantages of the available transfer pricing methods.

Method	Characteristics	Advantages	Disadvantages
Market based • Intermediate market price (or modified market price adjusted for savings in pro-curement/sales)	the price of the intermediate good in the market	- close to optimal in theory - not affected by asym information - possibility of profit when modified price	- limits exploitation of organizational synergies. More in situations with many transactions
Cost based • Actual costs	supplying division fully compensated	- buying division not able to control price if volume related	- no incentive to supplying division - risk to buying division if price unknown
• Standard costs	supplying division compensated by standard/budgeted costs	- incentive for supplying division	- purchasing division able to control cost variance if related to volume
• Marginal costs	marginal cost is transfer price	- in theory optimal price under certain conditions	- manipulation of marginal cost by buying and supplying division
• Full cost	full compensation on average (variable costs +/- overheads)	- easy to operate from data on cost accounting - profit or deficit not possible for supplying division	- profit or deficit not possible for supplying division - price affected if volume affects cost function (as above)

• Alternative cost based methods - Multi-tire - Full cost plus - Dual transfer price	single amount each period, marginal cost for purchases a profit is allowed in addition to covering cost of supplying division different prices used for selling and buying division		
Negotiated • Ad hoc • By general rule	transfer prices are negotiated	- autonomy - less information asymmetry	- time consuming - conflict - divisional profit at the cost of overall profit

Table 3.2. Most relevant characteristics, advantages and disadvantages of the available methods in transfer pricing.

4 Method

This chapter reviews the methodological approach used to investigate the thesis research questions. In the first section choice of research design is explained. In the second section, methods of data collection are described before the last section provides a discussion of the analysis and interpretation of the collected data.

4.1 Research Design

In research theory, qualitative and quantitative methods are often described as two opposing research paradigms were qualitative methods are explained as offering understanding, and quantitative methods as offering explanation. A qualitative method is used to approach the research question of this thesis, but the research question could have been approached from a quantitative perspective as well. The choice of a qualitative approach is affected by the research question, collected empirical data from literature reviews and the researchers own theoretical background with a study specialization in Management of Health Care Institutions.

Regarding the role of the research question, a qualitative research design is often considered the appropriate method for explorative and empirically based research. As transfer pricing is used in some Norwegian hospitals, but research is scarce, this supports the choice of method. Instead of investigating quantitative sizes and effects of transfer pricing, the thesis aims to investigate the need for, and potential pros and cons of transfer pricing systems, based on the knowledge, experience and opinions of the objects interviewed.

4.2 Data Collection

The thesis work is based on data collected from both primary and secondary sources. Secondary data collected from reviews of literature was essential for establishing a theoretical framework. The established theoretical framework helped develop semi-structured interviews used to collect primary data.

4.2.1 Literature Review

A literature review was performed during the early phase of research. Web-based searches were performed by the help of Google Scholar, PubMed and the electronic library services of the University of Oslo (UiO) and the University of Stavanger (UiS).

Applied search words such as “transfer pricing” and “internal pricing” provided a high number of returns. Articles discussing use of transfer pricing in hospitals and other businesses had usually been performed under significantly different conditions, and no empirical articles of relevance were identified. As a consequence, it was decided to establish a general theoretical framework. First, literature offering a broad and general view on theoretical perspectives of transfer pricing was reviewed. Second, literature discussing practical application of transfer pricing in a general theoretical perspective was reviewed.

4.2.2 Semi-Structured Interview

Qualitative methods are basically made up of the four methods of observation, text, transcripts (of recordings) and interviews (Silverman 1993). In this study semi-structured interviews are used. At the extremes, interviews can be non-structured, resembling a conversation at one end, or completely structured, resembling a questionnaire at the other end. The semi-structured approach is positioned in the middle of these extremes, and is the most commonly used research interview (Thagaard 2013). When using semi-structured interviews, the questions the researcher wants to investigate are set in advance, but the researcher decides the order of the questions during the interview. This way the semi-structured interview permits freedom, so that the interview object is allowed to elaborate, at the same time as it ensures that all topics of importance will be discussed during the interview. Semi-structured interviews offer the opportunity to adjust interview questions depending on the interview object. This is useful when interview objects have different professional backgrounds, experiences and theoretical knowledge about the topic investigated. In addition, it is an advantage of semi-structured interviews that comparison of answers is possible during data analysis.

- **Selection and Recruitment of Interview Objects**

The primary research question of the thesis is to investigate if and how services should be priced in a situation where increased production in one division leads to increased use of services provided by a second division. As previous research on the topic is scarce, it was natural to select interview objects from several hospitals to ensure representation of a sufficiently number of opinions on the topic. In addition, it was known that some of the selected hospitals had more empirical knowledge and experience on transfer pricing than others. The three Hospital Trusts selected for the research were all part of the same Regional Health Authority, so that the possibility of any major differences in the Trusts' financing model was minimized.

The study aimed to collect interview data from one Chief Financial Officer (CFO), one divisional leader and one controller in each Hospital Trust. The primary contact person in Hospital A provided information regarding primary contacts and interview objects in Hospital B and Hospital C. Contact was established by phone, and for each hospital the primary contact suggested further interview objects. This way of recruitment is often referred to as the snowball sampling method. Some divisional leaders and controllers declined to be interview as they did not feel they had the necessary competence on the subject, but were helpful establishing contact with other potential interview objects. Thus, except for the interviewed CFOs, the selected interview objects were largely strategically recruited. In hospital C, one divisional leader was represented by a controller since the divisional director was not able to attend the interview the day Hospital C was visited.

The topic of transfer pricing can be discussed from an elementary level and up to an advanced level. Few of the interview objects managed to follow the most advanced topics deduced from the theoretical framework, and for less advances questions a pattern in the answers provided were recognized early. There may have been saturation, which by some authors is defined as the point where increasing the sample of interview objects do not result in any new information (Thagaard 2013). However, at least six interview objects were probably needed to recognize and establish the generally held opinion on some of the central topics discussed. All selected interview objects and investigated hospitals were anonymized.

- **Development of Interview Guide**

As described above, topics for the interviews were decided in advance, and an interview guide was developed before interviews took place. The research questions and the theoretical framework of the thesis were actively used to guide the development of the interview guide.

The interview guide covered three topics where interview objects were questioned on their generally held opinion on transfer pricing in the first part, on potential advantages and disadvantages of transfer pricing in the second part, and in the last part questioned on their opinion on the choice and use of possible transfer pricing methods.

Interviews showed that for most interviewed objects questions were of increasing difficulty. Every topic, but not every question, was discussed in every interview. Interview questions were asked in both an open- and close-ended manner, though most questions in the interview guide are presented as closed-ended questions. As interviews were semi-structured elaboration was allowed, especially in situations where the interview object had practical experience with the topic discussed. Interview questions were practiced in advance.

- **Execution of Interviews**

Interviews took place between 21st of April and 13th of May 2016. All interviews took place during working hours in available offices in the relevant hospitals, except one interview that was done by telephone. The interview guide was followed, and all interviews recorded. All interviews lasted from fifty to seventy minutes.

All interview objects were welcoming and showed interest in the subject. Starting the interviews with general and less advances questions helped set the stage for a nice dialogue throughout the interview.

Transcription of interviews was a time consuming process, but allowed repetition and reflection that provided the researcher with new knowledge on accounting and use of transfer pricing systems in hospitals. This improved insight guided later interviews that probably were of a higher quality than first performed interviews. All interviews were transcribed.

4.3 Data Analysis

Direct contact between the researcher and the one who is studied is a characteristic of qualitative methods (Thagaard 2013), and if one aims to understand social phenomena by interviews it becomes important to handle methodological issues relating to this contact. It is the responsibility of the researcher to analyze and translate the phenomena uncovered by the direct contact between researcher and the ones studied. Thus, to be transparent and clarify which approaches were used during collection and interpretation of data becomes crucial for the researcher to achieve results that appear credible and have an impact (Thagaard 2013).

On one extreme, the criteria that a research result is based on, can only be evaluated and defined clearly if every decision made during the work on the research project is documented (Thagaard 2013). However, if qualitative methods are completely formalized at the cost of insight, empathy and social skills, there is a risk that all qualitative data ends up in categories, and in the end resembles a quantitative study (Thagaard 2013). These arguments reflect the balance between flexibility (insight, empathy and social skills) and rigidity (systematic methodology) in qualitative research (Thagaard 2013).

As it is acknowledged that elements of insight, empathy and social skills will help the researcher improve his result in qualitative research, it follows that reflections upon limits and content of the relationship is necessary to minimize the possibility of the researcher and research object affecting each other's behavior. Or as Thagaard notices, it is important in qualitative research to consider the text in the light of the researchers' background, knowledge, influence on the research position and so on (Thagaard 2013). In several interviews it was noticed that interview objects both referred to, and customized answers, to the researches background from work in hospitals. However, judging whether this affects the collected data significantly is not straightforward.

The analytical process is often considered to start at the time the researcher and the interview objects separate. However, it can be argued that it starts earlier. As an example it was discussed above how acquired knowledge from early interviews affected the theoretical perspective and the content and quality of later interviews. For the collected data, all interviews were transcribed, read and structured by topic,

allowing direct comparison of interview objects answers. Frequently discussed elements were registered, hoping to identify central topics of discussion. Commonalities and deviations in opinions held were also registered, hoping to identify central topics of agreement and disagreement, respectively.

The credibility of qualitative research relates to its reliability and validity.

If there's reliability research findings will be replicable. To achieve a high degree of reliability all questions should be asked the same way and in the same situation, and not be affected by coincidences or different people performing the research. This definition of reliability, that the same study should reveal a similar result when repeated, is problematic as it supports the rigidity position in the discussion of the balance between flexibility (insight, empathy and social skills) and rigidity (systematic methodology) presented above. Thus, most of the time, reliability is considered to include a margin of tolerated variability.

Regarding reliability, it has been described how the majority of interviews were conducting under similar conditions, and how interviews after transcription were analyzed in a similar structured way. However, it is difficult to consider if the acquired knowledge from early interviews that affected later interviews, or answers that were clearly customized to the researches background, distorts results beyond a tolerated margin of variability.

The concept of validity relates to whether the answers resulting from a research project actually are the answers to the research questions asked. If there's validity research findings will be accurate. Internal validity refers to whether the findings of a study are valid to the sample investigated or not. A study has external validity when its findings can be generalized to other situations and samples than the one studied. When interviews are used in qualitative research, validity will depend on the ability of the researcher to get access to the knowledge and experience of the interview objects.

Regarding internal validity only literature from scientific publications were used as secondary data when establishing the theoretical framework presented in chapter two. Number of citations were used as a measure of recognition. As noticed above, no research investigating a similar problem under similar conditions were found. Hoping to exclude bias, all empirical literature was excluded, while literature

discussing arguments of transfer pricing and transfer pricing methods in a general approach was preferred. However, weakness in secondary literature is difficult to exclude. The interview guide was followed during all interviews, but questions may have been prepared slightly different to different interview objects.

Regarding external validity there may be generalizability of findings to other Norwegian hospitals that have a divisional structure and similar financing and accounting mechanisms. External validity will be lower for organizations that are not involved in production of health care services. Table 3.1. summarizes the methodological approach of the study.

Method:	**Data:**	**Sample:**
Qualitative study • Semi-structured interview	Primary data • Interview Secondary data • Review of literature	Interview objects • Three CFOs • Two managers and one controller from divisional level • Three controllers

Table 4.1. Methodologic approach of the study

5. Research Data Findings

This chapter presents the data and resulting analysis from the conducted research on transfer pricing. Data findings are reviewed in accordance to the theoretical framework presented in chapter two.

During introductory talks on collaboration and use of transfer pricing systems in hospitals, interview objects often classified transfer pricing as a difficult subject, and acknowledged the gap that seems to separate theory and reality. Among the most experienced interview objects it was claimed that discussions on transfer pricing are occasionally raised in hospitals, and follows an almost cyclical pattern of five to ten years.

Besides discussing transfer pricing methods, interview objects commonly returned to possible organizational measures that could supplement, or possibly eliminate the need for a transfer pricing systems. Discussions revolved around the way upper management involves in decisions on daily operations, frequency of meetings and the resulting contrast between flatter managerial structures and hierarchical structure where divisional leaders and upper management meet less often.

Regarding the financing mechanism of hospitals, it was claimed that the problem the research question raises will be minimized if reimbursement of individual divisions for activity beyond budgeted activity is stopped (figure 2.2.). However, a CFO familiar with reimbursement at the divisional level expressed reluctance to change the model as he considered this financing mechanism a well-functioning incentive.

5.1 Presentation and Analysis of Data on The Different Arguments of Transfer Pricing

The Functional Argument of transfer pricing

Following the theoretical framework developed in chapter 3, the functional argument for transfer pricing is to enable organizations to estimate true divisional profit. At the other hand, economic costs, increased bureaucracy and potential of conflicts balances this functional argument.

The functional advantage of transfer pricing seems to be of less relevance in all hospitals investigated, as measurement of profit plays a minor role in hospitals compared to traditional businesses.

> *"As we use block grant financing profit is not of relevance to us (…) What we report is budget variance. Variable income represents a small part of divisions income since most of their income comes as a fixed block grant. You don't experience big variations in income in a hospital, but rather a steady increase, and not variations like in other businesses such as oil and gas. Therefore, we have arrived at a solution that tells something about performance this year. And, if you follow the development over time, you can study how they manage, and how they gradually improve economically".*

Questioned on whether the budget variance of an organization will be correct without transfer pricing, one CFO answered:

> *"It's precision (budget variance) is acceptable. But, you can't just measure budget variance in a hospital. There are many parameters that are just as important as economic parameters. And, that is something we have made very clear; when it comes to financial management it's just not economics, but just as much activity and quality that has to be included, and (…) we shall not maximize profit"*

One controllers experience with transfer pricing in a laboratory department balanced the above statement, noting

> *"Before (transfer pricing), nobody noticed changes before after half a year… too late. You could start taking out what you wanted without giving us the time to prepare for delivering, or having costs covered. That means, that somebody else in practice is deciding your result, that's a disadvantage".*

A CFO provided another example:

> *"Yes, you can inflict deficits to other divisions. When there is sick leave in the division of medical services that provides anesthesia and surgical nurses for the surgical division… If they don't hire extra staff the division will have their budget under control, but the surgical division will not be able to perform*

planned surgery; so the division of medical services will have to hire extra staff and run a deficit"

Regarding the importance of estimating true divisional profit (or budget variance) relative to other performance measures (efficiency, quality) one controller said

"What is the operating profit of a division? It's just a "bottom line" (…), that you earn more or less. But, if you measure results a different way – if you measure that you have been cost efficient when producing goods and services for someone else - you can still have a good result (…) The deficit shows up somewhere, but it is still the organizations common responsibility; it's just a question of how you handle internal cash flows".

While a director of a division did not support this view fully

"Yes, of course improved efficiency and quality matters. But, my impression is, that in the end, our leaders have a strong focus on operating profit"

A CFO also expressed that the operating profit is of importance in the end, especially for hospitals that plan big investments such as building a new hospital.

First, interviews reveal that due to the financing mechanism of hospitals (combination of lump sum and ABF), and the way production is decided by the Document of order, operating profit as management objective becomes less important in hospitals. Second, different interview objects hold different perspectives on divisional budget variance. People at the divisional level may show a higher interest in the ability to control the budget variance, while people at a distance seem to have a wider perspective, ignoring negative budget variance as long as efficiency and quality is high. From interviews leaders (CFOs) seem to argue for a variety of measures in production beside budget variance, but from interviews of divisional leaders and controllers there is a clear impression that there is a strong focus on budget variance in real life. One interview object emphasized that divisional leaders should not be kept responsible for budget variance if they cannot control it, and that divisional managers urge to control these parameters follows naturally from increased focus on economic parameters in hospital later years.

Interviews find that the functional argument of using transfer pricing to achieve improved measures of operating profits (or budget variance) is of less relevance in

hospitals as operating profit is not their only goal or measurement. Most leaders accept this view, but leaders in divisions who experience a lack of control seem to support this view less than those at a distance, and those holding a more theoretical view.

All interviewed objects agreed that implementation of transfer pricing had to be possible without increasing costs or bureaucracy. One CFO expressed that

> *"I do not have an exact number of people that would need to work with this, but it's not a high number, it's not many… before I would not do this"*

The previously controller, who had been involved in establishing transfer pricing for laboratory services, expressed that

> *"(…) it has to be an automated system, that's a prerequisite"*

Throughout interviews there was general agreement that many of the current cost accounting data were insufficient for establishing automated systems of quality, but one interview object held the opinion that it could not be impossible to establish a transfer pricing system as they are common in other businesses in Norway and common in hospitals in other countries. Two Hospital Trusts were about to implement new accounting data systems, both within non-medical support services, with an inbuilt possibility of establishing automated system for transfer pricing at a later point in time.

Overall, there was agreement that current data quality is too low to establish a good system for transfer pricing. Some costs are acceptable in the development and implementation of the system, while the cost of operating the system should be low.

The Economic Argument of Transfer Pricing

When discussing economic inefficiency all interview objects preferred to discuss laboratory tests and radiologic examinations. These goods and services are all provided in a high volume, and delivered in units that are more easy to separate than other goods and services provided between hospital divisions. One interview found that the hospital most experienced with transfer pricing systems had based their implementation of a transfer pricing system, for non-medical goods and services, primarily on an economic argument.

On debating economic inefficiency and transfer pricing most interview objects placed themselves along a continuum from a high trust in economic incentives (theoretical perspective) on one extreme, to a belief in medical practice and culture (empirical perspective) at the other extreme. Some interview objects held a middle position where they did not hold the opinion that transfer prices should reduce demand, but rather raise cost awareness.

For some interview objects this continuum appeared more solid as a dichotomy between those who consider economic incentives (theoretical perspective) to work in health care, and those who believe medical practice and culture (empirical perspective) overrules economic incentives.

To begin, all CFOs believed that some internal firm inefficiency exists. On firm inefficiency in general, without specifying its relation to missing transfer pricing, one CFO expressed

> *"I have no idea (of the percentage). But, we manage to become 2-3 percent more efficient almost every year by increased activity. (…) I'm sure there is potential for increased efficiency in the hospital"*

More related to the topic of firm inefficiency and excess demand, another CFO expressed that

> *"I think it can, at some levels, exist an inefficiency, and overuse of some services. If you consider laboratory test for inpatients which increase all the way. As I see it; there is no mechanism holding laboratory tests back – you just order"*

Two hospitals had for many years observed an increase in the use of laboratory tests (about 10 %) far above the general increase in patients treated (about 1-2 %). One interview object, holding an empirical view, stated

> *"A patient with chest pain; Is it 15 blood tests? Or 30 blood tests? Who sets the standard…? There is no point to use economic incentives to push demand down. Transfer pricing – no point (…) It seems like, with transfer prices, that it is easier to receive an invoice than to be told by a laboratory, or a colleague, that you do too much".*

The two interview objects experienced with use of transfer pricing for laboratory tests had not seen a change in demand after the introduction of transfer pricing. Nor did they observe growth in use of laboratory services that exceeded the overall growth in the production of the hospital. The expressed that

> *"The biggest difference is; no one can do major changes in type or quantity of use without consequences. If it was not for transfer pricing it may not be like that."*

It should be noticed that the discussed differences may be explained by patient variation or other variations between the hospitals, and that the comparison of hospitals above is not based on scientific evidence. As budgets of buying divisions were aligned with their average use of laboratory tests for the last three years when transfer prices were introduced, one may speculate that this adjustment can explain some the observed inelasticity in demand.

The laboratory department's experience with unchanged demand after the introduction of transfer pricing corresponds to the empirical view on transfer pricing presented above, that a higher price does not change demand as demand is guided by quality and patient needs. However, the observed increase in use of laboratory tests in the other hospitals supports the theoretical economic view.

Questioned about difficulties in creating an efficient internal market, one CFO argued that prices could easily be set too high for non-medical goods (e.g. internal rent, internal hiring of vacancies), and that it would be a very serious problem if a transfer price was set too high so that underutilization results, since that is not what one wants to achieve with a transfer prices. A divisional director summarized;

> *"I like to emphasize, again, I believe use of transfer pricing best serves to rise cost awareness. And not to limit use of goods and services".*

One interview object told that a transfer price on internal transportation had resulted in nurses performing more internal transportation. It is plausible that, beyond a threshold, transfer pricing could shift employees away from their primary tasks, and risk reduced quality and increased economic inefficiency. It was also argued that a transfer price that is set too low, risks establishing unreasonable high standards of quality. If transfer pricing makes the buying division demand higher standards of

quality, the supplying divisions situation may become worse than it initially was if increased productions costs are not fully compensated by the transfer price.

Questioned on prerequisites required for creating a well-functioning market of transfer pricing, all responders had opinions. The general held opinion can be reflected with the answer of one CFO:

> "We see, that for transfer pricing to function, it needs to be transparent, with a relationship between what you order and what you get".

One controller regarded certain criteria as mandatory for an internal market with transfer prices to function well

> *"In my opinion it is important that it is (1) for real, that there is (2) a choice and (3) that the risk has been placed (…) In the end (regarding choice) the one who buys and the one who sells needs to be able choose something else. And when It comes to risk, who carries the risk? What if one division increases supply by 20 % and the demand only increases 10 %; who is responsible? Then, we don't take it too serious anyway, that is what I experienced another place, and (regarding being for real) it becomes only numbers flying between divisions, and that is what I call "play money"*

In relation to this, and especially in the question of risk placement, it was discussed whether a reduction in demand would result in an equivalent reduction in resources used by the supplying division, or only less efficiency in the production of that division. One controller described that if the hospital trusts reduced demand for services bought from other trusts, such as highly specialized medical services in other hospitals or the regional pharmaceutical trust, the only result would be a higher unit price for the buying institution the following year.

In relation to risk placement and the transfer pricing system being for real, one interview object argued that the main problems transfer pricing systems face are wear and tear beyond the short term perspective of two to three years. This interview object argued that later budget increases, consciously or unconsciously, are used to replace the previously reduction in demand achieved by implementing transfer pricing.

From a different point of view, the element of risk placement was also acknowledged by personal having real life experience with transfer pricing of laboratory services. This department considered the ability of the supplying division to increase the prices without adjusting the budget of the buying division as one of the surest way to undermine systems of transfer prices. It was emphasized that in a transfer pricing system “real prices will have to be reflected in real budgets”. Regarding the question of placing the risk, the representative of the laboratory department saw control and management of this, as essential.

> *“Our laboratories have also become more efficient, also by the help of the budget process, and this have resulted in declining transfer price. But, of course, there is an obvious risk, if there is no control or management, that you can just do as you want”*

To summarize, our finding from interviews suggest the two opposing views of economic theory on one side, and medical culture and practice guidelines on the other side, as central to the debate on use of transfer pricing for medical goods and services in hospitals. In real life, interview objects seem to hold different theoretical views. Those who have a theoretical approach and believe in economic principles seem willing to adjust their view to the medical culture of the working environment and arrive at the middle position of raising cost awareness. This majority of interviewed objects argues that transfer prices can be used primarily to improve cost awareness, and secondarily, to limit overuse of medical goods or services.

On the opposite, there is a minority holding a strong stance that it should not be the job of accounting measures, but the job of medical professionals to keep the use of medical related goods and services at an adequate level. Those experiences with use of transfer pricing for laboratory tests had not experienced any changes in demand when the system was introduced. All interview objects emphasized the need for transparency in transfer pricing so that the system is easy to understand and not perceived as unfair. One controller argued that the system would have to be real with consequences, provide choice and place risk in a fair way. In relation to this it was proposed that transfer pricing systems only work in the short term perspective, and that incentives are weakened from wear and tear in the long run if managers do nothing to avoid this. The department experienced with transfer pricing also

emphasized the need for control and management of a transfer pricing system, so that the power of the supplying division is limited.

The risk of causing more firm inefficiency as a result of management intervention was recognized form a theoretical perspective, but few of the interviewed objects had made any reflections concerning this possibility in real life. Those supporting use of transfer pricing mainly to raise cost awareness, and only secondarily to limit demand, may hold the view that transfer prices will not be set too high, and therefore, will be less likely to result in more firm inefficiency than from the origin. However, it should be noticed, as discussed above, that some interview objects hold the position that a transfer price that is too low will result in a worse situation for the supplying division.

Questioned on whether internal market failure (IMF) or internal government failure (IGF) causes firm inefficiency there was given examples of both. High use of laboratory and radiologic services was considered to happen at an individual level (IMF), while firm inefficiency may also origin by IGF from decisions at a higher level (e.g. documents of order).

Everyone interviewed recognized potential monopoly situations in the hospital. The most commonly discussed examples were internal food services from the kitchen, and, as already discussed above, purchases from other trusts. Discussing changing the relationship between hospitals divisions, so that they gain monopoly power, lead to hypothetical discussions. No one managed to discuss monopoly power, with or without a transfer pricing system, beyond a theoretical level.

CFOs considered asymmetric information to exist, but they all expressed that as divisions are all strictly controlled the problem is of an acceptable scale. A CFO said that cheating is always possible, but that divisional leaders will need to “act knowingly” if the problem of asymmetrical information should become of a relevant scale.

The Organizational Argument of Transfer Pricing

One CFO expressed concerns of assigning to many roles to a transfer pricing system. He argued that one should be careful not to integrate to many variables into the system, and that when establishing such a system focus should be on the main purpose of the system which for transfer pricing would be to share costs. On the

other hand, as already discussed, a CFO considered that a transparent system may provide buyers to set criteria's that results in improved quality and better services. This CFO also sees an opportunity for improved coordination if data on consumption becomes available for future planning of production. Several of the interviewed CFOs and controllers agree that transfer pricing can be used to create quality improving incentives, but had difficulties judging how the use of transfer pricing would compare to other available incentives (e.g. pay for performance). The possibility of uncontrolled differentiation (e.g. increases in quality or quantity) due to a wrong transfer price is recognized, but CFOs opinion is that accounting data system will reveal such behavior within reasonable time. Those who argue that a too low transfer price risks worsening the supplying divisions situation will find support for their position in the organizational argument of transfer pricing.

The Strategical Argument of Transfer Pricing

There was general agreement that strategic and operational goals can be superior to firm efficiency and thus undermine the use of transfer pricing systems. Except for quality and improved efficiency discussed above, the hospitals role in providing a geographical area with health care services at all times was commonly mentioned as an important strategic goal. Debating whether transfer prices could be used to achieve the company's strategic or operational goal was difficult. Discussions often became identical to debates on the organizational role of transfer prices, and use of transfer price as an incentive, presented above. That a too high transfer prices may result in a change of production deviating from the organizations strategy was seen as unlikely. Several interview object claimed that accounting data would disclose such behavior early, and compared this to the current situation were a high reimbursement (DRG) of some procedures can trigger increased production.

The Evaluational Argument of Transfer Pricing

All interviewed CFOs considered use of transfer prices to be a potential control measure. A transfer pricing system that is able to provide a number of transactions and a corresponding sum of money assigned will provide upper management with data that could be used for control of divisions and future planning. The potential of transfer prices to distort accounting and budgeting data proved to be a difficult subject that the selected interview objects had difficulties discussing in full.

5.2 Presentation and Analysis of Data on the Different Transfer Pricing Methods

Market-based transfer prices

The Health Trust most experience with use of transfer prices used market price for internal rent. Except this, experience with market price as transfer price was scarce.

Discussions on market price as transfer price raised three topics. First, whether it's possible to identify the market price or not. Second, whether it will be right or wrong to use the market price if it is higher than the actual cost of producing the service or good in the hospital, and third, whether it will be right or wrong to use the market price if the quality of the product is different in the market place and the hospital.

First, to identifying the market price will in general be easier for non-medical than for medical goods and services. The health trust experienced with internal rent for floor space used data from the market place in both cases. For office space information from the market space was used. As the hospital trust also rented some of its area used for production of medical services it obtained information that could be used to establish internal rent from market price.

Some departments had experience in calculating a market price for some of their provided medical services. As external laboratory services and laboratory departments in hospitals both provide services for general practitioners, one hospital referred to its experience in calculating "market prices" for laboratory tests. A common discussion arising in such calculations is how to handle overheads costs in the hospital that do not apply to the product directly, but would not exist if it was not for the hospital and its departments.

One CFO's opinion was that it would not be a problem to obtain a market price for goods and services where there is good coverage in the private marked. His opinion was, that for radiology and laboratory services there had to be a market price, and an example were provided from the regional level where the RHA is buying radiology services to its patients in the private market.

Second, regarding concern for a too high market prices compared to actual costs, one CFO expressed that it would be wrong if the Facility Division responsible for food

could earn a profit on food. For locum services supplying nurses and doctors this would be even more clear as hiring extra staff in the market place is expensive for these categories. One CFO expressed

> *"Locum doctors, locum nurses… How much are they per hour? If we choose that level it will cause an incredible amount of turbulence. For staff hiring (the recruitment and temporary staffing office) we have selected a cost-based approach".*

This potential turbulence, or in specific, cultural negative view on hospital divisions or departments earning a profit from the external or internal market, was also apparent when interviewing staff from the laboratory department

> *"(…) research and development, education and training of students. We are not primarily here for selling our laboratory services. It's not our goal to be a company in the commercial market"*

Third, all interview objects question the relevance of the market price if the product, or its quality, is different in the market place and the hospital. A CFO told that for patients referred to the hospital, it was common that work performed by external providers had to be revised either due to differences in technical systems or different standards of quality. For food there is a higher quality regarding patients' nutritional requirements than among most external provides. In the case of laboratory medicine, it was argued that altering the composition of employed nurses and doctors would affect the quality of some of the products. In addition, the role of the different departments in research, education and training discussed above, was also considered to be part of the products quality. One CFO summarized that

> *"It cannot just be a price, there has to be a clearly defined quality as well"*

The introduction of patient level data and cost per patient (KPP) may make it possible to establish a "market price" for services provided by hospitals. By benchmarking hospitals, it may become easier to establish a more correct "market price" for products made in hospitals. But, some of the differences between hospitals and external providers discussed above will exist between hospitals as well. Many of the interview objects hoped that the system, in years, will be able to provide a "market price" for the goods and services produced in the hospital.

Modified market prices was seen as a possibility. Some interview objects reflected on the possibility of creating incentives by the help of modified market prices.

Several interview objects held the opinion that, at least in theory, market price could be established by the help of purchase orders. Again, it was noted that the problem of differences in quality would make it difficult to compare different offers, and one CFO expressed clearly that purchase orders to establish market price would never be an option.

One CFO worried about loss of synergy effects

> *"Yes, I believe so. You lose team spirit and stop pulling together if to many put a price on what they do, especially it it's at a market price"*

The discussion above shows that for some goods and services (hiring of nurses and doctors) a well-functioning market may not exist as prices are very high. In addition, for some services where there exists a nearly competitive market (food) the market price may be above the cost of producing these services in the hospital. Several of the interview objects held a negative view on supplying divisions earning a profit (e.g. facility services) and, though they recognize the possibility of firm inefficiency, seemed more concerned about ethical and cultural objections to the use of a market price as transfer price in health care. The potential loss of synergies due to loss of team spirit was recognized, but no one of the interview objects followed the more theoretic argumentation that market price as transfer price risks exploitation of synergies if demand is reduced, and that this risk is higher for situations with many transactions. All interview objects saw difference in quality as the biggest obstacle in estimating a correct transfer price from the market price.

Cost-based Transfer Prices

- ### Transfer prices based on actual costs or standard costs (budgeted cost)

All interview objects showed an interest in discussing whether using actual costs or standard cost would provide the supplying division with an incentive to improve efficiency or not.

Some of the CFOs stated clearly that the use of actual cost could cause a lack of incentives for the supplying division to keep cost low and the budget under control. It was argued that if actual cost is used, a control mechanism has to be in place. This could be a common understanding of when and how prices are updated, and in addition comparison to other hospitals or market price for benchmarking of the actual cost. Some CFOs considered standard cost as a more optimal solution that would provide an incentive for the supplying division.

As discussed above, the previous controller experienced with transfer pricing for laboratory services, argued that this does not necessarily need to be the case if those managing the department have the correct attitude, focuses on improved efficiency and there is an element of external control from upper management in place. One CFO supported this view, and argued that if a division is always running a deficit when standard cost is used, a negative work culture, that outweigh the possible additional cost of using actual cost, may develop.

The opportunity of the buying division to change demand, so that the cost function and price changes, was only acknowledged at a theoretical level.

Again, the role of asymmetric information, in this case affecting the cost function and the price, was not considered to be of significance as long as misuse of information is not done intentionally.

There is a shared interest on the role patient-level costing (KPP) may play in establishing actual and standard costs. One CFO expressed that, if considering establishing transfer prices, it would be natural to search for a solution in patient-level data.

One controller experience with a pilot project concerning cost per patient held the opinion that the current national standard (KPP) cannot easily be used to establish a transfer price based on cost. In part, this is because the system is constructed to give a good estimate of the cost at a patient level and not at the sub processes that makes up the total costs, and partly because the national standard used today assigns overheads (standby time, teaching and education) to the production costs. One CFO did not agree with this view, and argued that the system they were developing, and planning to implement locally, would be able to identify the cost of sub processes with a high degree of certainty.

To summarize, the main topic of discussion regarding the use of actual price or standard price to establish transfer price, is whether it gives an incentive for the supplying division or not. Questioned directly many interview objects support the traditional economic view that fully compensating actual costs gives the wrong incentive for the supplying division, while staff experienced with transfer pricing argues that this does not necessarily need to be the case if there exist other mechanisms stimulating efficiency.

When it comes to the role of patient-level costing there are expectations that this, in time, will make it possible to establish the cost, and provide a price for all goods and services produced. But, there are different views on the ability of the patient-level costing method to do this. One controller argued that the current national standard, which incorporates overheads, provide data of higher quality at the patient level than at the sub process level. However, all interview objects believed that in time patient-level costing systems will be able to provide quality data at the sub process level as well.

- **Transfer Prices Based on Marginal Cost**

The use of marginal cost as transfer price is an advanced topic. In general, the topic was too difficult to grasp for interview objects without a solid economic background. As described in the theory chapter marginal cost is seldom used, and only one of the interview objects knew of its use in hospitals.

The potential problem of suppliers and buyers affecting the marginal cost was acknowledged as many products made in hospitals show a step cost function where volume increases in production is dependent on investment in technical equipment.

A CFO did not see divisions speculating, by adjusting investment to affect the cost function and resulting marginal cost, as any likely

> *“No, I don’t believe that. They want technical equipment. I don’t believe they think of cost. In the case of technical equipment there are other criteria (e.g. quality)”*

Instead, the same CFO reasoned that a well-functioning transfer pricing system based on marginal cost could be used to demonstrate improved efficiency from investments and changes in production.

A controller, the only one who had observed transfer price based on marginal cost in hospitals, criticized use of marginal cost as transfer price

> *"I have experience internal patient flow (e.g. where patients who belong to one hospital trust receives treatment in another hospital trust) compensated on the margin. Problem is, you don't receive any of the surplus if you use less. In addition, the marginal cost only occurs at the end of the year. We have no option; you cannot change your buying pattern or anything…"*

As described above, it is expected that a transfer price will result in more specific demands, and there exists a fear that a too low symbolic price, or marginal cost used as transfer price, will make the supplying divisions situation worse than it initially was.

There was general agreement that it should be possible to derive marginal costs from data available in a well-functioning cost per patient-system, but interview objects could not answer how much work, resources or time would be needed to develop such a system. It was pointed out that an advanced transfer pricing method that cannot be easily explained will be less welcomed among employees, and more difficult to implement throughout the organization.

To summarize; marginal cost is probably the least likely of the options discussed to be used for establishing transfer price. Again, the role quality plays in hospitals is demonstrated as a CFO does not believe divisions or departments would consider affecting the marginal cost by delaying investments or development. The only interview object experienced with marginal price criticized the solution as there was not any sharing of surplus or benefits to buyers using less (e.g. no risk placement).

- ## Transfer Prices Based on Full Cost

Most interview objects recognize this situation as similar to the current situation were financing of service division are mainly composed of a lump sum, and this made discussion on full cost as transfer price difficult. That the supplying division will not be able to run a surplus, nor a deficit, was generally perceived as a disadvantage. This was, as for the use of actual cost as transfer price above, based on the assumption that this will lead to a lack of incentives for the supplying division and an unsecure situation for the buying divisions as they cannot know what costs will be.

On whether reimbursement of full costs should be based on variable cost alone or also include overhead costs as well, the general opinion was that all overhead costs should not be included in the full cost. One suggestion was to include a small percentage (1-2 %) of overheads to the variable cost, representing overheads close to the product in question. Another suggestion was to exclude overhead costs for sub processes at lower levels before assigning overhead costs at a given level. This system is also considered possible to operate in a patient level costing-system.

- **Alternative Cost-based Methods Used in Transfer Pricing**

  - **Multi-tire Transfer Pricing**

    No one of the interview objects had reflected on the possibility of multi-tire transfer pricing models, but the hospital most experienced with transfer pricing had operated a mechanism with some similar characteristics. In this hospital the department of radiology provided other departments with services for free up to a limit, but for situations of increased production the buying department would have to pay the radiologic department an additional compensation.

  - **Full Cost Plus used in transfer pricing**

    All interview objects considered this a bad alternative, and argued that this method would involve shifting money between budgets. It was noted, that the way divisions are currently managed by lump sum financing and documents of order, such a shift of profit would have to result in corresponding changes regarding the expected production and budget of the buying divisions.

  - **Dual Transfer Pricing**

    Use of dual transfer pricing was a difficult concept to grasp for most interview objects, and it was not possible to deduce a general held opinion on this topic. One hospital had operated a transfer pricing mechanism with similar characteristic for the office of recruitment and temporary staffing. In this system the departments hiring staff through the office of recruitment and temporary staffing would pay a lower rate than what the office itself had paid, and the office was compensated through the budget. This way upper management actively stimulated departments to hire staff through the office of recruitment instead of using the market.

Negotiated transfer prices

Most discussions on the use of negotiated transfer prices were brief. Advantages of increased autonomy and elimination of asymmetric information was not acknowledged. There is a general opinion that as long as there are no real alternatives to negotiations there is no point in negotiating, and this is by many regarded as a monopoly situation. Outsourcing can be used to establish alternative suppliers in negotiations, but it is postulated that outsourcing, if used, should be handled at a higher level than the divisional level. In addition, negotiations are seen as time consuming and as a sources of conflict.

One hospital had experience with negotiating transfer prices in situations where departments were planning extra work (to eliminate waiting lists etc.). Thus, this CFO considered negotiated transfer prices suitable to solve single cases (ad hoc basis), but did not consider there to be any potential benefit from establishing a general rule to help negotiate transfer price on a regular basis.

6 Discussion

This chapter discussed the research question presented in chapter one in light of the research findings presented in chapter five.

6.1 The Need for Transfer Pricing as a Result of the Current Financing Mechanism of Hospitals

Interviews demonstrated that use of transfer pricing is a topic occasionally discussed in most hospitals, but from the recruitment process it was made clear that not all employees in financing and accounting departments are familiar with the subject.

To begin, other methods that could help solve the problem should be noticed. During interviews, it was commonly argued that increased cooperation and dialogue serves as the best alternative solution to the problem. In addition, it was argued that by changing the financing mechanism of hospital divisions the scope of the problem can be reduced.

Regarding cooperation and dialogue it was uncovered that the hospitals practice and organize meetings between upper management and division representatives differently. One hospital had a flatter structure where meetings were more frequent, and involved closer updating of upper management on daily operations. Several interview objects argued that a flatter organizational structure improves collaboration between hospital divisions in production.

Another option, also relating to potential organizational measures, is to change the responsibility of task execution. As an example, it was speculated if the resources related to repeated and unnecessary blood tests would become more evident to ordering doctors if blood for laboratory tests were drawn by nurses working closer to the ordering doctor, and not by laboratory technicians on rounds. Interviews did not uncover whether such measures work or not, though both methods of task execution are already practiced in hospitals.

Regarding the financing mechanism, interview objects occasionally argued that the problem, as presented by the research question in chapter one, and illustrated in figure 2.2., primarily results from the selected method of financing hospital divisions.

It is argued that by centralizing reimbursement for production beyond budgeted activity, as originally intended by the Directorate of Health (Helsedirektoratet 2015b), the problem will be self-limiting. It was also argued that hospitals reducing the ratio of block grant funding to activity based funding in a high productive division initiate a downward spiral where increased production in the high productive division increases demand of goods and services provided by other divisions. As the hospital will need to redistribution and increase the block grant funding of the providing divisions later, this initiates a further reduction of the ratio of block grant funding to activity based funding in the high productive division. The investigated hospital with the lowest ratio of block grant funding to activity based funding, currently practiced a ratio of 15-20 % block grant funding to 80-85 % of activity based funding in one of its divisions.

It is beyond the scope of this thesis to discuss the organizational and financial measures presented above in full detail, but these and other alternative options to transfer pricing should not be ignored. Despite these alternative measures, all interview objects in this study had some experience with transfer pricing.

6.2 Relevant Arguments of Transfer Pricing

From the data obtained by interviews this study concludes which advantageous and disadvantageous arguments of transfer pricing are of relevance when discussing use of transfer pricing in Norwegian hospitals.

Only some interview objects consider the divisional operating profit as wrong, and only a few considers it significantly wrong. In addition, all interview objects see other measures as relevant (quality, improved efficiency). No one of the interview objects considered the hospitals total budget profit or variance to be affected by a lack of transfer pricing. The thesis concludes that the functional argument for a transfer pricing system in hospitals is weak.

All interview objects acknowledge economic arguments as relevant when discussing transfer pricing. Different views are emphasized when discussing economic arguments. Some simply see it as unfair not paying for a service, while other argues that if goods or services are provided for free unnecessary use results. Some focuses on overuse, while others see bad prioritizing as the main problem of nonexistent transfer pricing. It is an interesting finding that no one of the interview objects was

able to estimate a percentage, nor to provide a range, of the economic consequences of these effects in their hospital. The thesis concludes that the economic argument for a transfer pricing system in Norwegian hospitals is valid.

In the case of the organizational argument, many interview objects hold the opinion that transfer pricing will improve quality as they expect improved product specification (e.g. differentiation) to follow the implementation of transfer pricing. As discussed in chapter four, some see evidence of improved patient quality as paramount to ensure that a transfer pricing system is well received among employees. The organizational argument for transfer pricing is considered to be valid, but as quality is already high in hospitals, the strength and impact of the organizational argument becomes difficult to estimate.

The thesis did not manage to explore the strategical argument of transfer pricing sufficiently in the hospitals investigated.

Use of data from a transfer pricing system to improve practice of evaluation and planning was not immediately acknowledged by all interview objects. However, a majority of CFOs and controllers believe data provided by a transfer pricing system will benefit future planning and improve upper management's ability to control divisions. The evaluation argument if of relevance.

Regarding disadvantages of transfer pricing the cost of operating the system was frequently debated among interview objects. No one of the interview objects were able to estimate a cost, but others concluded that it should be possible as similar systems are found in many private businesses and in hospitals in other countries. At this point in time, it is not possible to tell when more automated system for operating transfer pricing systems will be available. The thesis concludes that the cost of operating a transfer pricing system is a functional disadvantage of relevance.

In general, interview objects do not consider arguments of economic disadvantage to be of relevance. A minority of interview objects fear that the use of a low symbolic transfer price (or marginal cost) will result in a worse situation for supplying divisions due to higher demands of quality. not corresponding to the low transfer price paid. The economic disadvantage of transfer pricing is not considered valid, but those discussing use of a low transfer price should reflect upon this, so that they don't increased economic inefficiency by their actions.

All interviews objects considered it possible to identify and handle uncontrolled differentiation if resulting as a consequence of transfer pricing. This topic was mainly discussed in relation to increases in quantity, and not changes in quality. The organizational argument of disadvantage is not considered to be of relevance.

As described above, the thesis did not manage to investigate the strategical argument of disadvantage for transfer pricing in the hospitals sufficiently. Nor did the thesis manage to investigate the evaluational argument of disadvantage for transfer pricing in the hospitals, as this was a difficult concept to grasp for most interview objects. These argument of disadvantage are considered to be of theoretical interest, but not of relevance when discussing implementation of transfer pricing in practice.

The first research finding of this study is that the assessment of whether a transfer pricing system should be introduced or not, depends on the sum of the economical, organizational and evaluational advantages compared to the functional disadvantage of transfer pricing.

This first research finding of the study makes it possible to answer the research question of the study; In theory, implementation of a transfer pricing system is recommended as the sum of the economic, organizational and evaluational arguments are considered to be of significant relevance and impact. However, as the quality of available costing data is currently not sufficiently high, and the cost of operating a transfer pricing system is largely unknown, implementation of transfer pricing is, in practice, not recommended due to the argument of functional disadvantage. At the time the functional disadvantage is sufficiently reduced, it will be recommended to implement transfer pricing.

In hospitals, the introduction of patient-level data and reporting of cost per patient (KPP) may enable implementation of a transfer pricing system if the quality of the reported data becomes sufficiently high, and the cost of operating the system acceptable.

It should be emphasized that the relative weighting of the three relevant advantageous arguments of transfer pricing is largely unknown. However, it is deduced from the thesis work that the economic argument is the argument of most importance and highest impact. This, as findings regarding the economic argument were supported by most interview objects, and represent the most consistent findings

of the study. Though the research work suggest that the economic argument is the one of the three advantageous arguments with the highest impact, it was not able to estimate the magnitude of the economic argument.

Regarding the organizational argument, study findings suggests that proof of improvements in quality may be a necessity for successful implementation of a transfer pricing system. Thus, benefits from economical and evaluational advantages of a transfer pricing system may not be enough if the organizational argument of transfer pricing system shows out to be a sine qua non for successful implementation throughout the organization. In the same way the relative importance of quality in health care eliminates the functional advantage of transfer pricing, it strengthens the role of the organizational argument for transfer pricing.

The evaluational argument of transfer pricing is of relevance, but is considered to play a minor role among the three identified advantageous arguments. This, as the argument is expected to be weak compared to the economic argument, and, as it primarily will benefit upper management, is expected to be of less relevance than the organizational argument.

As the functional disadvantage of operating a transfer pricing system is the only acknowledged disadvantage, it follows directly from the findings of the study that a transfer pricing system will benefit the organization when the cost of operating it is sufficiently reduced.

6.3 The Choice of Transfer Pricing Method

Concerning choice of transfer pricing method, it is a consistent finding that market price is not well-suited as all interview object considers it a problem if divisions have the opportunity of earning a profit. Negotiated prices are, in general, not considered well-suited for establishing transfer prices. Negotiations are expected to result in an unacceptable increase in bureaucracy due to the many transfer prices that would have to be negotiated. The second finding of this thesis is that a cost-based method should be applied in a transfer pricing system.

It can be argued that the recommendation of cost-based transfer price results due to a lack of good alternatives. As the thesis concludes that market price and negotiated

prices are unacceptable, cost-based transfer prices can be seen as the least bad choice.

Actual costs and standard cost are seen as the two available options among the cost-based methods of transfer pricing. In theory, choosing actual costs risks inefficiency in the supplying division, but this may be of less importance in practice. Of course, it cannot be excluded that efficiency will fall in some divisions if actual cost is used, but this effect will depend on the existing level of efficiency, organizational culture and other measures implemented by divisional leaders and upper management.

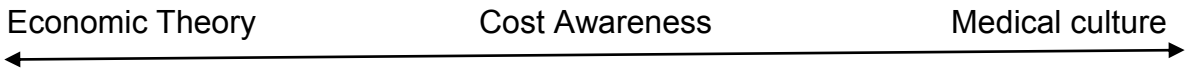
As marginal cost is a more complicated method that requires a level of economic competence to understand, use of it as a transfer price will be difficult. Acceptance and implementation throughout the organization will be more difficult if the selected transfer pricing method cannot be easily understood.

Transfer price based on full cost was an option difficult to discuss in full detail as it strongly resembles todays model with block grant financing. A two-tire system of transfer pricing may be appealing as it is close to the current system, but the study did not manage to evaluate this option.

The conclusion of the thesis is that in a situation where increased production in one division leads to increased use of services provided by a second division, transfer pricing should be implemented. However, a transfer pricing system will not benefit the organization before the functional disadvantage of operating the system is managed. To facilitate implementation and achieve acceptance throughout the organization, actual cost or standard cost is the preferred method of transfer pricing.

Beyond the conclusion to the research question of the thesis, the research work raises two other important questions for discussion. The first question relates to the use of transfer pricing in provision of medical goods and services, the second to the question of how to secure the longevity of the economic incentive.

From interviews, it emerged that opinions on the use of transfer pricing for medical goods and services are placed along a continuum from a strict economic theoretical view at one extreme, to a cost awareness perspective in the middle, and a trust in medical culture at the other extreme. This can be presented as below



It should be noticed that simply using transfer pricing to increase cost awareness, at some point reduces the magnitude and impact of the economic argument. If the impact of the economic argument is reduced, there may no longer be any significant benefit from implementing a transfer pricing system as the functional disadvantage will never be zero. If the economic arguments impact is reduced, the organizational argument may not be strong enough alone as quality is already high and prioritized in hospitals. The evaluation argument may still be valid, but as this mostly benefits hospital managers and not employees at lower levels, implementing a transfer pricing system based on the evaluational argument alone cannot be recommended.

This study postulates that a transfer pricing system cannot be implemented only to raise cost awareness, but need to be fully implemented and improve internal firm efficiency to defend the use of resources needed to implement and operate the system.

As described above, the second important question raised by the thesis work also relates to the economic argument, as it addresses the transfer pricing systems ability to create economic incentives that works both in the short run and the long run. To make the benefit of a transfer pricing system more than transient, it will be fundamental to establish a mechanism that maintains the economic incentive of the system over time. As suggested in chapter four, the most obvious choice may be to establish specifications or earmarking in budgeting, so that money is not moved around in future divisional budgets to compensate past effects of transfer pricing.

Implementation and acceptance throughout the organization may become more difficult if the transfer pricing system also involves increased budget rigidity. However, if a perspective of cost-awareness is prioritized, and maintenance of economic incentives abandoned, it will risk the longevity of the economic argument, and in the end undermine the existence of the transfer pricing system.

An alternative solution may be a two-step implementation were cost awareness is the focus during the first step of implementation (first two to three years), and a more strictly operating system with a budget mechanism is established at a later stage. However, this would require long-term commitment from upper management.

The transfer pricing systems ability to secures the longevity of the economic incentive is considered to be more important than the choice of transfer pricing method.

7 Conclusion

This chapter summarizes the key finding of the thesis. Limitations of the study are discussed, and directions for future research on the topic is suggested.

7.1 Summary of Key Findings

This thesis develops a theoretical framework that identifies five sets of purposes that are presented as five arguments regarding the use of transfer pricing in hospitals. These arguments are the functional, the economical, the organizational, the strategical and the evaluational argument. Within these arguments both potential advantages and disadvantages exists.

Three advantageous arguments of relevance are identified; the economic argument, the organizational argument and the evaluational argument. Of these three identified advantageous arguments the economic argument is considered to have the highest impact. One disadvantageous argument of relevance is identified: the functional argument. One of the main conclusions of the thesis is that the decision to implement a transfer pricing system in a hospital, will depend on the sum of the relevant advantages and disadvantages.

Implementing transfer pricing solely to improve cost awareness may reduce or eliminate the relevance of the economic argument, and in this situation disadvantages will be more likely to outweigh advantages of transfer pricing. The advantageous organizational and evaluational arguments alone are not expected to outweigh the disadvantageous functional argument. Therefore, the findings of the thesis suggest that a transfer pricing system must be able to facilitate the potential of the economic argument to justify its implementation and existence. In addition, it is postulated that a mechanism must be implemented so that the longevity of the economic argument is secured. There is a risk that the economic argument will fade in the long-run if no such mechanism is implemented.

Concerning choice of transfer pricing method, the thesis work concludes that actual costs or standard costs should be used. It is frequently argued that the use of actual costs will weaken incentives for efficiency in the supplying divisions, but it is suggested that this can be compensated by other measures. However, when it

comes to establishing a well-functioning transfer pricing system, maintaining and securing the longevity of the economic argument described above is more important than the choice of transfer pricing method.

7.2 Limitations of the Thesis Work

To acknowledge the limitations of the presented study is important. First, since previous research on the topic is scarce, this result in a qualitative research design containing many of the characteristics of an explorative study design. This general approach enables a broad investigation of known and unknown factors of relevance to transfer pricing. However, with this research design there exist a risk that "unknown unknowns" are never uncovered.

Second, the gap between the theoretical framework of the study and the real world of Norwegian hospitals may limit the relevance of the study's findings. The development of a theoretical framework from general literature finding may have undermined significant characteristics specific to Norwegian hospitals. As discussed in chapter three, this includes a risk of unnatural separations of partly overlapping arguments in the established theoretical framework, as well as a framework maybe better customized to investigate traditional private sector businesses than publicly run hospitals.

Third, discussions of the different available costing methods were limited to a general and theoretical level as the study did not discuss any practical measures of data collection, or other activities necessary for successful implementation of a transfer pricing system. A thorough study of these factors would be beyond the scope of the study, but of importance when considering implementation of a transfer pricing system.

7.3 Directions for Future Research on the Use of Transfer Pricing in Hospitals

The thesis work identifies three advantageous arguments, and one disadvantageous argument of relevance regarding discussions on the use of transfer pricing systems in hospitals. Several directions for future research can be suggested from the findings of this thesis.

First of all, other studies with an explorative study design may uncover advantages and disadvantages of transfer pricing in hospitals not uncovered by this study.

Second, it is recommended that the economic argument of transfer pricing is investigated further as no one of the interview objects in the study were able to estimate the effects of the consequences resulting from the economic argument. When patient-level data becomes available, benchmarking or other methods of comparison, should be used to investigate and compare levels of internal market failure between hospitals with and without transfer pricing systems.

Third, research is needed to investigate which mechanisms that can be implemented to help preserve the longevity of the economic argument in a transfer pricing system.

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9 Appendix

Interview Guide

1: GENERAL QUESTIONS

What is your general opinion on transfer pricing in hospitals?

Do some divisions maximize divisional profit at the cost of other divisions?

Do some divisions maximize divisional profit at the cost of the company's overall profit?

Is there overproduction in some divisions?

Are transfer prices of more relevance to some division than other? E.g. where there is a higher degree of sharing of staff or facilities? Or high level of overhead costs?

2: ADVANTAGES OF TANSFER PRICING

Functional necessity of transfer pricing

Can true divisional profit be calculated without transfer prices?

How precise do you consider profits estimated in organizations without transfer pricing?

Economic arguments of transfer pricing

Does firm inefficiency correspond to other types of market failure, or does it represent a zero-sum game?

Is there internal firm inefficiency in hospitals? If yes, which percentage would you estimate this inefficiency to be?

Is it a problem that rivalrous services and goods are provided between divisions in a non-excludable way (e.g. for free)?

Does there exist firm inefficiency from oversupply with negative externalities, or undersupply where there is positive externalities, for some of the goods and services produced in hospitals?

Does there exist examples of monopoly power in supply of services and good? Could monopoly power develop if transfer prices are introduced?

Are discussed examples of firm inefficiency caused by individual behavior (IMF) or behavior by managers (IGF)? Which one is the biggest problem in hospitals? Can they be separated?

The Organizational Argument of Transfer Pricing

May transfer pricing help improve differentiation and quality of Divisions?

Can transfer pricing help improve coordination between divisions?

Strategic Arguments of Transfer Pricing

Does the organizational structure of the hospital and its purposes affect what can be accomplished with transfer prices? Can operational goals be superior to firm efficiency and undermine the relevance of transfer prices?

The Evaluation Argument of Transfer Pricing

Can transfer prices serve as a control measure to control divisional leaders? How does transfer prices relate to other profit and budget measure in controlling divisions?

3: DISADVANTAGES OF TANSFER PRICING

What will the costs of operating and managing a transfer pricing system be?

Wil it be possible to design efficient internal markets?

Will it be possible to derive a market price for all services produced in the different divisions? How can this market price be derived?

Can a too high or low transfer price result in inefficiency?

Can asymmetrical information result in difficulties for an estimated transfer price?

Could a transfer price induce production that conflicts with the organizations strategy?

4: METHODS OF TRANSFER PRICING

Market-based Transfer Prices

Transfer Prices Based on Intermediate Market Price and Transfer Prices Based on Modified Market Price

- Can market price be established for some services by the help of costing data or information from private providers in the market (see above)?
- In theory, could hospitals use purchase orders to establish market price, or open up for internal and external purchase of some basic services (standardized x-ray or MRI-scans)?
- Can patient-level cost data from the hospital, or from other hospitals in Norway, serve as an estimate of the market price?
- Can a modified market price be established, and the supplying and providing division allowed to share the saving form omitted costs in sales and procurement?

- Would the use of market price weaken synergy effect of production in the organization?
- How do you consider the task of operating such a transfer pricing system when patient-level costing data (Kostnad Per Pasient, KPP) is introduced?

Cost-based Internal Prices

Transfer prices based on actual costs or standard costs (budgeted cost)

- In practice, would compensation by actual costs risk inefficiency in the supplying division, and be a unreasonable solution for the purchasing division? Would standard cost provide incentives for the supplying division and be a better choice?
- Would it be possible for supplying divisions to manipulate reported costs and the resulting transfer price (due to asymmetric information of the cost function)?
- How do you consider the task of operating such a transfer pricing system when patient-level costing data (Kostnad Per Pasient, KPP) is introduced?

Transfer Prices Based on Marginal Cost

- Is it possible that buying divisions would change volume or methods of production with resulting changes to the marginal cost of production in the supplying division?
- Would the supplying division be able to change its marginal cost (in a situation where the division supply multiple product with both supplementary and complementary characteristics)?
- Could marginal cost as a transfer price affect the supplying divisions decisions regarding investments in new technology?
- How do you consider the task of operating such a transfer pricing system when patient-level costing data (Kostnad Per Pasient, KPP) is introduced?

Transfer Prices Based on Full Cost

- Is it a problem that supplying division cannot gain a profit, nor suffer a deficit, when the division is fully compensated on average?
- Should transfer prices based on average cost reflect variable costs only, or include fixed costs as well?
- How do you consider the task of operating such a transfer pricing system when patient-level costing data (Kostnad Per Pasient, KPP) is introduced?

Alternative Cost-based Methods Used in Transfer Pricing

Multi-tire Transfer Pricing

- Could periodic single amount in combination with marginal cost serves an alternative solution for transfer pricing?

Full Cost Plus used in transfer pricing

- Would the allowance of a small profit for the supplying division (in addition to compensation for actual costs) be fair? Or would this just represent shifting of profit from other divisions, and potentially stimulate oversupply of services that are profitable?

Dual Transfer Pricing

- Would the use of different transfer prices for the supplying and buying division (and a loss balance centrally) be an option? Would it still be possible to estimate divisional profit?

Negotiated Transfer Prices

- Is It possible to estimate cost of negotiating prices in hospitals? Would negotiation generate conflict?
- Does there exist a zone of potential agreement (ZOPA) the way Norwegian hospitals are currently reimbursed?

5: Concluding Questions

Do you have any experiences or thoughts on transfer pricing which so far has not been covered in the interviews?

What do you see as the greatest barriers and challenges of establishing transfer pricing in hospitals?