Introduction

INTRODUCTION

In many countries, market mechanisms are used to generate incentives for efficiency in health care markets. However, markets may suffer from market failures, resulting in an inefficient use of resources. Economists can help to design and tweak markets such that the public goals that have been set are reached. It is thus important to understand these market failures and to advance policy proposals that can help to avoid these failures.

In most OECD countries, markets play an important role in the delivery of health care. Additionally, in several OECD countries markets play an important role in the financing of health care, by means of health insurance markets, as well. This is for example the case in the United States, the Netherlands, Switzerland and Israel (OECD 2018). Such health care markets consist of a complex interaction between consumers, insurers and providers. Generally, in these health systems consumers buy health plans from competing health insurers. These health plans give consumers access to a network of providers when they seek treatment. An insurer and a provider negotiate over the inclusion of the provider into the insurer's network. These negotiations result into contracts that include for example the reimbursement rates. Hospitals compete with each other to be included into an insurer's network based on their contracts. Health insurers compete with each other based on their health plan premiums and the breadth and quality of their provider networks (Gaynor et al., 2015).

A potentially important source of market failure in health care is insufficient competition between health care providers. In that case, health insurers are not able to bargain effectively with providers. This results in high reimbursement rates and, most likely, high premiums. Another potential source of market failure is that health insurance markets can by affected by selection problems and information frictions. There is selection in the health insurance market when insurers cannot price all risk characteristics and riskier consumers choose more comprehensive health plans (Handel, 2013). Adverse selection can induce insurers to offer health plans with the goal to encourage self-selection by healthy individuals. Furthermore, information frictions may hamper optimal consumer choice in health insurance markets. A mismatch between people's preferences and their health insurance choices is then created (Handel & Kolstad, 2015). This thesis examines these market failures in the context of the Dutch health care system. It focuses on (*i*) market power in the provider market and (*ii*) selection and inertia in the insurance market.

1. DUTCH HEALTH CARE SYSTEM

In the Dutch health care system, market mechanisms were stepwise introduced with a major market-oriented reform in 2006 (Helderman, Schut, Van der Grinten, & Van de Ven, 2005). This reform was largely based on the Dekker plan (Dekker, 1987), which was drafted almost 20 years earlier. With the reform, 'regulated competition' was introduced in the Dutch health system: i.e. a regulated market with competing providers and competing health insurers.

The current Dutch health care system is characterized by mandatory health insurance with open enrollment. Since 1 January 2006 each person who lives or works in the Netherlands is obliged to buy health insurance. Private health insurer companies offer health plans based on a standardized benefits package, which is defined by the government. Health insurers have to accept all applicants for each health plan that they offer at a community-rated premium. Each year, individuals can switch health plans during the annual open enrollment period (December-January). Insurers compete with each other mainly on premium and service. The government expects that the insurers become prudent buyers of care on behalf of their insured populations (Van de Ven & Schut, 2008). Since health insurers cannot refuse applicants or charge a higher premium for individuals that are expected to have high health care costs, they have an incentive to select individuals that are expected to have low costs. To mitigate this selection incentive, a risk-adjustment system is in place. This risk-adjustment system aims to eliminate as much as possible the predictable profits (losses) on low-risk profile (high-risk profile) individuals emanating from community rating.

Since 2005, health care providers gradually received more freedom to determine prices as well as the quantity and quality of production. For example, in the hospital market, which is largest market in terms of total expenditure, the percentage of revenue for which providers can freely set their prices increased from on average 10% in 2005 to about 70% in 2012. The role of the insurers in this regulated market is twofold. First, they offer health plans to citizens. Second, they negotiate contracts with health care providers concerning the delivery of health care. An important bargaining instrument for health insurers is selective contracting. When offering health plans, insurers can limit the set of contracted providers for which the costs are fully reimbursed. Hence, they are allowed to contract selectively. This threat empowers insurers to negotiate lower prices or higher quality.

2. HOSPITAL MARKET FAILURE

The first potential market failure discussed in this thesis is market power in the provider market. We focus on hospital markets, which accounts for the largest share (i.e. more than one third) of total healthcare expenditure in the Netherlands[1]. Since the 1980s, hospital sectors in many OECD countries have become increasingly concentrated as a result of mergers (Gaynor, Ho & Town, 2015). In hospital markets, where competition should create incentives for efficiency (Gaynor & Town, 2011), an increase in market concentration means that there may be less competitive pressure in the market. This may result in higher prices and/or lower quality.

An increasing number of empirical studies have investigated the price effects of hospital mergers. Most of these studies have shown that although mergers may bring about meaningful reductions in marginal costs, mergers between rival hospitals are likely to raise prices in concentrated hospital markets (Gaynor & Town, 2011; Gaynor et al., 2015).

In many developed countries, an important policy instrument to prevent dominant positions (market power) is merger control. Competition authorities are entrusted with this instrument to prohibit anticompetitive mergers in order to keep markets competitive. However, the traditional approaches used to prospectively review mergers are especially problematic in hospital markets. Generally, these methods first define the relevant market for the industry being studied and then use market shares to infer how the merger could affect competition in that market (Shapiro, 2010). In order to delineate the relevant market, they typically rely on disputed methodologies and the conclusions drawn from the resulting analysis typically depends heavily on how that market is defined. Given the critical role for merger control in keeping hospital markets competitive, it is important to develop reliable methods that competition authorities can implement to effectively review mergers. A recent development is the use of merger simulation models to assess the competitive effects of hospital mergers.

My first three research questions are about market concentration in the Dutch hospital industry and its (potential) implications for market outcomes. Due to a large number of hospital mergers, hospital market concentration in the Netherlands has substantially increased. From 2004 to (August) 2018, 30 hospital mergers were reviewed by the Dutch Competition Authority. From these 30 reviewed mergers, one merger was forbidden by the Competition Authority, one was accepted with remedies and three approved mergers were in the end not realized by the merging parties. Currently (August 2018) there are 68 hospital organizations in the Netherlands. Due to the above described

---

1   In 2018 total hospital expenditure is projected at 24.9 billion euro, which is 36% of total projected expenditure on curative and long-term health care (69.2 billion euro). These figures are derived from the 2019 Budget Memorandum, available at http://www.rijksbegroting.nl/rijksbegroting2019.html).

Erasmus University Rotterdam

merger activities, 21 of the current 68 hospital organizations consists of hospitals that have merged between 2004 and (August) 2018[2].This indicates that the concentration in the Dutch hospital market has substantially increased during the last 14 years. In this thesis we will: (*i*) investigate the effect of a hospital merger on prices, (*ii*) evaluate the use of a merger simulation model to assess the price-effects of a hospital merger, and (*iii*) examine the relationship between hospital market concentration and quality of care.

To date, research on the causal effect of mergers on prices in the Dutch hospital market is limited. By examining the effects of one specific hospital merger case on various hospital products in depth, we want to determine how mergers may affect prices in the Dutch hospital market. In most hospital merger studies, the unit of observation is the merged hospital. That is, hospital products are aggregated and prices are averaged across different payers. In practice, however, price effects of a hospital merger may vary between different hospital locations, different products and different insurers. Therefore, my first research question is (discussed in Chapter 2): ***For a merger between two neighboring hospitals in the Netherlands, do the prices increase after a merger and do we observe differential price changes between different hospital locations, different products and different insurers?***

As discussed above, recently, economists have developed new methods for reviewing mergers: merger simulation models. Specifically for hospital merger simulation, the Option Demand Method has been developed. This method uses a Nash-bargaining framework to model the hospital-insurer interactions, where the added value that a hospital brings to a health plan network is measured through a logit demand model. However, there is still not much empirical evidence that such simulation models are able to produce reliable predictions. An approach to evaluate the predictive power of a merger simulation model is to compare the predicted price effects from the simulation model with the actual price effect of a consummated hospital merger. Hence, my second research question is (discussed in Chapter 3): ***What is the predictive power of the Option Demand Method for mergers in the Dutch hospital market?*** We examine this question by contrasting the prediction of the simulation model with the post-merger price effects examined in Chapter 2.

Next to prices, quality of care may also be affected by (changes in) the level of competition. Gaynor and Town (2011) argue that in hospital markets without regulated prices the impact of competition on quality is ambiguous. This is supported by empirical evidence from the US and UK. To date empirical evidence about the relationship between competition and quality in the Netherlands is lacking. My third research question is

---

2   Author's own calculation based on data on hospital organizations from Volksgezondheidenzorg.info and a merger list from the Authority for Consumers and Markets (ACM). For a detailed historical description of merger activities in the Dutch hospital market, see chapter 2 in Roos (2018).

(discussed in Chapter 4): ***What is the relationship between competition and quality in-dicators in the Dutch non-price-regulated hospital market?*** We examine this question by analyzing three diagnosis groups (cataract, adenoid and tonsils, bladder tumor) de-livered by Dutch hospitals in the period 2008-2011. For these three diagnoses the Health Inspectorate (current name: Dutch Health and Youth Care Inspectorate) published for each hospital outcome, process and structure indicators. Using these indicators, we evaluate the relationship between hospitals' quality scores and market concentration.

3. MARKET FAILURES IN HEALTH INSURANCE

Health insurance markets play an important role in the financing of health care in vari-ous countries, including the United States, Netherlands, Switzerland and Israel. In these countries, consumers buy health plans from insurers that give them access to health care in case they fall ill. Insurers bargain with providers to create provider networks for their enrollees. It is thus important to have an efficient health insurance market that give health insurers appropriate incentives to buy health care efficiently and to offer health plans that matches the preferences of the enrollees. As discussed above, the presence of adverse selection and inertia are impediments to an efficient health insurance market.

For many people, choosing the right health plan is a complex task. First, people have to search for relevant information and have to understand all the dimensions of the health plans (such as provider networks, reimbursement rates and deductible schemes). In addition, people have to predict their health care demand and expenses for the next year, since at the moment of choosing their health plan for the coming year, they do not exactly know what their health care needs will be. There is a growing number of studies finding that most consumers in health insurance markets are poorly informed and often do not actively and carefully evaluate their health plan choices (Ericson & Sydnor, 2017). Optimal consumer choice in health insurance markets is hampered by both frictions (inertia, search and switching cost) and a lack of knowledge (health insurance illiteracy); see for example Abaluck & Gruber, 2011, Bhargava, Loewenstein, & Sydnor, 2015, Handel, 2013, and Handel & Kolstad, 2015. A mismatch between the theoretical optimal choices and the actual choices of the individuals can lower consumer welfare.

On the other hand, well-informed consumer choices can lead to adverse selection when high-risk consumers choose more comprehensive health plans and/or low-risk consumers choose less comprehensive health plans. Rothschild and Stiglitz (1976) show that adverse selection can result in the underinsurance of low-risk individuals and even in a market without a stable equilibrium.

In this thesis, we identify and examine inertia and selection in the context of voluntary deductibles in the Dutch health insurance market. This analysis starts with the empirical

identification of the exact magnitude of selection, which is challenging, because of the interaction of selection with moral hazard (Cohen & Siegelman, 2010). The mere fact that people who opt for a voluntary deductible have lower health care expenses does not, in itself, prove the presence of adverse selection, because the deductible may also induce more cost conscious behavior (i.e. less moral hazard). Importantly, in the Dutch health insurance market, which contains an comprehensive risk-adjustment system, it is a priori not clear if contracts with voluntary deductibles are profitable for insurers given the prevailing risk-adjustment system, since the goal of the system is to eliminate the predictable gains (losses) on low-risk profile (high-risk profile) individuals. My fourth research question is thus (discussed in Chapter 5): ***How large is the selection effect for individuals who chose voluntary deductibles in a health insurance market with risk-adjustment?*** By examining people's deductible choice taking account of their prior health care expenses, we are able to identify the selection effect separately from moral hazard effect. In addition, we examine whether people opting for voluntary deductibles are over- or undercompensated by the risk adjustment scheme.

As shown by Handel (2013) and Handel et al. (2015), adverse selection may be counteracted by consumer inertia. Hence, in case of consumer inertia the welfare loss due to suboptimal health plan choice may be compensated by a welfare gain due to less adverse selection. This interaction between adverse selection and consumer inertia is the subject of my fifth and final research question (discussed in Chapter 6): ***Is adverse selection effectively mitigated by consumer inertia in the Dutch health insurance market?*** By examining how previous as well as future health costs affect the choices individuals make regarding their voluntary deductible, we try to determine the extent of inertia and adverse selection regarding the uptake of voluntary deductible contracts. The Dutch market for mandatory basic health insurance has an interesting feature: i.e. people can annually adjust the voluntary deductible without changing health plans. This feature can be exploited for an empirical identification of the relationship between prior health care expenses and deductible choice, which can provide an indication of the extent of inertia and adverse selection in deductible choice.

REFERENCES

Abaluck, J., & Gruber, J. (2011). Choice inconsistencies among the elderly: evidence from plan choice in the medicare part d program. American Economic Review , 101 (4), 1180–1210.

Bhargava, S., Loewenstein, G., & Sydnor, J. (2015). Do individuals make sensible health insurance decisions? evidence from a menu with dominated options. National Bureau of Economic Research.

Capps, C., Dranove, D., & Satterthwaite, M. (2003). Competition and market power in option demand markets. RAND Journal of Economics,737–763

Cohen, A., & Siegelman, P. (2010). Testing for adverse selection in insurance markets. Journal of Risk and insurance, 77 (1), 39–84.

Dekker, C. (1987). Bereidheid tot verandering (willingness to change). The Hague: Distributiecentrum Overheidspublicaties.

Ericson, K. M., & Sydnor, J. (2017). The questionable value of having a choice of levels of health insurance coverage. Journal of Economic Perspectives, 31 (4), 51–72.

Gaynor, M., Ho, K., & Town, R. J. (2015). The industrial organization of health-care markets. Journal of Economic Literature, 53 (2), 235–84.

Gaynor, M., & Town, R. (2011). Competition in health care markets. In T. G. M. Mark V. Pauly & P. P. Barros (Eds.), Handbook of health economics (Vol. 2, p. 499 - 637). Elsevier.

Gowrisankaran, G., Nevo, A., & Town, R. (2015). Mergers when prices are negotiated: Evidence from the hospital industry. American Economic Review , 105 (1), 172–203.

Handel, B. (2013). Adverse selection and inertia in health insurance markets: When nudging hurts. American Economic Review , 103 (7), 2643–82.

Handel, B. R., & Kolstad, J. T. (2015). Health insurance for" humans": Information frictions, plan choice, and consumer welfare. American Economic Review , 105 (8), 2449–2500.

Handel, B. R., Kolstad, J. T., & Spinnewijn, J. (2015). Information frictions and adverse selection: Policy interventions in health insurance markets (Tech. Rep.). National Bureau of Economic Research.

Helderman, J.-K., Schut, F., van der Grinten, T., & van de Ven, W. (2005). Market-oriented health care reforms and policy learning in the nether- lands. Journal of Health Politics, Policy and Law , 30 (1-2), 189–210.

OECD (2018). Health Statistics - Social Protection, OECD Publishing, Paris. https://stats.oecd.org/index. aspx?DataSetCode=HEALTH_STAT#. Retrieved on 14 Sep 2018 13:49 UTC (GMT).

Rothschild, M., & Stiglitz, J. (1976). Equilibrium in competitive insurance markets: An essay on the economics of imperfect information. Quarterly Journal of Economics, 90(4), 629–649.

Roos, A.F. (2018). Mergers and Competition in the Dutch Healthcare Sector (Doctoral dissertation). Retrieved from https://repub.eur.nl/pub/108851.

Shapiro, C. (2010). The 2010 horizontal merger guidelines: From hedgehog to fox in forty years. Antitrust Law Journal , 77 (1), 49–107.

van de Ven, W., & Schut, F. (2008). Universal mandatory health insurance in the netherlands: a model for the United States? Health Affairs, 27 (3), 771–781.