ERASMUS UNIVERSITEIT ROTTERDAM
Institute of Health Policy and Management (iBMG)

Master Thesis:

Pricing of Group Health Insurance Contracts in the Netherlands

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Contents

Chapter I - Introduction

§ 1-1 Introduction

On January the 1st 2006, a new health insurance scheme was introduced in the Netherlands. This new Health Insurance Act (Zorgverzekeringswet, ZVW) ended the existing difference between the compulsory Sickness Fund Act (Ziekenfondswet, ZFW) for one part of the Dutch inhabitants, and private health insurance schemes for the other part.

Under the new Health Insurance Act, insurers can offer both individual insurance contracts and group contracts. Group contracts are health insurance contracts that any Dutch legal person can offer to its members. It is legally arranged that the discount on a group contract can be up to 10%. With the introduction of the new health insurance system in the Netherlands, the importance of group insurance contracts has increased. Whereas in the old system about 29% of the Dutch population was insured under a group contract, since the reform over 50% of the Dutch population joined a group contract. About 59% of the population is registered in a group health insurance plan in 2008 (Smit and Mokveld, 2008).

The reform in 2006 was meant to shift from supply-side regulation toward managed competition. It intended to combine competition on the health insurance market with the right incentives for consumers, providers and insurers, and with access for the entire population. Under the Health Insurance Act, each person is obliged to buy health insurance from private insurance companies. Insurers are not allowed to refuse any applicants for the basic benefit package that is composed by the government. Consumers face an annual open enrollment period and insurance policies are offered on a competitive health insurance market. Since 2006, price competition has risen and many consumers switched to lower priced health insurers (Douven et al., 2007).

This thesis will study the pricing of group health insurance contracts. This is interesting for two main reasons. First, according to Atos (2007), the price of group contracts has been a major determinant of the growing importance of group contracts. Second, since it became clear that insurers have had major losses over the past two years (DNB, 2008), studying the pricing of contracts is an important step towards greater knowledge about the reform and is an important aspect for policy-makers.
Since the reform of the Dutch health insurance market is quite recent, studies on the pricing of contracts and the behaviour of enrolees in group plans in this new period are limited. At this moment, data from the first years after the reform have become available.

This thesis is related to an earlier theoretical study by the Dutch Healthcare Authority on cross-subsidies in the health insurance market (NZa, 2006). It investigated the connection between individual insurance policies and group insurance policies and focused on the question whether groups paid lower premiums due to cross-subsidies resulting from high premiums paid by individual consumers. This study found no evidence for cross-subsidies in the health insurance market. However, the question of what causes the high premium discounts on group health insurance remains unanswered. This thesis tries to answer that question. It consists of an empirical study of price determinants of individual and group contracts in the Netherlands and a review of the literature in this field.

§ 1-2 Goal of this research

This study investigates group health insurance contracts and the way prices of these contracts are determined. We perform a literature research and an empirical study. The following question is of central interest in this study:

How are prices of group contracts in the Netherlands determined?

In order to answer this question, several research questions are distinguished:

1. What legal framework is faced by insurers?
2. How does the Dutch market for group health insurance contracts work?
3. Which factors impact pricing of (group) insurance contracts according to existing literature?
4. Which factors in the literature are relevant for the determination of the prices of individual insurance contracts in this study?
5. Which factors in the literature are relevant for the determination of the prices of group insurance contracts in this study?
6. Which factors are found to be of influence on the price of group insurance contracts according to an empirical study?

§ 1-3 Structure of the thesis

This thesis is organized as follows. In Chapter 2, the Dutch health insurance market is described. The research area is defined. Chapter 3 describes the theoretical framework of the study. Several potential determinants of the price of an insurance contract are discussed. In Chapter 4, we describe the data used for the empirical part of the study. In addition, we define variables and explain the econometric methodology of the empirical study. Chapter 5 deals with the results of the empirical analysis. Finally, Chapter 6 draws some conclusions, it discusses limitations of the study and deals with policy recommendations.

Chapter II - Description of the Dutch Health Insurance System

This chapter provides an overview of the Dutch health insurance market. First, we give a description of the framework in which health insurance companies act. A description of the recently introduced Health Insurance Act, as well as the process towards the introduction of this new system is described briefly. Second, we focus on the market for group contracts. Finally, we discuss the development of the new system since the reform.

§ 2-1 The Health Care System in the Netherlands

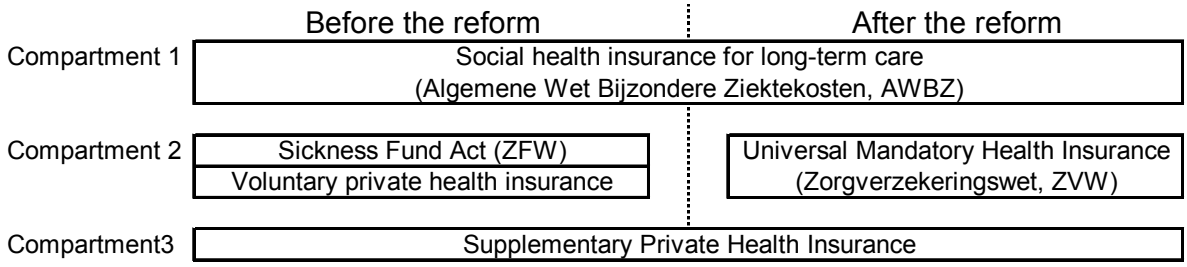
On January the 1st 2006, the Dutch government implemented a major reform of the health insurance market. The focus of the system has been shifted from a supply-side driven system towards a demand-side driven system. The aim of the reform was to increase both the efficiency and the quality of the health care market, while keeping it accessible for the entire population. This paragraph gives a brief summary of the transition towards the new system, and analyzes the key elements of the new system.

2-1-1 Transition towards the Health Insurance Act

The current health care system in the Netherlands is the result of a long process of reforms, of which the reform in 2006 was the highlight. Before the reforms, the Dutch health care system focused on the regulation of prices and the supply of health care. The system consisted of three compartments, including four parts (see figure 1). The first compartment represents long-term care services, the second compartment includes basic cure services, and additional cure services are included in the third compartment (Westerhout, 1999).

The system was heavily criticized for lacking incentives for efficiency and innovation (Enthoven and Van de Ven, 2007). Two direct causes of the implementation of the Health Insurance Act were mentioned by the Ministry of Health, Welfare and Sport (2006b). First, the fragmentation of the market (due to the two-pillar system of basic cure services) resulted in an untransparant system that lacked incentives for competition. Second, consumers lacked knowledge about costs of health care. This resulted in too little competition in the health insurance market. An additional problem was a structural unfairness in the contributions that led to discussions about solidarity.

Figure 1 - Overview of the health insurance system in the Netherlands



Ideas of a shift towards managed competition started in 1974 with the Hendriks paper (Muiser, 2007). In this paper, the Minister of Health J.P.M. Hendriks described a single public system that should replace the existing two-pillar system. The proposal never came into effect, but the idea of one single system came back in the 1987 proposal of the Dekker Committee and later in the 1990 Simons Plan. Both plans aimed at the introduction of regulated competition in order to keep the growth of health care expenditures under control and to increase solidarity by income-related payments. Where possible, market competition for providers of care and health insurers had to be introduced. The Simons Plan led to gradual implementations of market oriented reforms since the early 1990s. Several preconditions were to be fulfilled, including the development of a risk-equalisation system, a system of product classification, a system of quality measurement and of consumer information, and an adequate governance structure. In 2006, the environment was ready for implementation of the Health Insurance Act.

The 2006 reform mainly had an impact on the second compartment. This is also the focus of this study, since we examine basic insurance packages, which are situated in the second compartment. Before the reform, the second compartment made a distinction between public and private coverage. About 63 percent of the population was covered by mandatory social health insurance under the Sickness Fund Act, while about 37 percent was covered by voluntary private health insurance (Muiser, 2007). The distinction between these groups was made by a government-set income-threshold. This distinction between public and private insurance has disappeared and made place for one insurance system. The entire population is now insured by a mandatory social health insurance scheme.

2-1-2 Key elements of the Health Insurance Act

- *Market competition and Consumer choice*

The introduction of managed care in the health care system aimed at reaching higher efficiency levels in the market for health insurance. Under the new system, health insurance

has become mandatory for the entire Dutch population. Insurance is purchased through private insurance companies. These companies are allowed to make profits and can do so by competing on prices and services and quality of care.

Consumer choice is an important aspect under the Health Insurance Act. Not only are consumers allowed to choose their own insurer and to change insurer each year, freedom of choice also includes choice of the type of health plan. Apart from the basic benefit package, which is composed by the government, many combinations are possible. This includes the level of deductible and whether or not to include preferred provider networks (Bartholomée et al., 2006).

Out of all available health insurance contracts, consumers can choose between three types; in-kind contracts, reimbursement contracts and mixed contracts. An in-kind insurance contract may be more restricted with respect to the provision of health care. The insurer may have negotiated special arrangements with a subset of providers. Enrolees of in-kind contracts are not restricted from going to not-contracted providers, but consults outside the agreed network are not reimbursed. A reimbursement contract has no restrictions with respect to provider choice. The price of a reimbursement contract is usually higher than prices of in-kind contracts, since the insurer has not made agreements on a restricted network with providers. The third form of policy is a mixture of the former two. Consumers face contracted care as in the in-kind form, but are allowed to receive health care from outside the contracted network. In that case, the consumer is partly reimbursed for the received care. Up to now, in the Netherlands, in-kind and mixed contracts still include all providers in their network (NZa, 2008).

Another choice option includes the size of a deductible. After the reform in 2006, consumers could voluntarily choose a deductible. Deductibles ranged from €100 up to €500 and the higher the deductible chosen, the lower the price of the insurance contract. Next to this deductible, all insured faced a no-claim arrangement. This no-claim arrangement resulted in a rebate up to €255 depending on the consumed health care by the enrolee. This was called the no-claim rebate rule.
As of January 1st 2008, this scheme has changed (Ministry of Health, Welfare and Sport, 2007b). A compulsory deductible of €150, - has replaced the no-claim arrangement. Every consumer now faces this compulsory deductible and can voluntarily upgrade this amount up to €650, again resulting in a lower price for the insurance contract.

- *Regulation*

Next to the introduction of market competition and the broader choice-set for consumers, another major change is the fact that insurers face a whole new set of rules (Ministry of Health, Welfare and Sport, 2006b). First, the benefit package design is standardized under the Health Insurance Act. The government defines the basic standard package that insurers are obliged to offer.

Second, insurers are not allowed to refuse any applicants for the basic package. This diminishes insurers' possibility for risk selection. The same holds for risk-rating. In order to compensate insurers for different risks in their pool, a health-based risk-adjustment system was set up. The risk-adjustment system takes care of both ex ante and ex post adjustment of health care payments (Ministry of Health, Welfare and Sport, 2007a). At the beginning of each calendar year an ex ante adjustment share is calculated per insurer. This adjustment share depends on the risk profile of the insured individuals. The risk profile is determined by several factors, including age, gender, health, region, and source of income. In addition, pharmacy-based cost groups and diagnostic cost groups are defined in order to gain more insight in the expected costs of individuals (Van de Ven et al., 2007). Although this system is designed to stimulate insurers to work as efficient as possible, unexpected high payments are a possibility. Therefore, at the end of the calendar year, ex post payments partly compensate insurers for differences between the ex ante determined adjustment share and the actual payments in the past year (Ministry of Health, Welfare and Sport, 2007a). The risk-equalisation mechanism is meant to give an incentive to compete on efficiency and quality.

Third, under the new health insurance scheme, offering group contracts is still allowed, although restricted on some points. Several forms of group contracts and their characteristics are discussed in paragraph 2-2.

Finally, under the Health Insurance Act, insurers are allowed to offer a restricted network of preferred providers. In addition, integrated insurer-provider combinations (Health Maintenance Organisations) are allowed too.

- *Financing*

Premiums are collected in two ways. Community-rated premiums cover about 50 percent of health care expenditures, while the other 50 percent of financing goes through the tax system and is income-dependent. There are some exceptions to this basic rule. First, income solidarity is regulated through a subsidy system for low income groups who are not able to afford the fixed contribution. This subsidy is financed from tax revenues. The legal ground for the premium subsidy is determined each calendar month separately (Ministry of Health, Welfare and Sport, 2004). Another exception includes all children below the age of 18.

Insurers are compensated for their health care costs through the risk-equalisation fund (Van de Ven and Schut, 2008).

Table I

Key elements of the Health Insurance Act

In transition toward managed competition
Mandatory basic health insurance for everyone, purchased through private insurance companies
Annual open enrollment period
Free choice of deductible between €150 and €650 per person per year
Community rated premium
Premium subsidies for elderly people and those who are at high risk of disease, through a risk-equalisation system
Insurers permitted to contract selectively with doctors and hospitals
Insurers allowed to sell other types of insurance (e.g. supplementary insurance)
General practitioners to serve as gatekeepers

Source: Enthoven and Van de Ven (2007)

§ 2-2 Group Health Insurance Contracts

As mentioned in the introductory chapter, group health insurance contracts have become more important since the reform in 2006. While only 29% of the insured was assigned under a group contract in 2005, in 2008 this amount has risen to 59% of the entire Dutch population (Smit and Mokveld, 2008). According to a study by Atos (2007), the low price of group contracts has been a major determinant of the growing interest in group contracts. Another aspect that has led to this increase is the fact that, before the reform, group contracts were only available for private insured individuals. Under the Health Insurance Act, the entire Dutch population is allowed to join a group contract.

Since the reform in 2006, the rules of the game have been changed slightly. This paragraph gives an overview of the market for group health insurance contracts. First, we will discuss the different types of group contracts. In addition, we explore reasons for joining and offering group contracts. Finally, the realization of group contracts is explained and the legal framework insurers face when it comes to offering group contracts is briefly discussed.

2-2-1 Types of group health insurance contracts

A group health insurance contract follows from an agreement between a legal person and a health insurer, where the legal person works on behalf of its members. The resulting contract from negotiations is specifically made for the members of the legal person: the group. Group health insurance contracts can be offered by virtually all legal persons in the Netherlands. Next to the well-known employer-based group contracts, numerous other group contracts are possible and available. While an employer-based group is quite restricted in its access, other legal persons are more open in their acceptance of membership. Examples of such open or

"pseudo"-groups are patient organisations, sport clubs and trade unions (Schut and De Bruijn, 2007). In 2007, out of all individuals joining a group contract 69% had an employer-based group contract, about 1 % joined a patient group and the remaining 30% had another type of group contract (NZa, 2007). This distribution has been quite stable since the reform in 2006.

Furthermore, of all individuals that joined a group contract in 2008, 49% chose an in-kind contract, 21% chose for the reimbursement contracts and the remaining 30% chose for the mixed contract. Since the reform, an increase in popularity has been observed for the mixture policy. The part of the population that had a mixture policy in 2007 was only 9%. In-kind contracts faced a sharp decrease in popularity, with an amount of 63% of the population in 2007.

In 2008, 5.4% of the individuals with a group insurance contract chose a voluntary deductible, compared to 5% of individually insured (Smit and Mokveld, 2008).

2-2-2 Advantages of group contracts

In general, groups (like employees of a certain company, or members of a certain legal person) have a better bargaining position than individuals when searching for a health insurance contract. Groups are able to practise market power when negotiating with health insurers. This bargaining power can result in lower prices and in specific supplementary benefit packages that meet the needs of the group. Employers, for example, can negotiate on specific benefits included in supplementary contracts. They can include facilities to withstand disablement and to make reintegration easier. Also work-related health care can be contracted. In patient organisations it is even more clear that some types of care or medication are needed in the group and that price agreements can be negotiated with respect to specific types of care and medication. Legal persons not only negotiate on prices of insurance and supplementary benefit packages, but also on quality (Van de Ven et al., 2007).

Not only negotiation leads to lower prices. According to Pauly and Percy (2000), individual insurance is much more costly than group insurance, due to high administrative costs and tax advantages for group insurance. In addition, risk-spreading in group contracts leads to less uncertainty and therefore to lower prices.

Next to price and benefit agreements, group contracts often offer other advantages too. Such advantages in Dutch group insurance contracts may be a guarantee from the insurer that there will be no selection procedure for supplementary insurance (acceptation of the entire group), discounts on other-than-health-insurance packages from the same insurer, discounts on the membership fee of the concerning organisation and discounts on goods that are

especially relevant for the insured group. Examples are a discount on sporting shoes or on the membership fee of the local fitness club.

Advantages of group health insurance contracts do not only reach the insured individuals. The health insurance market in general may benefit as well. Groups may trigger competition between insurers, which may lead to more effective negotiations between insurers and health care providers and an incentive to buy good quality care (Schut and De Bruijn, 2007).

Mathewson and Winter (1995) explore buyer groups in the United States. They find that group health insurance contracts impose positive externalities on buyers outside the group, since prices can be lowered overall because of the negotiated prices for the group contracts. In addition, group contracts can reduce both moral hazard and adverse selection. These last two mechanisms are more prominent in the US than in the Netherlands. The general conclusion of the study is that, without group contracts, the market would fail to achieve efficient insurance packages. Due to the existence of group contracts, both a greater availability of products and lower costs are established.

From the insurers' point of view, offering group contracts may be a profitable business, both because group contracts can substantially increase their market share and because of the increasing bargaining position with respect to health care providers in comparison with individual insurance. Although this sounds intuitive, health care insurers have faced considerable losses on the basic insurance package since the reform. These losses are due to the increased price competition that has led to enormous group discounts (Douven and Schut, 2006b). Since the reform in 2006, the losses have been systematically high. According to De Nederlandsche Bank (DNB, 2008), jointly the insurers faced losses of €507 million on the basic insurance and €93 million on supplementary insurance in 2007. In order to counteract this trend, insurers have revised their supplementary insurance package for 2008. The benefits have been simplified and premiums have been raised (Smit and Mokveld, 2008).

2-2-3 Demand for group insurance

Not all members of the legal person offering a group contract actually choose to join it. According to a study by van Ruth et al. (2007), on average 67 percent of employees participated in group contracts that are offered by employers. Other legal persons offering contracts, like patient organisations, internet groups, umbrella organisations, and alliances, face an average degree of participation of 47 percent. From these other types, patient

organisations score the lowest with an amount of 4 percent. The study by van Ruth et al. confirms an earlier study by Aon Consulting (2006). According to that study, the higher the number of employees, the higher the participation degree of the group contract. A reason for this observation could be that small companies do not have efficiently established information services with respect to the new health insurance act (yet). Larger companies were probably able to react more adequately on the new system.

2-2-4 Realisation of group contracts

A group health insurance contract is developed through negotiations between a legal person and a health insurer. Legal persons usually take the first step to make contact. This can happen directly or through an intermediary. Most legal persons start negotiations with several insurers in order to end up with the best arrangement.
Agreements can contain a wide variety of aspects, including the period of the agreement, who collects the premiums, how to stimulate participation of members, the amount of money the legal person invests in the insurance contract, and whether or not the option of a deductible is included (van Ruth et al., 2007). Legal persons are not restricted to contracting one insurer. Large legal persons often offer several group contracts with several different insurers to their members.

2-2-5 Legal framework

Group contracts are regulated by the government in several ways. Not only must insurers keep the maximum of 10 percent discount in mind, other rules are set too. Before the reform for example, employers and other legal persons were obliged to enrol their employees or members. Since the reform, any legal person can still offer group contracts, but consumers cannot be forced to join. In addition, the benefit package of the basic insurance is fixed by the government. Insurers and organisations can therefore only negotiate on benefits and application of supplementary insurance. When talking about the basic insurance, options to negotiate on are, for example, the price of the package and the type of insurance (reimbursement or in-kind policy).

§ 2-3 Development of the system

Although the system is in operation for a little more than two years, some first results have already been investigated. We will briefly describe these developments.

In 2006 the Ministry of Health, Welfare and Sports investigated the effects of the new health insurance scheme and compared these to their expectations (Ministry of Health, Welfare and Sport, 2006b). The main conclusions of the report are threefold. First, competition between insurers indeed started and was reflected in the nominal premium. The premiums in 2006 turned out to be lower than expected in advance. Second, this price competition has led to an intense search for cheap contracts by consumers and therefore to an increase in consumer switching. The extreme consumer shift from insurers was at its peak in 2006, when almost 20 percent of the population switched. In the two years following the reform, consumer mobility was substantially lower, respectively 4.5 percent and 3.5 percent (Smit and Mokveld, 2008). Third, the Ministry observed that hospitals started to innovate more. Projects for effectiveness and improved quality were set up, and a rise in customer focus was observed.

Douven and Schut (2006b) evaluate the new health care system with respect to price competition between health insurers. They also find that price competition has increased substantially, and on average it has led to losses for insurers. Figures from De Nederlandsche Bank show that this trend has been proceeding. Since 2006, insurers have systematically made losses, mainly on the basic insurance, but also the supplementary insurance is proven to be unprofitable (DNB, 2008).

According to Muiser (2007) it can be stated that the new system is capable of meeting the health system goals of fairness, transparency and efficiency. Although the Health Insurance Act is an improvement in several ways, it also faces some drawbacks. Quality of care has not become a part of competition. This uncertainty with respect to performance carries the risk of market failure. Increased monitoring is therefore required, but this will lead to significant cost increases compared to costs in the former scheme. This statement by Muiser (2007) contradicts to an earlier statement of the Ministry of Health, Welfare and Sport (2006b). Although the Ministry admits that it is very difficult for consumers to observe and judge the quality of the care they receive, they state that this insight in quality will significantly grow under the new scheme, because it aims at more transparency. Several institutions will have to get used to the fact that they are “publicly accountable”.

The Dutch Healthcare Authority confirms the observation by Muiser (NZa, 2008). They state that competition on quality is essential in order to let the health insurance system work. Information on quality is not yet a useful tool for consumers to choose their health insurance. Several solutions are proposed, mainly in the field of the purchase of health care by insurers.

When insurers are more selective in contracting care, they are better able to distinguish themselves from others on quality.
In addition, the Dutch Healthcare Authority observes that accessibility of health insurance has improved. Access to group health insurance contracts has improved substantially, mainly due to the fact that risk selection is efficiently prohibited. A distinction is made between risk selection *by* group insurance and risk selection *through* group insurance. The former indicates selection when a consumer enters a group (i.e. becomes a member of the legal person), the latter indicates the amount of discount that is offered to different groups (i.e. insurers can offer lower discounts to groups that include relatively many 'bad risks'). Although an earlier study by Schut and De Bruijn (2007) concluded that there was no indication of the performance of risk selection in the Netherlands, the increased difference in prices between employer-based group contracts and insurance contracts for open groups might be an indication of risk selection *through* group contracts.
Another development noted by the Dutch Healthcare Authority is that the administrative activities are substantially improved, mainly with respect to changing consumers. In addition, two drawbacks are noted. First, price competition has decreased, but is not replaced by competition on benefits and quality. Second, the authority observes a lack of renewal of the benefits in the supplementary insurance.

§ 2-4 Conclusion

In this chapter we described the market for health insurance and discussed the framework in which insurers can provide group health insurance contracts. We summarize the main findings of this chapter.

The recent reforms in the Dutch health insurance market have changed the setting of health insurance contracts significantly. Under the new Health Insurance Act, a system of managed care is introduced on the health insurance market. As a result, the market is expected to provide better incentives for efficiency and innovation.
Insurers face several new legal constraints. First, insurers face a standardised basic insurance package that is determined by the government. Second, it is prohibited to practise risk-rating and risk-selection. Insurers are compensated for bad risks in their pool through a risk-equalisation scheme. Third, children under 18 years old do not have to pay contributions. Finally, the price of group health insurance contracts is based on the price of the equivalent individual insurance contract. For group health insurance contracts, a maximum of 10% discount on this premium is allowed.

Chapter III - Theoretical Framework

In this chapter we describe the theoretical framework. We will discuss several factors that are expected to have an impact on the price of an insurance contract. As we described in the former chapter, the price of a group contract depends on the price of the equivalent individual insurance contract. Therefore, we divide the theoretical framework into two parts. We will first explore factors that are expected to have a direct impact on the price of the equivalent individual insurance contract and thus an indirect impact on the price of a group contract. In the second paragraph we explore factors that are expected to have a direct impact on the price of a group contract. The discussed factors follow from a literature research. It should be noted that literature that specifically focuses on group contracts is limited. The factors we review in this chapter follow from general economic theories too.

§ 3-1 Individual insurance contracts

In this paragraph, we discuss factors that are expected to influence the price of individual insurance contracts. Most of the factors we discuss may have an impact on costs. When insurers face lower costs, we expect them to recharge this lower cost to the price of the insurance contract.

3-1-1 Type of insurance policy

In Chapter 2 we discussed the distinction between in-kind, mixed and reimbursement contracts. The type of insurance contract a consumer takes is expected to influence the price of the insurance contract. In general, in-kind contracts will be cheaper than other contracts. This is due to several mechanisms.

First, insurers are probably able to negotiate better prices with providers of health care when they are able to 'move market share'. This feature is analysed by Sorensen (2003). It was found that the ability of payers of group contracts to bring patients to a certain hospital (their ability to 'move market share') has a large effect on the magnitude of the agreed discount on the price of health care services. Since insurers are more able to move market share when it comes to in-kind contracts, insurers are expected to be able to negotiate on lower prices when they sell more in-kind contracts.

Second, consumers have to be compensated for the possible restrictions in their provider choice. Compensation can be established through lower prices. This is confirmed by Zweifel et al. (2006). They examine consumer response to regulations, such as a restrictions in provider access and connect this restricted provider access to moral hazard problems. Imposing restricted provider networks can reduce moral hazard by consumers. A successful

reduction in moral hazard leads to cost-reductions. Present price competition then leads to compensation for this restricted choice in the form of lower prices.
In addition, in-kind contracts have a smaller administrative burden than reimbursement contracts. For in-kind contracts, the bill that comes from the health care provider is directly paid by the insurer. Reimbursement contracts are arranged differently. Bills go to the patient first. All patients declare their costs personally. For an insurer this leads to higher administrative costs.
Since most in-kind contracts on the Dutch health insurance market still include all health care providers in the Netherlands (NZa, 2008), it will be interesting to see whether or not this variable has an impact on prices.

3-1-2 Insurance types offered

As became clear in the past two years, health insurers in the Netherlands suffered considerable losses (DNB, 2008). Therefore, insurers may find it profitable to sell other types of insurances. Attracting consumers with a low priced health insurance contract and selling them (more profitable) other types of insurance may be an advantage over focussing on health insurance only. Cross-subsidies could be used to finance the health insurance costs. Whether or not an insurer offers other types of contracts in addition to health insurance is therefore expected to be of influence on the price of the health insurance contract.

3-1-3 Former type of insurance offered

Before the reform, there existed two types of insurance. First, mandatory insurance under the Sickness Fund Act. Second, voluntary private health insurance. After the reform this distinction has disappeared and made place for an insurance market with only private insurance. Since the reform was implemented only three years ago, the type of insurance that insurers used to offer, might still be of influence on insurers' price setting.

We expect this factor to be of influence for several reasons. First, since the reform, the legally required minimum of financial reserves has decreased (Douven and Schut, 2006a). Insurers are therefore able to use a part of their accumulated reserves to involve in aggressive pricing strategies. However, former Sickness Funds are known to have limited reserves. It can therefore be argued that they are not able to compete with former private insurers that use such pricing strategies.
A second influence might be the fact that private insurers and Sickness Fund insurers used to offer different types of insurance. They both had a different view on insurance. While Sickness Funds had a social point of view, private insurers are used to compete with others and already had a focus on making profit. This difference in behaviour and focus might be of

influence on the negotiating skills of the different insurers. It therefore might cause a difference in prices between former Sickness Funds and private insurers too.

Several new insurers have appeared on the market for health insurance since the reform. These insurers already offered other types of insurance, but started to sell health insurance in 2006. They too are expected to have substantial reserves. Although they do not have expertise on the health insurance market yet, they will probably be able to sell low priced health insurance, financed through cross-subsidies from other types of insurance. They are expected to perform a penetration pricing strategy, which aims at market acceptance in their early years.

3-1-4 Bargaining power

The bargaining position of insurers when negotiating with providers of care is expected to be of influence on the price of an insurer's insurance contracts. Several studies have focused on negotiations in the field of health insurance. Bargaining positions of consumers, pharmacies, hospitals and insurers have been explored extensively. We give a brief overview of literature in the insurer-provider context.

Several studies include concentration indexes in their research. First, Brooks et al. (1997) explore factors that determine the prices agreed upon by insurers and hospitals. They capture the interaction between insurers and hospitals in a bargaining model and find several factors that influence a hospital's bargaining position. Their main finding is that the bargaining position of hospitals is improved by certain institutional arrangements (like hospital affiliations), HMO penetration and greater hospital concentration.

Second, Brooks et al. (1999) study the bargaining position of pharmacies when negotiating with insurers. Their main findings include two influential characteristics. Both the concentration of pharmacies and general socioeconomic measures like income per capita are positively influencing the bargaining position of pharmacies.

The findings of Brooks et al. (1997 and 1999) with respect to concentration are confirmed in a more recent study. Halbersma et al. (2007) use two models to describe the hospital-insurer bargaining act. In order to model the influence of concentration on the outcomes of negotiations both a structure-conduct-performance model and a bargaining model are used. The former model shows significant impact of both hospital concentration and insurer concentration on negotiation outcomes, the latter confirms the impact in the case of hospital concentration.

A study by Atos (2007) evaluates the health insurance market in the Netherlands after the reforms. They expect that insurers eventually will start strategic alliances with providers of health care which could result in significant cost-reductions. Atos expects the market to change toward a more HMO-like structure. This will result in a move toward more in-kind contracts and more preferred provider networks.

Sorensen (2003) analyses the economic factors that determine the discounts agreed upon between payers and hospitals. Two main results are reported. First, the ability of payers of group contracts to bring patients to a certain hospital (their ability to 'move market share') has a large effect on the magnitude of the agreed discount in price. Another significant influence, although with a much smaller effect, is the size of the payer. Size of the payer is defined as the volume of patients.

Although the way bargaining power is defined is very diverse, the discussed studies confirm the idea that the bargaining power of a negotiator could be of influence on the price of an insurance contract.

§ 3-2 Group insurance contracts

The former paragraph handled with factors that are expected to influence the price of individual insurance contracts. Those factors are mainly insurer- and contract-specific. In this paragraph, we discuss several factors that are expected to directly influence the price of group contracts. These factors are mainly contract- and group-specific.

3-2-1 The price of the equivalent individual insurance contract

As a first aspect, we know that the price of the equivalent individual insurance contract is a main determinant in the price of a group contract. This is not an expectation, but a certainty that is stated in the law. Legal persons and insurers negotiate on discounts. These discounts are based on the price of an equivalent health insurance contract. Therefore, the price of the equivalent individual insurance contract is an important determinant of the price of a group contract.

3-2-2 Type of legal person

Different types of legal persons probably make different agreements with insurers. For instance, patient organisations can probably make certain agreements on special care, since their need is partly known in advance. Employer-based group contracts probably have other agreements, like waiting list mediation. The type of legal person that offers the group contract might therefore be of influence on the final price paid by consumers.

According to Schut and De Bruijn (2007) and the Dutch Healthcare Authority (NZa, 2008), there is a difference between the prices of employer-based health insurance contracts and other (open) health insurance contracts. On average, the former was able to agree on lower prices than other types. As we already discussed in the former chapter, the fact that employer-based group contracts face lower prices than other types of contracts might be an indication of risk-selection through group contracts.

3-2-3 Socio-economic characteristics of the group

Muñoz Pérez and Shina (2006) examined the determinants of claims of group health insurances in Spain. They focussed on socio-economic characteristics that have an influence on demand for health care. Their main finding is that both age and income have a strong impact on demand. Higher age leads to more claims; lower income has the same effect. Implication of their study is that health insurance companies should take both of these socio-economic characteristics into account when determining the price of a group health insurance contract.

3-2-4 Duration of the contract

Some group contracts in the Netherlands are signed up for one year, some last two years and some even longer. It could be expected that an insurer gives larger discounts when a legal person agrees on a longer contract than when a legal person only signs up for the next year. This is expected for several reasons. Firstly, administrative costs are lower when contracts last longer than a year. In addition, costs of drawing new groups for contracts are lower when you do not have to recruit them each year again. Finally, insurers may be able to diversify risks not only within the group, but also over time. Lower prices can be a result of these mechanisms.

3-2-5 Size of the group

The number of individuals that join a certain group contract might influence the price of the group contract. The expectation is based on two arguments.

First, when more persons join a group contract, risks within the contract are more diversified. Insurers will therefore be less uncertain with respect to their expected costs for the insured group. As we already discussed, these expected costs are expected to be of influence on the price of the group contract.

Second, as we explained in the former Chapter, groups are able to practice market power. Due to competition, large groups are more important for the health insurer. This mechanism will lead to lower prices when more consumers join a group contract.

3-2-6 Cost-containment methods

Another factor that is found to be of influence on the price of a group health insurance contract is whether or not cost-containment methods are included in the contract. Jensen and Morrisey (1990) examined the marginal effects of several different characteristics of the benefit package on the price firms pay for group health insurance in the United States. Their main finding is that cost-containment methods are effective at lowering premiums. So, when cost-containment methods are included in the agreement, prices are expected to be lower.

3-2-7 Bargaining power

Again we focus on bargaining power as potential explanatory variable. Not only negotiations between insurers and providers of care are expected to be of influence on the price of an insurance contract. In the case of group contracts, negotiations take place at the consumer level too. We discuss two studies that focus on insurer-consumer negotiations.

Viaene et al. (2001) relate bargaining outcomes to the risk-aversion of the consumer. Although this theoretical paper does not focus on health insurance, the results can be applied to the health insurance market since an imperfect competitive environment is assumed, using the cooperative Nash bargaining solution. The main finding of the paper is that the insurer's expected profit is found to be significantly higher when the client is more risk-averse. For insurers, negotiation with a risk-averse person is apparently easier and will probably result in higher prices than negotiating with risk-neutral clients.

In reaction to this risk-aversion paper, Quiggin et al. (2003) look at bargaining positions from a partner-agent perspective, where the insurer is the partner and the consumer is the agent. While the loss to be insured is fixed in the study by Viaene et al., Quiggin et al. broaden the scope. They examine the effect of differential bargaining power on the efficiency of insurance contracts. A main result of the study is that consumers can use their information lead to reduce the bargaining position of the insurer. This might result in both adverse selection and moral hazard problems.

We conclude that several consumer-specific (i.e. legal person–specific) characteristics could influence the negotiations between insurers and legal persons and therefore the price of the group contract.

§ 3-3 Conclusion

In this chapter, we discussed several factors that are expected to influence prices of insurance contracts. We have divided the influential factors into two groups. First, factors that

influence the price of individual insurance contracts that are equivalent to group insurance contracts. These include the type of insurance policy (in-kind, mixed or reimbursement contract), other types of insurance an insurer offers, the former type of insurer and the bargaining position of the insurer.

The second group contains characteristics that are expected to have a direct influence on the price of a group contract. These include the price of the equivalent individual insurance contract, the type of legal person, socio-economic characteristics of the group, the duration of the contract, the size of the group, included cost-containment methods and the bargaining power of the legal person. We discuss the use of these variables in Chapter 4.

Chapter IV - Data and methodology

In this chapter we will discuss the background of the empirical study. We will explain the used data and methodology. Although this study focuses on group health insurance contracts, we will start our empirical part with an analysis of the price of individual insurance contracts. As we already discussed in the former two chapters, the price of group health insurance contracts is largely determined by the price of the equivalent individual insurance contract. Therefore, by analyzing the price of individual insurance contracts, we also gather knowledge about pricing of group contracts.
This chapter will start with a description of the dataset. The first paragraph handles with the data on both individual and group contacts. The second and third paragraph will focus on the analyses. We will separately deal with individual insurance contracts and group contracts and their corresponding variables. In the former chapter we described several variables that are expected to influence the insurers' price setting behaviour. The factors from the previous chapter are discussed with respect to the empirical analyses. Not all factors are included in this research, mainly due to lack of data. The final paragraph deals with the model structure.

§ 4-1 Description of the data

In order to estimate the effect of several explanatory variables on the price paid by insured, we use a dataset of group health insurance contracts over both 2007 and 2008. Per insurer, several group contracts are included in the dataset that is collected by the Dutch Healthcare Authority (NZa). For the analysis of individual insurance contracts, we collected additional information from publicly available sources, mainly by use of the internet and publicly available studies. The additional information includes the price of the individual insurance contract and insurer-specific characteristics; the type of insurance that is sold by the insurer and the former type of insurance the insurer used to offer before the reform in 2006. The use of these variables is discussed below.
As a starting point for the dataset on individual insurance contracts we used the dataset on group contracts. So the additional information on individual insurance contracts was collected on individual contracts that are equivalent to the group contracts included in the dataset described below.

From a total of 41 insurers in the Netherlands, 27 insurers are approached and asked to give information about their largest group health insurance contracts. In order to get a representative dataset, the following criteria are used for inclusion of group contracts:

1. In principle, all group contracts with a market share of more than 1% of the total number of consumers in group contracts are included.
2. When the definition under (1) leads to a list of less than 10 group contracts, smaller group contracts are added in diminishing size, until the list includes 10 contracts.
3. At least three of the included contracts should be not employer-based (like patient groups or quasi-collective contracts). If this is not the case, smaller group contracts should be added to the list.

This definition has led to a dataset including 790 group health insurance contracts. For 2007 we have 447 group contracts, for 2008 there are 343 group contracts included in the dataset. The criteria do not lead to inclusion of exactly the same group health insurance contracts in 2007 and 2008. 233 similar group contracts are present in both years. Table II gives an overview of the basic characteristics of the included group contracts. In addition, it shows the average price of individual contracts as comparison value. Table A.1 in the Appendix shows the division of group contracts over insurers.

Table II

Descriptive statistics

Type of legal person	2007				
	Number	Average price	Minimum	Maximum	Insured
Employer	251	€ 1,047.98	1,015.20	1,179.00	2,115,618
Patient organization	4	€ 1,069.03	1,015.20	1,143.63	16,076
Members of an Alliance	43	€ 1,082.45	1,047.06	1,179.00	828,026
Internet group	9	€ 1,071.31	1,017.90	1,137.51	58,093
Umbrella organization	58	€ 1,060.86	1,015.20	1,126.08	636,352
Social service of a congregation	27	€ 1,070.15	998.44	1,143.63	266,541
Other	55	€ 1,073.91	1,025.46	1,162.80	933,229
Total	447	€ 1,067.96	998.44	1,179.00	4,853,935
Individual contracts		€ 1,153.33	1,125.00	1,224.00	
	2008				
	Number	Average price	Minimum	Maximum	Insured
Employer	164	€ 1,020.62	€ 952.78	€ 1,134.00	1,269,306
Patient organization	4	€ 1,039.11	€ 1,004.09	€ 1,099.98	7,311
Members of an Alliance	23	€ 1,035.48	€ 984.54	€ 1,134.00	503,207
Internet group	16	€ 1,018.71	€ 952.78	€ 1,054.50	353,338
Umbrella organization	50	€ 1,015.50	€ 963.36	€ 1,114.55	1,538,232
Social service of a congregation	24	€ 1,021.40	€ 980.10	€ 1,099.98	298,268
Other	62	€ 1,024.41	€ 973.95	€ 1,109.40	1,117,475
Total	343	€ 1,025.03	€ 952.78	€ 1,134.00	5,087,137
Individual contracts		€ 1,105.50	€ 1,058.64	€ 1,198.44	

As can be observed in table II, the average price for the basic benefit package has decreased over time. This is mainly due to government policy. By discarding the no-claim arrangement and introducing a compulsory deductible in the basic insurance, prices of

insurance contracts have decreased substantially. This is both reflected in the price of group contracts and in the price of individual contracts.

Employer-based group contracts are largely represented in the dataset, although their share of the total shows a sharp decrease. This decrease could be explained in several ways. Firstly, it might be due to the increasing number of open groups. Employees are able to choose from several group contracts instead of making a choice between an employer-based group contract and an individual insurance contract. However, for both years, employers offer one of the lowest prices for their group contract. Second, as can be seen in table A.1 in the appendix, for some insurers we observe a sharp decrease in the amount of group contracts included in the dataset. For example, insurer 8 reported 22 group contracts in 2007 and zero contracts in 2008. Although we do not have information on the cause of this decrease, it is not expected that all these contracts have disappeared. This insurer probably did not respond to the information request in 2008.

It should be noted that there are only a few patient organisations in the dataset. According to the literature, especially patient organisations are expected to benefit from negotiating as a group, since the supplementary benefit package can be formed to their needs. Therefore, it is surprising to see such a small number of patient organisations in the dataset. An explanation could be that patient organisations are indeed negotiating on group contracts, but are not very large and therefore fall outside the used criteria. As we discussed in Chapter 2, out of all individuals joining a group contract, only 1% joined a patient group. In addition, we found that on average only 4% of the members of patient organisations participated in a group contract offered by their organisation (van Ruth et al., 2007).
The price of group contracts for the few patient organisations in the dataset is relatively high. This could be due to the fact that individuals who join a patient organization on average are less healthy or may negotiate specific arrangements that are more expensive. Since a patient organization includes the “bad risks”, insurers may set higher prices. This could also explain the low number of insured in patient organisations.

The number of internet groups increased over time. The average price of these group contracts has decreased substantially. The composition of risks in these groups may have a diminishing effect on the price. For internet groups, one would expect to find on average younger, and therefore healthier, individuals than in the other groups.

§ 4-2 Prices of Individual Health Insurance Contracts

The first analysis involves individual health insurance contracts and their expected influential characteristics. The following equation is derived from the theoretical framework in the former chapter:

$$P_{ind} = \beta_0 + \beta_1 \cdot Type + \beta_2 \cdot Insurance + \beta_3 \cdot Before\ 2006 + \beta_4 \cdot Bargaining\ power + \varepsilon$$

4-2-1 Dependent variable

We will start the empirical study with an analysis of the price of individual insurance contracts. Therefore, we use the standard price of the individual insurance contract (P_{ind}) as explanatory variable.

4-2-2 Explanatory variables

- *Type of insurance contract ("Type")*

In-kind contracts are expected to be cheaper than other types of contracts. We therefore create three dummy variables indicating the type of insurance contract. These three variables represent reimbursement, mixed and in-kind insurance contracts. We include the latter two, using reimbursement contracts as comparison group. Since we expect in-kind contracts to be the cheapest, we expect to find a negative sign for the variable that represents in-kind contracts. Mixed contracts are a combination of in-kind and reimbursement contracts and are therefore expected to be priced in between. Again a negative coefficient is expected, although less negative than the coefficient for in-kind contracts.

- *Insurance types offered ("Insurance")*

When an insurer is able to sell more insurance types to a group, it could be expected that they can offer lower prices as a result of the use of cross-subsidies. Three dummy variables are constructed, indicating what insurance types are offered by the insurer. The first variable represents insurers that offer only health insurance. The second dummy variable represents health insurers who offer also travel insurance. The third variable captures insurers who offer even more types of insurance. This division is based on the fact that health insurance and travel insurance are often combined, in order to have health care coverage all over the world. Other types of insurance are less often offered in combination with health insurance.

In the analysis, we include the second and third dummy variable, using the variable for "only health insurance" as comparison group. When insurers offer more than only health insurance, the price of the contract is expected to be lower than when only health insurance

is offered, due to cross-subsidies. A negative sign is therefore expected for the two dummy variables.

- *Former type of insurance offered (Before 2006)*

A distinction between former Sickness Funds and former private insurers is not straightforward. A lot of insurers used to offer both types of insurance and some of the insurers in the dataset are new since the reform. Therefore, we created four dummy variables, based on the overview of insurers in Cuijpers et al. (2005). The first dummy variable represents former private insurers. The second variable represents insurers that used to offer Sickness Fund insurance. The third captures all insurers that used to offer both types of insurance and the fourth dummy variable represents new insurers on the market. This last variable includes several insurers that already existed before the reform, but started to sell health insurance since 2006. The dataset does not include insurers that are totally new in the Netherlands. The second, third and fourth dummy variable are included in the analysis, leaving the former private insurers as reference group.

As explained in the former chapter, former Sickness Fund insurers had fewer reserves at the moment of the reform. In addition, former private insurers are expected to have more negotiating skills than former Sickness Funds. We therefore expect that insurance contracts offered by these insurers are more expensive than contracts offered by former private insurers. A positive coefficient is therefore expected.

For the dummy variable that captures insurers that used to offer both types of insurance, we expect no significant difference with former private insurers, since these insurers faced the same minimum level of reserves as former private insurers and are also used to competition and negotiations on the health insurance market.

Finally, the new insurers are expected to cross-subsidize their new health insurance contracts with reserves from their other types of contracts. Therefore, they are expected to be cheap too. We expect to find a significantly lower coefficient for these new insurers compared to the coefficient for former Sickness Funds. We can discuss about the relation to the comparison group of private insurers. New insurers might be performing even more aggressive pricing strategies than private insurers in order to capture a good share of the market in their early years. When this is the case, a negative coefficient will be found.

- *Bargaining power*

When insurers negotiate with providers of health care, both their bargaining power will influence the outcome of the negotiations and therefore the prices of the insurers' health insurance contracts. Bargaining power can be measured in several ways, as we concluded in Chapter 3. Unfortunately, our dataset does not provide the information to capture bargaining power in our analysis.

- *Time-specific variable (Year)*

Since data are available for two years, a dummy variable will be included to capture time-specific effects. Since the benefit package has changed from 2007 to 2008, and a compulsory deductible is included since 2008, differences in the prices of group contracts across time are to be expected. The former no-claim arrangements led to higher prices, since people were to receive €255 back when they did not use any care. In 2008, deductibles were introduced. Since then, insured have to pay the first €150 of health care costs by themselves, leading to lower prices for the insurance contract. Furthermore, differences in prices across time are usually related to changing health care expenditures and price inflation. Including a dummy variable will subtract these effects which will lead to better estimators.

Since we cannot include all influential variables we discussed in Chapter 3, we will estimate the following equation:

$$P_{ind} = \beta_0 + \beta_1 \cdot In\text{-}kind + \beta_2 \cdot Mixed + \beta_3 \cdot Health\ and\ travel + \beta_4 \cdot Health\ and\ more + \beta_5 \cdot Former\ Sickness\ Fund + \beta_6 \cdot Former\ Both + \beta_7 \cdot New\ insurer + \beta_8 \cdot Year + \varepsilon$$

§ 4-3 Prices of Group Insurance Contracts

The second analysis involves group health insurance contracts and their expected influential characteristics. The following equation is derived from the theoretical framework in the former chapter:

$$P_{group} = \beta_0 + \beta_1 \cdot Price\ individual + \beta_2 \cdot Employer + \beta_3 \cdot Socio\text{-}economic\ characteristics + \beta_4 \cdot Duration + \beta_5 \cdot Size + \beta_6 \cdot Cost\ containment + \beta_7 \cdot Bargaining\ power + \varepsilon$$

4-3-1 Dependent variable

The price of the basic insurance of the group contracts in the dataset is defined as the dependent variable (P_{group}). This price of the basic insurance equals the insurer's standard

price for the basic benefit package minus the discount for the group contract. The standard price is the price paid for an individual contract.

4-3-2 Explanatory variables

- *Price of the individual contract*

As we explained in the former chapter, the price of the equivalent individual insurance contract is a main determinant of the price of a group contract. Therefore, we use the price of the individual contract as an explanatory variable in the analysis of the prices of group contracts.

- *Type of legal person (Employer)*

In order to see whether the distinction between prices of group contracts from several types of legal persons is still present in 2008, a dummy variable is created for the type of legal person. Following the study by Schut and De Bruijn (2007), we made a distinction between employers and other legal persons. In table II, the existing other types of legal persons in the dataset can be found.

- *Socio-economic characteristics*

According to Muñoz Pérez and Shina (2006), socio-economic characteristics like age and income can be of influence on the price of a health insurance contract. For some group contracts, this could be the case too. For instance when an association for elderly decides to offer their members a group contract. More in general we can say that the composition of risks in the group can be of influence on the price of the group contract. However, such characteristics are left out of this empirical study for two reasons. First, in the Netherlands we have a risk-equalization system that captures age and socio-economic status in ex ante payments to the insurer. These characteristics are therefore not expected to be of influence on the price of group contracts. Second, there are no data available on socio-economic characteristics of the groups in the dataset.

- *Duration*

In order to include the duration of the agreement as explanatory variable in the regression, we created a dummy variable. The dummy variable is 0 for contracts that last one year and 1 for longer contracts[1]. A lower price is expected when the contract is signed up for a longer period. Therefore, we expect to find a negative coefficient for this variable.

[1] We were not able to construct a continuous variable for duration since there are not enough observations for 3 or more years.

- *Size*

For the impact of the size of the insurance contract on the price of the contract we create three dummy variables[2]. These dummy variables divide the number of insured in three groups. The variable "size<1000" represents all group contracts with less than 1000 insured individuals. The variable "1000<size<10000" represents all group contracts that include a number of insured between 1000 and 10000. The remaining group ("size>10000") includes all contracts with more than 10000 insured individuals. The second and third variable are included in the analysis. It is expected that for both of these variables, a negative coefficient is found.

We expect that larger groups are able to negotiate lower prices. Therefore, the coefficient for the third dummy variable is expected to be lower than the coefficient for the second dummy variable.

- *Cost-containment methods*

As was found in Jensen and Morrisey (1990), inclusion of cost-containment methods in a health insurance contract can significantly influence its price. In this study, however, there is no variable included for cost-containment. The explanatory variable for price is based on the basic package. For 2007, this means that the price is based on a contract without a deductible, but with a no-claim arrangement. For the contracts in 2008, the price is based on a contract that includes the compulsory deductible of €150. Additional agreements at the individual level are not represented in the dataset. Since only about 5% of the population has agreed on an additional deductible, the fact that this variable is left out is not expected to influence the results significantly.

- *Bargaining power*

Like the previous discussed bargaining power between insurers and providers of care, the literature on bargaining power between insurers and consumers shows several ways to include this variable in the analysis. However, we do not have data available to construct a variable to include in the analysis.

- *Time-specific variable (Year)*

Again a dummy variable will be included to capture time-specific effects. Although differences in prices across time are indirectly captured by the inclusion of the price of the

[2] Again, a continuous variable was not appropriate. When the number of insured individuals is used as explanatory variable, the estimation will not be efficient, since the number of insured individuals ranges from 7 to 463,728.

individual contracts, an additional effect could be present. This additional effect might be due to differences in the discount on group contracts across time.

Again we cannot include all influential variables we discussed in Chapter 3. Therefore, we will estimate the following equation:

$$P_{group} = \beta_0 + \beta_1 \cdot Price\ individual + \beta_2 \cdot Employer + \beta_3 \cdot Duration + \beta_4 \cdot 1000<Size<10000 + \beta_5 \cdot Size>10000 + \beta_6 \cdot Year + \varepsilon$$

In table III, an overview of the included variables is given. In table IV, we show the descriptive statistics of the used explanatory variables. Table A.2 in the appendix shows a correlation matrix of the explanatory variables.

Table III

Overview of the explanatory variables

		Equals 1 when…
Type	Reimbursement	…the group has a reimbursement contract
	In-kind	…the group has an in-kind contract
	Mixed	…the group as a mixed contract
Insurance	Health insurance	…the insurer offers only health insurance
	Health & travel	…the insurer offers health insurance and travel insurance
	Health & more	…the insurer offers all kinds of other types of insurance (also health insurance)
Before 2006	Private	…the insurer used to be a private insurer
	Sickness Fund	…the insurer used to be an insurer under the Sickness Fund Act
	Both	…the insurer used to offer both private insurance and Sickness Fund insurance
	New	…the insurer is new in the health insurance market
Year	Year	…the year is 2008
Employer	Employer	...the legal person is an employer
Duration	Duration	…the duration of the contract is longer than one year
Size	size < 1,000	…the insured group is smaller than 1000 individuals
	1,000 < size < 10,000	…the insured group is larger than 1000 individuals but smaller than 10000
	size > 10,000	…the insured group is larger than 10000 individuals

Table IV

Statistics of the explanatory variables

	2007		2008	
	1 as % of total	Total	1 as % of total	Total
Reimbursement	40.04%	447	41.40%	343
In-kind	46.76%	447	24.78%	343
Mixed	13.20%	447	33.82%	343
Health insurance	11.41%	447	13.41%	343
Health & travel	39.15%	447	37.90%	343
Health & more	49.44%	447	48.69%	343
Private	18.57%	447	21.28%	343
Sickness Fund	10.29%	447	6.41%	343
Both	57.49%	447	65.60%	343
New	13.65%	447	6.71%	343
Employer	56.15%	447	47.81%	343
Duration	92.20%	410	96.94%	327
size < 1,000	31.99%	447	22.16%	343
1,000 < size < 10,000	44.97%	447	46.06%	343
size > 10,000	23.04%	447	31.78%	343

§ 4-4 Model estimation and extensions

In order to explain the dependent variables, several model specifications are estimated using the statistical programme Stata/SE 10.0. The models will be estimated using Ordinary Least Squares with robust standard errors. When using robust standard errors, the estimated coefficients are the same as in estimations without robust standard errors. However, the standard errors are robust to the failure to meet several assumptions underlying the OLS technique. These assumptions include normality and homogeneity of variance of the errors.

We will first estimate the basic model for individual insurance contracts. We will try to explain the difference between the prices in the two years that are included in the dataset. Therefore, we will also estimate the basic model for 2007 and 2008 separately. This way we might be able to observe what characteristics cause a difference in prices over time.

In addition, we will extend the basic model by adding dummy variables for the six existing cooperation groups of insurers in the Netherlands. These cooperation groups are groups that exist of several insurers. This distinction is based on the overview in Smit and Mokveld (2008). According to them, not all insurers within the groups actually buy health care together, but some do and for the others we can say that at least they share their expertise in negotiating. By adding a dummy variable per cooperation group, we are able to include insurer-specific characteristics that influence prices but are not included in the explanatory variables[3]. Examples of insurer-specific effects that are not captured in the explanatory variables are the insurer's reputation, its own expertise in negotiating with both providers and consumers, and its level of service offered to consumers. In table V, the number of observations per group is given.

Groups 1 to 4 are strategic alliances. These groups of health insurance companies buy health care together but sell it through separate insurer companies. Group 5 was formed by a merger. Although legally this group is seen as one company and cash flows are combined, the merged insurer companies still use their own names. Finally, group 6

Table V

Cooperation groups

Group	Number of observations
1	224
2	97
3	74
4	92
5	207
6	95

[3] Of course, insurer-specific effects are captured best when a dummy variable per insurer is added. However, since the dataset does not include enough observations for all insurers to add a dummy variable for each insurer separately, we chose to include these effects per cooperation group.

is a group with less collaboration. This group exists of insurers that do not share more than knowledge and expertise. With this distinction in mind, we will be able to connect observations to the type of collaboration and the price of an insurance contract.
In the analysis we include dummy variables for the first five groups, using the sixth group as comparison group.

Second, we will estimate the basic model for group insurance contracts. Again we estimate the basic model for both years and for 2007 and 2008 separately and we add insurer-group dummy variables to an additional regression.

For group contracts, we define an additional extension. We include the variable for in-kind contracts and mixed-contracts in this analysis too. As we discussed before, in the Netherlands, in-kind contracts still include all health care providers. When we find a significantly negative coefficient for this variable in the analysis of individual contracts, this might indicate a different mechanism. Maybe administrative costs are lower and maybe insurers want to attract consumers for this type of contract already. When this is the case, insurers might be focussing on selling in-kind contracts to groups. In that case, in-kind contracts might lead to lower prices for groups than for individual contracts. Stated differently, groups might be able to negotiate a higher discount on in-kind contracts than on reimbursement contracts. To see whether this indeed is the case, we include the dummy variables “In-kind” and “Mixed” in the analysis for group contracts too.

Chapter V - Results

In this chapter, we describe the results from the OLS estimations and discuss our findings in the light of the stated hypotheses in the former chapter. We will first describe the estimations of the model specifications for the individual insurance contracts. First we discuss the basic model, both with inclusion of a dummy variable for year and for the two years included in the dataset separately. In addition, we discuss the extended model including insurer-group dummy variables. In the second paragraph, the model specifications for group health insurance contracts are discussed. Again we start with the basic model. In addition, we extend the model with insurer-group dummies and with the variables for the type of insurance contract. Finally, paragraph three concludes the chapter.

Although the dataset consists of 790 group contracts, only 737 observations are included in the regression analyses for group contracts. This difference is due to missing observations for the explanatory variable “Duration”. For the F-tests and t-tests we performed throughout the study, we use a significance level of 5%.

§ 5-1 Individual insurance contracts

5-1-1 The basic model

In table VI, the results from the estimation of the basic model for individual insurance contracts are presented. The model is first estimated with inclusion of a dummy variable for year (2008). This dummy variable shows that the price of insurance contracts in 2008 was significantly lower than the price in 2007, just as expected. In the same table, the separate estimations for 2007 and 2008 are shown.

The estimated coefficients for in-kind contracts show the expected negative sign, meaning that in-kind contracts are significantly cheaper than reimbursement policies.
We note again that Dutch insurers do not exploit their possibility of selective contracting much yet. In-kind contracts often include all health care providers in the Netherlands. This makes the result of significantly lower in-kind contracts of special interest. The question why these contracts are cheaper is unanswered by this study. Several explanations are possible. As we discussed in Chapter 3, the administrative burden of in-kind contracts is much smaller than for reimbursement contracts. This might lead to lower costs for in-kind contracts than for reimbursement contracts. Another explanation could be that insurers already want to attract consumers for these policies before they will reduce the amount of choice. In addition, it

might be that case that hospitals are already willing to be included in in-kind contracts and therefore offer lower prices to insurers when negotiating on in-kind contracts.
The coefficient in 2008 is significantly lower than the one in 2007. This might indicate that insurers have started to actively sell and negotiate for in-kind contracts since 2008.

Table VI

Price of the Individual Insurance Contract

	All data	2007	2008
Constant	1196.72	1192.76	1145.19
	[2.11***]	[2.65***]	[3.11***]
In-kind	-17.84	-10.55	-36.59
	[2.00***]	[2.48***]	[2.37***]
Mixed	-0.56	4.90	-1.85
	[1.90]	[2.32**]	[2.50]
Health and travel ins.	-42.62	-36.46	-50.74
	[2.34***]	[3.41***]	[3.51***]
Health and more	-32.53	-36.85	-24.45
	[2.31***]	[3.25***]	[3.58***]
Former Sickness Fund	4.39	1.57	7.81
	[2.57*]	[3.02]	[3.94**]
Former Both	1.36	-0.17	4.90
	[2.68]	[3.40]	[3.87]
New insurer	-25.19	-19.86	-38.48
	[3.03***]	[3.39***]	[5.81***]
2008	-54.11	-	-
	[1.43***]		
	N = 790	N = 447	N = 343
	R2 = 0.715	R2 = 0.420	R2 = 0.644

Robust standard errors are expressed between brackets. Significance is indicated with the following significance levels: * = 0.1, ** = 0.05, *** = 0.01.

According to the model with all data, mixed policies seem to be slightly cheaper than reimbursement contracts, although not significant. However, the coefficient in 2007 is significantly positive. This might be due to the fact that this type of contract brings a higher administrative burden. With a reimbursement policy, everything is fully reimbursed. With a mixed policy, a distinction is made between fully reimbursed contracted care and not fully reimbursed care from providers that are not contracted. Administrative costs from a mixed contract might be higher than administrative costs for the 'easy' reimbursement policy, leading to higher prices for mixed policies.

Estimated coefficients for the variables that capture the types of insurance that insurers offer ("health and travel" and "health and more") are significantly negative as expected. When an insurer offers both health insurance and travel insurance, the price of a health insurance contract is significantly lower than when an insurer only offers health insurance. The same

holds for insurers that offer other insurance types too. This is an indication that cross-subsidies are present in the insurance market.
An F-test on equal coefficients shows that the estimated coefficients are significantly different from each other, except for 2007. We can conclude that selling other types of insurance leads to lower prices for insurance contracts. When an insurer offers the combination of health insurance and travel insurance, lower prices are asked than when an insurer offers other types of insurance too. This difference is remarkable since the insurers that offer all kinds of other types of insurance, often offer travel insurance too. The difference between the coefficients might be caused by some kind of selection mechanism. By offering the combination of health insurance and travel insurance, a certain type of consumer might be attracted.

Finally, the type of insurance an insurer used to offer before the reform is found to be significantly influential on the price of insurance contracts after the reform. Insurers that used to offer Sickness Fund insurance are priced higher than insurers that offered private insurance. This was expected, since former private insurers are expected to have a focus on price competition, while former Sickness Fund insurers are not able to perform such aggressive pricing strategies due to lack of reserves. In addition, former Sickness Fund insurers are not expected to be used to negotiations.
The fact that prices from insurers that used to offer both types of insurance does not significantly differ from prices of former private insurers can be explained with the same theory. Insurers that used to offer both types of insurance are also focusing on price competition. The fact that these insurers offered Sickness Fund insurance too does not change that focus.
Insurers that are new on the health insurance market are significantly cheaper than former private insurers. The new players on the health insurance market might also have started with aggressive pricing strategies in order to obtain market share.

5-1-2 Insurer-group dummy variables
Table VII shows the basic model with inclusion of insurer-group dummy variables. Inclusion of dummy variables for each group of insurers leads to different results for the explanatory variables. Some values are lower, and some show different significance levels than in table VI.

From the estimated coefficients for the insurer-group dummy variables we observe some differences in price. Since all estimated coefficients are positive, we conclude that the comparison group is the cheapest. This is surprising since the comparison group represents

the group with the least collaboration. Insurance companies in this group only share their knowledge and expertise; they do not buy health care together while the other five groups do. In addition, we cannot find a strict distinction in prices between the four strategic alliances and the merged group.

Table VII

Insurer-Specific Effects Individual Contracts

	All data
Group 1	13.53
	[1.56***]
Group 2	12.87
	[2.73***]
Group 3	5.36
	[2.30**]
Group 4	23.48
	[2.69***]
Group 5	16.57
	[1.94***]
Constant	1178.09
	[2.89***]
In-kind	-17.40
	[2.40***]
Mixed	4.63
	[2.38*]
Health and travel ins.	-38.57
	[2.83***]
Health and more	-29.80
	[2.52***]
Former Sickness Fund	15.37
	[2.74***]
Former Both	2.39
	[2.81]
New insurer	-24.88
	[2.94***]
2008	-54.55
	[1.47***]
	N = 789
	R2 = 0.736

Robust standard errors are expressed between brackets.
Significance is indicated with the following significance levels: * = 0.1, ** = 0.05, *** = 0.01.

When we compare the results from tables VI and VII, we observe a few interesting differences. The coefficients all have changed, although only the difference between the estimated coefficients for “Former Sickness Fund” is significant. This coefficient has increased substantially, meaning that we found an even larger difference between the prices of former private insurers and former Sickness Funds than we found in the analysis without the group-dummies.

The R-squared from table VII is slightly larger than the R-squared in table VI, indicating that the second model specification yields a better fit.

We can conclude that insurer-group specific dummy variables capture some unobserved insurer-specific effects. Although the analysis mainly consists of insurer-specific characteristics, most of the coefficients and corresponding conclusions do not change when group dummies are added.

§ 5-2 Group insurance contracts

5-2-1 The basic model

In table VIII, the results from the basic model including group contracts are shown. Again we performed the analysis for both the entire dataset and for the two included years separately. The price of the equivalent individual insurance contract is significantly of influence on the price of the group contract, as expected. The value of 0.68 should be interpreted as follows. When the price of the individual insurance contract increases with one euro, the price of the equivalent group contract increases with 68 eurocents. This is counterintuitive, since the discount on group contracts is allowed to be maximal 10%, leading to an expected coefficient of at least 0.90. The difference between the expected and estimated coefficients is probably captured partly by the other variables and partly by the constant term.

The variable that distinguishes employer-based group contracts from other types shows a negative sign and is significantly different from zero. Employer-based group contracts are significantly cheaper than group contracts offered by other legal persons. This confirms the study of Schut and De Bruijn (2007) for the year 2007 and the findings by the Dutch Healthcare Authority for the year 2008. The difference in price between employer-based group contracts and other types remained quite stable the past two years.
This difference in prices between employer-based group contracts and contracts offered by other legal persons might be an indication of risk selection *through* group contracts, as was explained in Chapter 2. Insurers might be convinced that the working population in general is healthier than the rest of the Dutch population. Lower prices will then be asked to these groups with relatively ‘good risks’ when compared to other groups.

The coefficient for the duration of the contract shows the expected negative sign. Contracts that are agreed on for only one year face a higher price than contracts that last longer. It should be noted that the estimated value is not significant in 2007, while it is in 2008. Apparently, insurers are able to differentiate on the price by duration of contracts only since

2008. This might be due to the fact that in the first years after the reform, consumer mobility was high, and insurers had to attract consumers. In those years, consumers were probably not yet willing to bind themselves to a certain insurer for a longer period of time. Due to competition, insurers could not set too high prices for short-term contracts. Since most consumers have settled with a certain insurer now, higher prices can be asked for contracts that last only one year.

Table VIII

Price of the Group Insurance Contract

	All data	2007	2008
Constant	315.24	323.21	304.96
	[41.5***]	[80.08***]	[41.79***]
Price individual contract	0.68	0.67	0.68
	[0.04***]	[0.07***]	[0.04***]
Employer	-13.15	-13.33	-13.34
	[1.97***]	[3.03***]	[2.55***]
Duration	-5.92	-2.80	-17.07
	[3.93]	[4.62]	[7.66**]
1000 < Size < 10000	-18.64	-16.89	-21.54
	[2.59***]	[3.70***]	[3.44***]
Size > 10000	-25.74	-26.34	-25.40
	[2.53***]	[3.63***]	[3.39***]
Year	-13.58	-	-
	[2.63***]		
	N = 737	N = 410	N = 327
	R2 = 0.606	R2 = 0.309	R2 = 0.551

Robust standard errors are expressed between brackets. Significance is indicated with the following significance levels: * = 0.1, ** = 0.05, *** = 0.01.

The estimated coefficients for the size of the contract show the expected negative sign, meaning that a larger size leads to lower prices. Results of an F-test show that the estimated coefficients for “1000<Size<10000” and “Size>10000” are significantly different from each other, except for 2008. We can conclude that larger groups receive larger discounts. The difference in the upper groups, however, is diminishing over time.

For 2008 we can say that insuring a group with less than 1000 individuals (the comparison group) leads to a significantly larger price than insuring a group of more than 1000 individuals. Above the threshold of 1000 individuals, we have not found a difference in prices.

For the year dummy we find a significantly negative coefficient. Although the variable for prices of individual contracts indirectly captures a difference over time, we do find an additional effect of the time dummy. This might be due to changes in discounts over time. The negative coefficient shows that prices of group contracts have decreased over time.

5-2-2 Insurer-group dummy variables

Table IX shows the basic model with inclusion of insurer-group dummy variables. Again we see a small change in several variables and an increase in the R-squared. Signs and significance have not changed, except for duration which has become significantly negative. The coefficients for size are smaller than in the former table and seem to differ less from each other. However, an F-test shows that these coefficients are still significantly different from each other.

Table IX

Insurer-Specific Effects Group Contracts

	All data
Group 1	-12.49
	[2.88***]
Group 2	-19.02
	[3.24***]
Group 3	18.42
	[4.12***]
Group 4	-2.77
	[5.74]
Group 5	-7.32
	[2.79***]
Constant	318.55
	[59.17***]
Price individual contract	0.68
	[0.05***]
Employer	-12.51
	[1.81***]
Duration	-7.63
	[4.02*]
1000 < Size < 10000	-13.82
	[2.65***]
Size > 10000	-18.41
	[2.57***]
Year	-12.67
	[3.26***]
	N = 736
	R2 = 0.659

Robust standard errors are expressed between brackets. Significance is indicated with the following significance levels: * = 0.1, ** = 0.05, *** = 0.01.

It is interesting to compare the results from table IX with table VII. In table VII we already found that some insurer groups are more expensive than others. This effect on the price of the individual contracts is indirectly captured by the variable P_{ind} in this analysis. However, the insurer-specific dummy variables are still significantly different from zero. This indicates that insurers are not just more expensive or cheaper than others, their prices for group contracts differ in a different way than the prices for individual contracts. Note, for example,

the following: while the prices of individual contracts from group 1 are significantly larger than the prices of the comparison group according to table VII, table IX shows that *group contracts* from group 1 are cheaper than the ones in the comparison group. So, insurers from comparison group 6 sell cheaper individual insurance contracts than others, but for legal persons it is harder to negotiate on discounts with an insurance company from this insurer-group.

5-2-3 Extension: type of insurance contract

In table X on the next page, the results from the third model specification are given. Dummy variables for the type of insurance contract are added to the basic model. As we already found in tables VI and VII, the type of contract is significantly of influence on the price of a contract. As we discussed there, we expect that insurers want to attract consumers for these types of policies for several reasons.

The expectation that insurers are willing to attract many consumers for in-kind contracts is strengthened by the analysis in table X. Although the effect on prices of individual contracts is captured by the variable for individual contracts, the variable for in-kind contracts is still significantly negative. This implies that groups face higher discounts when they agree on an in-kind contract than when they agree on a reimbursement contract. This implies that insurers are trying to attract groups for their in-kind contracts.

§ 5-3 Conclusion

In this section, the results are briefly discussed. A substantial amount of the hypotheses stated in chapters 3 and 4 is confirmed by estimation results from the different model specifications. We will discuss the two basic models separately. Conclusions are drawn from the comparisons between the two years in the dataset and between the different model specifications used.

5-3-1 Individual insurance contracts

The price of an individual insurance contract is significantly influenced by the type of insurance policy. In-kind contracts are cheaper than reimbursement contracts. An explanation for this observation could be that insurers want to attract consumers for this type of insurance. Several reasons can be brought forward. First, administrative costs are relatively lower for in-kind contracts. In addition, insurers and health care providers might both be willing to attract consumers for in-kind policies, assuming that consumers do not switch easily when the provider network becomes restricted. Prices of mixed contracts do not show a significant difference with prices of reimbursement contracts.

Table X

Type of group contract added

Group 1	-11.53
	[3.14***]
Group 2	-20.37
	[4.09***]
Group 3	23.62
	[4.36***]
Group 4	-2.44
	[6.19]
Group 5	-4.21
	[3.47]
Constant	400.13
	[64.52***]
Price individual contract	0.61
	[0.06***]
Employer	-12.56
	[1.77***]
Duration	-8.65
	[4.21**]
1000 < Size < 10000	-11.17
	[2.82***]
Size > 10000	-13.49
	[2.90***]
In-kind	-11.68
	[2.64***]
Mixed	-7.09
	[3.57**]
Year	-17.10
	[3.85***]
	N = 736
	R2 = 0.668

Robust standard errors are expressed between brackets. Significance is indicated with the following significance levels: * = 0.1, ** = 0.05, *** = 0.01.

The types of insurance an insurer sells is also found to be of significant influence. When an insurer sells travel insurance in addition to health insurance, it offers cheaper health insurance contracts. The same, although with a smaller coefficient, holds for insurers that offer even more types of insurance. This indicates presence of cross-subsidies in the insurance market. Health insurance is in that case financed by profits from other types of insurance.

The type of insurance an insurer used to offer before the reform influences the price of an insurance contract too. When the insurer used to be a Sickness Fund, it offers significantly more expensive contracts than when it used to offer private health insurance. This could be explained by presence of reserves and experience in a competitive environment. When an

insurer sold both types of insurance before the reform, its prices are not significantly different from former private insurers. Insurers that are new on the market of health insurance sell significantly cheaper contracts than the others. It is expected that they try to obtain market share by cross-subsidizing health insurance with reserves from their other types of insurance.

Finally, we found that there are unobserved insurer-specific characteristics that are of influence on the price of an individual insurance contract. When we included insurer-group specific dummy variables, the model fit improved and we found significant differences in price. These differences could be caused by unobserved effects as reputation and expertise. An interesting results of the inclusion of insurer-group dummy variables is that the group with the least collaboration offers the lowest prices. Groups that buy health care together are found to offer higher prices.

When we compare the two years in the dataset, we find that health insurance contracts have become significantly cheaper in 2008. This is due to the difference in composition of the basic insurance. Not only the benefit package has changed slightly, the rebate-rule has been replaced by a deductible too. Next to the price of the insurance contract, consumers now have to pay the first €150 of their demanded health care too. Therefore, health insurance has become cheaper.
Several variables show different coefficients in 2007 and 2008. Most expected effects are stronger present in 2008. This might be caused by the fact that the market was reformed in 2006. It is not expected to be in a long-term equilibrium yet. While the effect of the former type of insurance is expected to diminish over time, other effects may increase over time. An example is the difference between in-kind and reimbursement contracts. Nowadays, insurers do not work with preferred provider networks yet. The difference between the prices of in-kind and reimbursement contracts might rise when insurers start restricting access.

5-3-2 Group insurance contracts

The price of a group contract depends mainly on the price of the equivalent individual insurance contract. In addition, several group- and contract-specific characteristics are found to influence the price of the group contract.

The type of legal person that offers the contract to its members is of influence on the price. Employer-based group contracts are significantly cheaper than contracts offered by other types of legal person. This could be explained by risk selection through group contracts.

When a group entirely consists of employees, this says something about the composition of risks in that group.

In addition, the duration of the agreed contract has a negative impact on the price of the contract. When a contract is signed for more than one year, it is significantly cheaper than a one-year contract. This might be due to risk diversification over time and lower administrative costs.

Large groups are found to be able to negotiate on lower prices. This is expected to be due to purchasing power of groups. When a group is large, it is attractive to an insurer. This leads to bargaining power for the group. Lower prices are therefore a result of negotiations between the legal person representing the large group and the insurer offering the contract.

For group contracts we also found that unobserved insurer-specific characteristics have an influence on price. Although insurer-specific effects were already indirectly captured by the price of the individual contract in the analysis, a significant effect on the price of group contracts was found too. In the analysis for individual insurance contracts we were able to see which insurer-groups are more expensive than others. With the observed additional effect on the price of group contracts we can conclude the following. For individual insurance contracts, some insurer-groups are more expensive than others, but the ranging is not necessarily the same for group contracts. This might be due to the fact that some insurers specifically focus on offering group contracts, while others do not.

A final effect that was found in the analysis of group contracts is an influence of the type of insurance policy. While this variable was expected to be mainly of influence on the price of the equivalent individual insurance contract, it is found to be influential on the price of group contracts too. This observation implies that groups are able to negotiate on larger discounts for in-kind contracts than for reimbursement contracts, while the standard price for in-kind contracts is already lower. This can be explained in the following way. We already concluded that insurers want to attract consumers to in-kind contracts for several reasons. When insurers want to attract many consumers, they are probably willing to attract groups even more. Offering higher discounts on in-kind contracts is a strategy to attract groups of consumers at once.

Chapter VI - Conclusions and discussion

This study aims at a description of the way prices of group contracts are realised. This includes both the legal framework in which insurers act and an empirical test of factors that have an impact on the actually paid price. This chapter draws a conclusion by answering the research question. In addition, we discuss the limitations of the study and describe policy recommendations.

§ 6-1 Conclusion

On January 16th 2006, the Dutch government implemented a new health insurance system: the Health Insurance Act (HIA). This reform in the Dutch health insurance market has changed the setting of health insurance contracts significantly. Under the Health Insurance Act, a system of managed care is introduced in the health insurance market. As a result, the market is expected to provide better incentives for efficiency and innovation. Insurers face several new legal constraints. First, a standardised basic insurance package is determined by the government. Second, it is prohibited to practise risk-rating and risk-selection. Insurers are compensated for bad risks in their pool through a risk-equalization scheme. Third, children less than 18 years old are free to choose any insurance contract and do not have to pay contributions. Finally, for group health insurance contracts, a maximum of 10% discount on the premium is allowed.

Since the reform, group health insurance contracts have become more important. While only 29% of the insured individuals was assigned under a group contract in 2005, in 2008 this amount has risen to 59% of the entire Dutch population (Smit and Mokveld, 2008). According to a study by Atos (2007), the price of group contracts has been a major determinant of the growing interest in group contracts.

Prices of group contracts are expected to be influenced by many factors. Since the price of a group contract is based on the price of the equivalent individual insurance contract, we studied the prices of individual contracts first. We formed a theoretical framework by discussing several possible explanatory variables. These factors are divided in two parts. First, insurer- and contract-specific characteristics that are expected to influence the price of the equivalent individual insurance contract and therefore to indirectly influence the price of a group contract. The second part contained group- and contract-specific characteristics that are expected to influence the price of group contracts. Not all factors found in the literature could be used in the empirical part of this study, mainly due to lack of data.

The results of this empirical study are the following. The price of an individual insurance contract depends on several variables. First, in-kind contracts are cheaper than other types of contracts. Most likely this is caused by the insurers' wish to sell mainly in-kind contracts, due to the lower costs these contracts bring.
Second, whether or not a health insurer sells other types of insurance too, significantly influences the price of the offered contract. The cheapest insurers are those who sell travel insurance in addition to health insurance. We expect these lower prices for health insurance to be financed through cross-subsidies.
A third effect we found was caused by the type of insurance the insurer sold before the reform in 2006. The differences between prices from former Sickness Funds, former private insurers, insurers who used to offer both types of insurance and new insurers is expected to be caused by the difference in available reserves to finance health insurance and by the difference in expertise on a competitive market. New insurers are the cheapest, followed by former private insurers and insurers who used to offer both types. Former Sickness Funds proved to be more expensive than the other types of insures.
The final observation from the analysis of individual insurance contracts is that there are some unobserved insurer-specific effects that also have an influence on the price of the individual insurance contract. Unobserved effects can be reputation and expertise. Groups that only share their knowledge and expertise are found to offer lower prices than groups that buy health care together.

The price of a group contract depends mainly on the price of the equivalent individual insurance contract. In addition, we found several other variables that influence the price of the contract. First, the price is significantly influenced by the type of legal person that offers the insurance contract to its members. Employer-based group contracts are significantly cheaper than other types. This is most likely caused by risk-selection through groups.
Second, both the duration of the contract and the size of the insured group lower the price. The first effect is expected to be caused by risk diversification over time and lower administrative costs; the latter is expected to be caused by purchasing power of groups.
Again, some unobserved insurer-specific effects are found to be influential on the price of the contract too. This indicates that insurers have a different view on group contracts.
Finally, the type of insurance policy influences the discount on the price too. In-kind group contracts are significantly cheaper than reimbursement contracts. This observation implies that groups are able to negotiate on larger discounts for in-kind contracts than for reimbursement contracts. Offering higher discounts on in-kind contracts might be a strategy to attract large groups of consumers, which is easier than attracting many individuals.

Over time, we observed some differences in influence. Health insurance contracts have become significantly cheaper in 2008. This is due to the difference in composition of the basic insurance. Several variables show differences between coefficients in 2007 and 2008. Most expected effects are stronger present in 2008. This might be caused by the fact that the market was reformed in 2006. It is not expected to be in a long-term equilibrium yet. This will be discussed in the next paragraph.

§ 6-2 Discussion

Although this study is able to answer the research questions as stated in the first chapter, one should be aware of several limitations. Limitations will be discussed in this paragraph, together with recommendations for further research.

The analysis

A first important aspect that should be noted is that this research has been performed three years after the reform of the health insurance market. The market is not expected to be in a long-term equilibrium yet. For example, in-kind policies are not formed the way they are expected to be and preferred provider networks are not often included. In addition, insurers and hospitals do not behave totally competitive yet. In order to see which factors will stay influential and which ones will not, this type of study should be performed again in a couple of years. Data will then be available for a longer period and the market might be moving towards a long-term equilibrium.

In addition, the empirical analysis is a rough indication of factors that are of influence on the price of a health insurance contract. Not only the small number of years included in the dataset leads to this conclusion, also the fact that we only use dummy variables leads to a rough indication of influences.

Assumptions

The underlying assumption that insurers recharge their negotiated prices might be violated. This empirical study contains estimations of an indirect causal relationship. We use explanatory variables that have a direct impact on the costs for the insurer and relate it to the actually paid price by the consumer. When insurers keep (a part of) the negotiated discounts for themselves, we might not find a significant influence on the price paid by consumers. It is hard to verify whether this assumption is violated or not, but we assume that competition will lead to at least a partial recharge by insurers.

Biases in the data

A third important aspect that should be noted here is that we must be aware of several biases in the data that lead to a bias in the estimated coefficient for the variable “Size”.

First, the criteria used by the Dutch Healthcare Authority for collection of the data lead to a selection bias. For each insurer, the dataset contains the largest group health insurance contracts. We expect the price to be smaller for large groups, but only large groups are included in the dataset. Therefore, we do not have a total overview of existing prices. The estimated coefficient for the variable “Size” is expected to be biased.

In addition, the variable “Size” is not exogenous. A legal person and an insurer negotiate on the price of the health insurance contract before the number of individuals that join the contract is known. After the contract is signed, members of the legal person get to choose whether or not to join the insurance contract. Price is an important determinant in this situation. Size is therefore influenced by the price of the contract.

Using an instrumental variable would be a solution to this endogeneity problem. In the case of a perfect panel dataset over several years, we would have been able to use the size of the contract in the former period (S_{t-1}) to establish an instrumental variable for the size of the contract in this period (S_t). In this study, we were not able to establish such an instrumental variable. The dataset is an unbalanced panel with too less observations present in both years.

Another option we considered was to include the size of the legal person. When a new contract is established, an insurer might estimate the size of the future contract by the size of the legal person. When a legal person is small, the size of the contract can not become very large. For large legal persons the size of the contract is expected to be larger. Unfortunately we were not able to gather information about the size of the legal person.

When this research would be performed again in a couple of years, we would recommend using a dataset with all group health insurance contracts, instead of only the largest. That way we both get round the selection bias and we are able to follow groups, and their size, over time. The bias in the variable “Size” can be solved this way.

Supplementary insurance

Fourth, we should note the exclusion of supplementary insurance in the analysis. Since about 92% of the Dutch population has bought supplementary insurance in 2008 (Smit and Mokveld, 2008), it would be interesting to estimate a separate model with the total out-of-pocket price used as explanatory variable. Here the total out-of-pocket price is defined as a sum of the basic price and the price for supplementary insurance. Since there is much room for negotiation when it comes to supplementary insurance, the packages provided by

different insurers are not comparable. A supplementary contract could be relatively cheap, but that might be due to a sober coverage. In this study, and with the used dataset, incorporating supplementary insurance in the comparison was not an option. This is mainly due to lack of information on the agreements in the supplementary contract.

Bargaining power

We discussed several studies that focus on bargaining power in the health insurance market, which imply that it could be of influence on the prices of insurance contracts. Although this could be interesting to examine, we were not able to include the bargaining power as an explanatory variable in the analysis due to a lack of data. A possible addition could therefore be to extend the analysis with a variable for bargaining power.

Variable Employer

The variable "Employer" was included in the analysis of group contracts. We found a significant influence of this variable on price. The division of legal persons in "Employers" and "Others" was based on the papers by Schut and De Bruijn (2007) and by the Dutch Healthcare Authority (2008). Both papers found that employers offer significantly cheaper contracts. However, a more detailed analysis of the influence of the type of legal person on the price of a group contracts would be interesting. Adding dummy variables for each legal person separately would provide more information. Unfortunately, the dataset used for this analysis did not include enough observations to distinct all legal persons from each other.

Travel insurance

A final interesting topic related to this study is travel insurance. We find that insurers who offer both health and travel insurance ask lower prices than other insurers. This is a finding which is not explained by this study. Therefore, it would be interesting to investigate prices of travel insurance of these insurers too. Based on the results from this study, we might expect prices of travel insurance to be larger for insurers that offer health insurance too, since we expect health insurance to be financed through cross-subsidies.

§ 6-3 Policy recommendations

As the health insurance market is not in a long-term equilibrium yet, we must consider that intervention may not be desirable at this moment. The competitive environment on the market can not be expected to be fully efficient in such a short period. Although we recommend waiting for further developments before the government adjusts policy again, we consider what the findings of this study might imply for further policy decisions. In this

discussion we focus on two points of interest according to the literature. These two are cost control and quality improvement.

Although keeping health insurance affordable for consumers is an important policy goal, we can not exclusively focus on lower prices of insurance contracts. We must keep in mind the considerable losses insurers faced since the reform. Keeping health insurance affordable can only be reached in the long run when insurers at least break-even. Therefore, to reach both goals of affordability for consumers and profitability for insurers, government should focus on cost reductions and improvement of efficiency for insurers.
At this moment we seem to face a conflict situation. Discounts on group health insurance contracts can not remain to exist when insurers keep facing losses. The empirical part of this study found several characteristics that lead to lower prices of group health insurance. Some of these are expected to be indirectly related to the price of the contract, namely through an influence on costs. When government wants to interfere on the market to assure that insurers can survive, they might want to stimulate these cost influencing characteristics.

Price reducing variables include duration and size. The fact that these characteristics lead to a lower price can be explained in two ways. It might be due to market power of the group and to diversification (respectively over time and across individuals). When the latter is the case, this is a factor that influences expected costs. Uncertainty with respect to costs decreases as a result of diversification.
In addition, we found that cross-subsidies seem to lead to lower prices too. Whether cross-subsidizing is a long-term solution depends on the profitability of the other types of insurance from which the cross-subsidies stem. The presence of cross-subsidies imply that the purchase of care is probably not efficient yet. In addition, Dutch insurers do not exploit their possibility of selective contracting much yet, again obstructing the efficiency of the market. The government might be willing to interfere in these matters. The Dutch Healthcare Authority indeed has started several activities to improve the efficiency in the purchase of care (NZa, 2008).

To improve competition on quality, or at least transparency with respect to quality of care, intervention might be desirable. Again, the purchase of care is the start of the problem. Although the empirical part of this study did not include quality, an indirect implication of the results is that there might be a too large focus on price competition. Insurers seem to use all kinds of methods to lower the prices of their insurance contracts, even though losses are inevitable that way.

To conclude, we recommend a focus on the efficiency of the purchase of care by insurers. This purchase of care should be focused both on price and on quality. In order to reach higher transparency with respect to quality of care, the government might need to interfere.

Appendix

Table A.1

Amount of contracts per insurer

Insurer	2007	2008
1	30	11
2	16	15
3	10	10
4	18	10
5	24	11
6	16	17
7	16	10
8	22	0
9	10	16
10	10	10
11	30	2
12	19	17
13	10	11
14	20	21
15	15	20
16	3	3
17	30	30
18	0	10
19	0	1
20	13	10
21	30	30
22	10	10
23	13	13
24	25	27
25	16	16
26	30	0
27	11	12
Total	447	343

Table A.2 shows the correlation matrix of all explanatory variables included in the basic model. In general, correlations between variables are not really high. Some correlations are obviously larger. We will briefly discuss the ones that are larger than |0.5|.

First, the correlation between Size 2 (1000 < size < 10000) and Size 3 (10000 < size) is equal to -0.5349. The negative sign is due to the fact that Size 2 is always equal to zero when Size 3 is equal to one and vice versa. The value of 0.5 was to be expected, since they exclude each other, and there are only 219 observations where they are both zero (namely: when Size 1 (size < 1000) is equal to one, see figure A.1).

Table A.2

Correlation matrix

	Employer	Duration	Size2	Size3	In-kind	Mixed	H. & travel	H. & more	Sickness F	Both	New
Employer	1.0000										
Duration	0.1713	1.0000									
Size2	0.0228	-0.0462	1.0000								
Size3	-0.2034	-0.0013	-0.5349	1.0000							
In-kind	-0.1448	-0.0823	0.1056	0.2176	1.0000						
Mixed	-0.0313	0.0350	-0.0396	0.1167	-0.3805	1.0000					
H. & travel	0.0710	0.0986	0.0067	0.2372	0.1177	0.1241	1.0000				
H. & more	-0.1742	-0.1427	0.0469	-0.1200	-0.0027	-0.0387	-0.7871	1.0000			
Sickness F.	0.1104	0.0190	-0.1289	-0.2014	-0.2261	0.1191	0.1470	-0.0660	1.0000		
Both	-0.1735	-0.1047	0.2263	0.4469	0.3909	0.0594	0.2783	-0.1054	-0.3974	1.0000	
New	-0.0177	-0.0176	-0.0071	-0.1650	-0.0489	0.1619	-0.2737	0.1467	-0.1118	-0.4104	1.0000

The second correlation that is worth noting is the one between “Health and travel” and “Health and more” which is equal to -0.7871. Again, the fact that the correlation between these variables is high is intuitive. Since these two exclude each other, meaning that when one of them is equal to one, the other is certainly zero, the correlation is negative again. In addition, there are only a few insurers that do not sell any other type of insurance, next to health insurance. This causes the correlation to be quite high: for only 97 observations, the variables are both zero.

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