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ORIGINAL PAPER

Spillover effects of supplementary on basic health insurance: evidence from the Netherlands

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Abstract Like many other countries, the Netherlands has a health insurance system that combines mandatory basic insurance with voluntary supplementary insurance. Both types of insurance are founded on different principles. Since basic and supplementary insurance are sold by the same health insurers, both markets may interact. This paper examines to what extent basic and supplementary insurance are linked to each other and whether these links generate spillover effects of supplementary on basic insurance. Our analysis is based on an investigation into supplementary health insurance contracts, underwriting procedures and annual surveys among 1,700–2,100 respondents over the period 2006–2009. We find that health insurers increasingly use a variety of strategies to enforce a joint purchase of basic and supplementary health insurance. Despite incentives for health insurers to use supplementary insurance as a tool for risk selection in basic insurance, we find limited evidence of supplementary insurance being used this way. Only a minority of health insurers uses health questionnaires when people apply for supplementary coverage. Nevertheless, we find that an increasing proportion of high-risk individuals believe that insurers would not be willing to offer them another supplementary insurance contract. We discuss several strategies to prevent or to counteract the observed negative spillover effects of supplementary insurance.

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Introduction

Many OECD countries, including the Netherlands, combine mandatory basic health insurance with voluntary supplementary health insurance. Policymakers in these countries typically consider voluntary (supplementary) health insurance as one of the primary instruments to limit statutory financing of health care [1]. Consequently, the role of supplementary insurance in health care financing is gradually expanding.

Basic and supplementary health insurance are often founded on different principles. In the Netherlands, the mandatory basic health insurance scheme is based on principles of solidarity,[1] universal access, consumer choice and regulated (or managed) competition. Supplementary health insurance, in contrast, is exclusively voluntary and based on the principles of a free insurance market in which insurers are free to set the terms of the insurance contract and are allowed to use medical underwriting. Since in the Netherlands as well as in other countries (e.g. Belgium, Switzerland) both types of insurance are offered by the same health insurers, the principles of supplementary health insurance market may interfere with the principles of basic health insurance. Specifically, supplementary

[1] This paper restricts the concept of solidarity to the so-called 'risk-solidarity', i.e. cross-subsidies from low- to high-risk individuals. Cross-subsidies between high- and low-incomes, i.e. 'income-solidarity', are not discussed here.

insurance may result in less favorable contracts and reduced choice for high-risk individuals in basic insurance.

In this paper, the theoretical and empirical effects of supplementary health insurance on basic health insurance are examined within the context of the Dutch health insurance system. Section "Health insurance in the Netherlands" briefly describes the main features of the Dutch health insurance system and the role of EU legislation. Next, we identify potential links between basic and supplementary health insurance and we discuss how these links may affect consumer choice in the market for basic health insurance. Section "Methods and data" describes the methods and data used to analyze the links between basic and supplementary health insurance and the spillover effects of supplementary on basic health insurance. The results of this analysis are set out in Sect. "Results". In the concluding section, we discuss which policy strategies might be effective to counteract negative spillover effects.

Health insurance in the Netherlands

Since the introduction of the Health Insurance Act (HIA) in 2006, all Dutch citizens are obliged to buy standardized individual basic health insurance from a private insurer. The Health Insurance Act replaced the former public health insurance scheme (available for two-thirds of the population) and the former voluntary private scheme (for the one-third of the population with higher incomes). The standardized basic benefits package covered by the HIA is rather comprehensive and includes e.g. hospital care, GP services, prescription drugs and maternity care.[2] There is a limited annual deductible of 165 euro per adult individual (in 2010).

The Health Insurance Act was preceded by a series of market-oriented reforms that were gradually implemented since the early 1990s. As the design of the insurance system has to be in accordance with EU legislation, the restrictions posed by the EC Treaty had to be considered. The EC Treaty (article 49) stipulates that restrictions on the freedom to provide services (insurance) across borders within the EU shall be prohibited. The Third Non-life Insurance Directive supplements this provision and intends to encourage and enhance competition in insurance markets by requiring the EU Member States to abolish controls on premium prices and prior notification of policy conditions. Private health insurance falls within the scope of this Insurance Directive [19]. This would imply that the government is not allowed to regulate prices and contractual conditions of private health insurance policies. However, the Insurance Directive provides an important exemption to this rule. According to article 54 of the Directive, the introduction of legal restrictions can be justified by reason of general good, in case private health insurance schemes 'wholly or partially' replace the social security system. The Dutch government considers the basic benefits package as an alternative to the health coverage provided by a social security system and therefore deems interventions in basic health insurance justified [10].[3]

The aim of the Health Insurance Act is to combine free consumer choice and incentives for efficiency with universal access to comprehensive basic health insurance coverage [39]. Universal access is guaranteed by requiring health insurers to offer all applicants standardized coverage at a community-rated premium, while lower-income groups get income-related tax subsidies to pay this premium. Since community-rated premiums involve cross-subsidization from low-risk to high-risk individuals, insurers would incur predictable profits and losses for identifiable subgroups of consumers. In order to prevent risk selection and an unfair level playing field for health insurers, a risk equalization fund was established. In addition to a community-rated premium charged by the health insurer, all individuals pay an income-related contribution to this risk equalization fund. The risk equalization fund provides risk-adjusted capitation payments (or premium subsidies) to health insurers in order to equalize predictable differences in health care expenditure associated with individual risk characteristics. On average, risk-adjusted capitation payments account for half of the total health expenditure covered by the basic insurance scheme.

Efficiency, the second aim of the HIA, is stimulated by providing consumers with a free choice of health insurer (through an open enrollment or guaranteed issue requirement) and by providing insurers and health care providers with increasing room to negotiate about price and quality of health services. Health insurers are allowed to selectively contract or vertically integrate with health care providers and may channel enrollees to preferred providers.

In addition to basic health insurance, people are free to buy supplementary health insurance, which provides coverage for benefits that are not included in the basic benefits package. Supplementary health insurance provides coverage for primarily dental care, physiotherapy and cosmetic surgery and accounts for about 10% of health care expenditure (see Table 1 for key figures). About 90% of

[2] Long-term care services are covered by a separate mandatory social insurance scheme (abbreviated as AWBZ).

[3] Although the European Commission (EC) has suggested that private health insurance schemes could be in line with article 54, the EC has also made clear that interventions are only justified if the Court considers the measures objectively *necessary* and *proportionate* to the general good [19]. The necessity and/or proportionality of Dutch governmental interventions is disputed (e.g. [37]). It goes beyond the scope of this paper, however, to deal with this issue extensively.

the Dutch population purchases supplementary health insurance.

Historically, supplementary health insurance functioned as a minor extension to the former public health insurance scheme (covering only few additional benefits) and was widely perceived as quasi-social insurance. Health insurers (then sickness funds) charged community-rated premiums and typically accepted any applicant, irrespective of health status (except for dental care). As a result, almost all people bought supplementary insurance as a by-product to basic health insurance from the same health insurer. The introduction of the HIA, however, implied a much sharper distinction between basic and supplementary insurance. In contrast to basic health insurance, the Dutch government stressed that supplementary health insurance is not based on the principle of solidarity and therefore it does not guarantee universal access to the benefits covered by supplementary health insurance [43]. In other words, supplementary health insurance is not intended to replace a social security system, so the exemption of Article 54 of the Third Non-life Insurance Directive does not apply. This implies that the government is not allowed to exert systematic ex ante control over policy conditions, premium rates and other provisions [31]. Health insurers are therefore free to set and differentiate premiums of supplementary insurance and are allowed to deny or restrict coverage (e.g. by excluding pre-existing conditions from coverage or by using waiting periods before coverage becomes effective). Hence, the dividing line between basic and supplementary insurance marks the distinction between those entitlements that, according to the Dutch government, require regulation to guarantee universal access, and benefits that are left to the free market for which universal access is not guaranteed. Despite the more clear-cut distinction between basic and supplementary insurance, as effectuated by the HIA, still almost all people obtain both insurance products from the same health insurer.

Potential links and spillover effects

Decisions to purchase basic and supplementary insurance can be linked in several ways. In some countries, health insurers are legally required to offer basic and supplementary insurance as a joint product [20]. In absence of such a strong regulatory link, health insurers may be able to enforce joint purchase by means of tie-in sale provisions in supplementary health insurance policies. Even without such tying provisions, consumers may display a strong preference for joint purchase of basic and supplementary health insurance because one-stop shopping lowers search and transaction costs and may facilitate the coordination of complementary benefits [5, 20]. Finally, joint purchase may also be the result from custom or habit if supplementary health insurance was traditionally offered as a minor by-product to basic health insurance (as was the case in the Netherlands).

If both types of insurance are linked, decisions to purchase supplementary health insurance may influence decisions to purchase basic health insurance. We distinguish two potentially important negative spillover effects of supplementary on basic insurance: (1) Supplementary health insurance may be used as a tool for risk selection in basic health insurance, undermining the principle solidarity; and (2) Lock-in effects in supplementary health insurance may reduce freedom of choice for high-risk individuals in basic health insurance, undermining the principle of free choice and reducing incentives for efficiency. Evidence of such negative spillover effects of supplementary insurance on basic health insurance is found in Switzerland, which has a similarly structured health insurance system as the Netherlands [5].

Risk selection in basic insurance

In case of perfect risk equalization, risk selection in basic health insurance would make no sense, since insurers would not be able to identify risk groups that are (un)profitable relative to the payments received (i.e. the community-rated premium plus the risk-adjusted capitation payment).

Despite the fact that the Dutch risk equalization system is quite sophisticated, several empirical studies show that there still are easily identifiable risk groups that are less attractive than others [36]. In 2005, it was estimated that health insurers would suffer a predictable loss of 30% on

Table 1 Key figures of supplementary health insurance (SI) in the Netherlands

	2006	2007	2008	2009
Number of insurers offering SI	32	33	30	29
Population share having SI (% of total population)	93	92	92	91
Health expenditure covered by SI:				
In Euros (billions)	3.4	3.6	3.6	n.a.
As % of total health expenditure	11	12	11	n.a.

Sources: NZa [17], Vektis [41, 42]

the 10% insured that had made the highest health care costs in the previous year(s) [21]. Also in 2006, 2007 and 2008, insurers could easily identify specific risk groups that were highly unprofitable relative to the community-rated premium [26–29].[4] Given the imperfections of the risk equalization system, several ex-post compensation payments were introduced to cover a part (on average about 50%) of the predictable losses. Still, health insurers are facing substantial incentives for risk selection in basic insurance. Moreover, the introduction of the new Health Insurance Act induced strong price competition among health insurers, resulting in an overall loss of on average 1.5% of total premium revenues of basic insurance in the period 2006–2008 [6–9]. The continuing strong price competition puts pressure on insurers to cut costs and thus reinforces the incentives for risk selection.

Supplementary health insurance can be used as a tool for risk selection in basic health insurance in two ways [38]. First, insurers can refuse applicants for supplementary health insurance who are expected to generate losses in basic insurance. Health insurers can identify unprofitable applicants by requiring them to fill out a health questionnaire. People who are rejected for supplementary health insurance will most likely choose another insurer for basic health insurance as well, particularly if both types of insurance are strongly linked [38]. As shown in Table 2, unprofitable high-risk applicants can easily be identified by health questionnaires asking questions about health status, specific conditions and prior drug or health care utilization.

Second, supplementary health insurance may also be used for self-selection. Health insurers may try to attract favorable risk groups and discourage unfavorable risk groups to apply for supplementary health insurance packages. Favorable risk groups can be attracted by a specific design of supplementary health insurance packages (i.e. product differentiation), by discounts on supplementary premiums (i.e. premium differentiation) or by specific benefits.[5] Unfavorable risk groups may be discouraged from buying supplementary health insurance by not covering benefits that are attractive to them.

In sum, there is a considerable risk that supplementary health insurance might be used for risk selection in basic health insurance and thereby will undermine the principle of solidarity fundamental to basic health insurance.

Lock-in effect for high-risk individuals

A second spillover effect may result from high-risk individuals being locked in their current supplementary health insurance contract. If supplementary and basic insurance are strongly linked, such a lock-in situation may effectively reduce free choice of basic health insurance for high-risk individuals. This would reduce incentives for health insurers to provide high-quality services and contract high-quality care for high-risk individuals.

A lock-in situation for high-risk individuals may occur if the premium they pay for their current supplementary insurance contract is below the actuarial fair price, while when they apply for another contract they have to pay a premium as high as the actuarial fair price.[6] In that case, high-risk individuals may not be able to switch to another, more attractive supplementary contract. Since the supplementary health insurance market is a free market, health insurers are likely to either adjust the premium to an applicant's risk profile or adjust the applicant's risk to the premium by restricting or denying coverage (e.g. pre-existing condition clauses).[7]

Traditionally, as explained in Sect. "Health insurance in the Netherlands", Dutch health insurers made little use of risk-adjusted premiums for supplementary health insurance. Health insurers could compensate the predictable losses on the contracts of the high-risk individuals with the predictable profits on the contracts of the low-risk individuals [35]. Since the enactment of the HIA, however, price competition has increased and the profit margins on the supplementary health insurance have decreased [40, 41]. Therefore, health insurers may have become more inclined to calculate risk-rated premiums and to use medical underwriting to prevent high-risk applicants from enrolling. As a consequence, high-risk individuals may be forced to stick with their current supplementary contracts, since no better alternatives will be available. In the Netherlands, all health insurers voluntarily included a guaranteed renewability (GR) clause in their supplementary insurance contracts. Generally, these GR provisions stipulate that the insurer has to renew the contract at the end of the contract period at the same conditions that apply for other subscribers with the same contract. This implies that no insured's future premium for a given policy will increase more than any other insured's premium increases

[4] Imperfect risk equalization implies that some risk groups generate predictable losses while others generate predicable gains. However, since the distribution of individual health care expenditures is highly skewed the individual predictable losses are relatively high and concentrated in a relatively small group of high-risk individuals.

[5] For instance, Dormont et al. [5] discuss the case of a Swiss health insurer that offers a 3 years' supplementary insurance contract with discounts on sun glasses, ski helmets and hospitalizations to people without any health care consumption during the preceding year.

[6] An actuarial fair price is the individual premium required to break even, given the individual's expected cost.

[7] In practice, health insurers typically employ both strategies to match premiums and risks, since these strategies are no perfect substitutes. Complete risk rating is often technically infeasible, too costly and unattractive because of the damaging effect of such behaviour on an insurer's reputation [18]. Large premium variation is therefore not often seen in practice [11].

Table 2 Identification of subgroups with predictable losses after risk equalization

Type of question	Subgroup	% of adult population ($n = 16.891$)[a]	Predictable annual loss (euro's, 2007)[b]
Health problems	Self-reported health status: poor/fair	21.2	541
	Hearing difficulties	4.8	308
	Loss of sight	7.3	222
	Moving difficulties	14.9	653
	Worst score SF-36 on mental health	10.0	297
Specific disorders	Arthritis	16.3	401
	Asthma/COPD	8.1	460
	Hypertension	15.2	342
	Rheumatoid arthritis	6.1	725
	Urinary incontinence	7.7	500
	Three or more self-reported disorders	25.2	463
Prior utilization	Medical prescription (within the last 14 days)	48.2	220
	Contact with medical specialist (within the past 12 months)	39.8	317
	Use of home health care	2.2	1,152

Source: Stam and Van de Ven [29]

[a] Based on surveys among adult enrollees of a major health insurer (Agis) in 2001

[b] Based on the risk equalization system of 2007, before ex-post compensations (by which predictable losses are reduced by about 50%). For all estimated losses: p-value < 0.05 (Null hypothesis: predictable annual loss equal to zero)

[12]. Thus, people who become a high-risk will pay the same premium as those who remain low-risk. Hence, each supplementary insurance contract involves some cross-subsidization from low-risk to high-risk individuals.[8] GR provisions are not required by law, so the fact that all contracts include such a GR provision seems to reflect consumers' preference for buying insurance that also offers protection against the risk of becoming a high risk in the future. In practice, however, the prevailing GR contracts do not effectively offer a long-term protection against future contingencies.[9] This is because low-risk individuals have an incentive to leave the contract if the level of cross-subsidization and the (uniform) premium of the contract increase over time as a result of an increasing average risk of the other policyholders. Competing insurers, in turn, have an incentive to close off old contracts to new entrants and then selectively accept the low-risks on a new contract. If low-risk individuals switch to a new contract, the risk profile of the old contract will worsen and in the end the contract will be bought only by high-risk individuals paying a high, but actuarial fair premium. Such "re-underwriting" practices are observed in the US individual health insurance market [12] and also seem to occur in the Dutch supplementary insurance market. For instance, in 2008 two Dutch health insurers (with a total market share of about 13%) substantially reduced the coverage of their most extensive supplementary policy, while, at the same time, introducing a new policy with the same coverage as the originally most extended supplementary benefits package.[10] Both health insurers used medical underwriting to prevent high-risk individuals from buying the new generous policy. When health insurers offer new contracts only to low-risk applicants or only at risk-rated premiums, high-risk individuals cannot escape this premium spiral, since all other contracts will make them worse off than their current contract. If this is the case, high-risk individuals will be locked in their current contract.

Therefore, a crucial question is whether health insurers apply risk rating or selective underwriting policies in supplementary health insurance. However, as argued by Dormont et al. [5], even if health insurers do not practice risk rating or selective underwriting, lock-in effects may

[8] In theory, as argued by Herring and Pauly [12], no cross-subsidization have to take place if premiums of GR contracts are sufficiently "front loaded" in the current contract period in order to cover the risk of becoming a high-risk in later contract periods. Supplementary insurance premiums in the Netherlands, however, strongly diverge from the incentive-compatible front-loaded premium schedule as estimated by Herring and Pauly. Rather than charging front-loaded premiums, Dutch health insurers typically adjust the uniform (community-rated) premium of a supplementary policy to the changing risk profile of the remaining pool of policyholders.

[9] GR contracts would only offer such protection if premiums would be sufficiently front-loaded, which is not the case in the Netherlands.

[10] One health insurer reported that these changes were induced by the overly extensive use of benefits covered by its most generous policy.

occur if high-risk individuals believe that insurers behave this way. Hence, we did not only examine actual health insurers' underwriting behavior, but also consumer beliefs about this behavior and their anticipation to the expected insurer behavior.

Methods and data

We employed two methods to investigate the links between supplementary and basic insurance and the presence of spillover effects. First, we investigated the contractual conditions and application forms of all supplementary health insurance policies that were issued in the period 2006–2009. To establish the links between basic and supplementary insurance, we analyzed for each contract the presence and nature of tying conditions. To examine insurers' underwriting behavior, we determined the use of premium surcharges, coverage restrictions and the use and content of health questionnaires for applicants of supplementary insurance. Furthermore, to determine whether supplementary health insurance is used for self-selection, we examined whether the supplementary contracts were designed to attract specific (favorable) risk groups. Second, over the same period (2006–2009), we used an annual survey among about 1,700–2,100 respondents to investigate reasons for (not) switching to another health insurer for basic and/or supplementary insurance and to find out whether or not consumers faced obstacles or restrictions when applying for supplementary health insurance.

Data on insurance contracts and application forms were gathered annually over the period 2006–2009.

Most information was publicly available via the internet, both on the websites of individual health insurers and on consumer comparison websites for insurance products (e.g. www.independer.nl). In case of missing information, insurers' customer services and insurers' agents were contacted.

Survey data were obtained from a questionnaire we constructed, which was sent in February each year (from 2006 to 2009) to participants of a regularly held internet-based telepanel. The panel consists of some 2000 respondents, aged 18 years and older, who are representative of the adult Dutch population. The panel is managed and maintained by CentERdata, a research institute specialized in online survey research. Of each respondent, standard background variables are routinely collected, such as age, sex, number of household members, education, primary occupation and income.

Results

We first discuss our findings about the type and strength of the links between basic and supplementary insurance. Next, we discuss whether these links have resulted in negative spillover effects.

Links between basic and supplementary insurance

In the Netherlands, regulation does not require insurers to link basic and supplementary health insurance. On the contrary, the new Health Insurance Act even includes a provision (article 120) to prevent a previously common tying arrangement. Prior to 2006, most Dutch supplementary health insurance contracts had a clause that the contract would be automatically terminated once the insured would switch to another basic health insurance provider [20]. Under the HIA (article 120), such termination clauses are explicitly forbidden. However, there appears to be a discrepancy between rules and practice: when consulting insurers' customer services we were told in 2009 by about half of the health insurers (accounting for about 30% of the market) that the supplementary insurance would be automatically terminated by the insurer if the customer would switch to another insurer for basic insurance. Although it is unclear whether customer services deliberately provide incorrect information or were just insufficiently trained, it is likely to reduce the effectiveness of prohibiting termination clauses.

However, we find that even if the article 120 would be effective, health insurers can, and increasingly do use a variety of ways to sell basic and supplementary insurance as a joint product (see Table 3). As shown in Table 3, in 2009 one out of four health insurers (with a joint market share of about 10%) offer supplementary health insurance only in combination with basic health insurance. In addition, about one-third of the insurers (with a joint market share of about 40%) requires premium surcharges if applicants only apply for supplementary health insurance (buying basic insurance from another insurer) and about 17% requires such surcharges if an subscriber switches to another provider of basic insurance (which is not prohibited under the article 120 of the Health Insurance Act). Although these insurers typically claim that the surcharges are needed to cover extra administrative costs, the level of surcharges, varying from 25 to 100%, is likely to be much higher than these additional expenses. About 1 out of 10 health insurers uses more stringent underwriting practices for people who only apply for supplementary insurance. Finally, in 2009 almost all health insurers use parent–child tie-in provisions, which stipulate that children are entitled to free supplementary health insurance if both parents and children obtain basic and supplementary health insurance from the same company.

As shown in Table 3, since 2006, the number of health insurers using some form of tying arrangement has substantially increased. By 2009, almost all health insurers use

Table 3 Nature and prevalence of links between basic and supplementary health insurance (SI) in the Netherlands between 2006 and 2009

Number of insurers	2006		2007		2008		2009	
	32		33		30		29	
	% of insurers	Market share[a]	% of insurers	Market share[a]	% of insurers	Market share[a]	% of insurers	Market share[a]
SI only in combination with basic health insurance	28	11	12	8	27	11	24	11
Premium surcharges when only applying for SI	19	21	24	34	30	36	34	40
SI premium surcharges when switching to other basic health insurance	6	4	15	17	17	17	17	14
More stringent acceptation policies when only applying for SI	n.a.	n.a.	n.a.	n.a.	13	10	14	10
Parent–child tie-in provisions	19	10	18	10	67	49	86	96
At least one of the above mentioned tie-in provisions	>44[b]	>30[b]	>48[b]	>45[b]	94	89	97	100

[a] Approximate market shares of health insurers are based on data provided by NZa [13, 15, 16] and annual reports of several health insurers

[b] Cumulative figures for 2006 and 2007 are minimum levels since information about insurers using more stringent acceptation policies when people only apply for supplementary insurance was not collected in these years

at least one of the prevailing tie-in provisions included in Table 3. In sum, insurers have made it highly unattractive, if not impossible, to apply for supplementary health insurance without applying for basic health insurance as well.[11]

Spillover effects of supplementary on basic insurance

Have these strong links resulted in the hypothesized negative spillover effects? We first discuss evidence of supplementary health insurance being used as a selection device in basic health insurance (the first spillover effect). Then, we discuss whether high-risk individuals with supplementary insurance face a lock-in problem, which may reduce their choice of basic insurance (the second spillover effect).

Is supplementary health insurance used as tool for risk selection?

An effective way to identify unfavorable risk groups is the use of health questionnaires when people apply for supplementary health insurance.[12] Prior to 2006, about 45% of the health insurers (then: sickness funds) made use of health questionnaires [2]. As shown in Table 4, this percentage dropped to only about 20% after the introduction of the new Health Insurance Act and even further to 12% in 2007. In 2008, the number of insurers using health questionnaires increased to 27%, but then again decreased to about 20% in 2009 (however, relative to 2008, the average number of questions increased).

Health questionnaires were only required for the most comprehensive supplementary insurance policies or for applicants that only apply for supplementary health insurance. Hence, most health insurers do not acquire information about health status of applicants for supplementary insurance, and therefore cannot use selective underwriting as a tool for risk selection in basic health insurance. Moreover, it is unlikely that the minority of health insurers using health questionnaires actually uses the questionnaires to identify individuals that may generate predictable losses in basic insurance. This is because the questions included in these questionnaires typically relate to benefits covered by supplementary insurance and not to disorders for which the risk equalization scheme provides insufficient compensation.

At first sight, the reduction in the use of health questionnaires by health insurers since the introduction of the Health Insurance Act seems surprising because the fierce price competition among health insurers provides much stronger incentives for risk selection than prior to 2006. A first explanation for this seemingly contradictory behavior is that in 2006, under pressure from the Dutch Parliament, health insurers collectively and publicly agreed not to refuse applicants for supplementary health insurance (except for extensive dental coverage), in order to accommodate a smooth implementation of the new basic health insurance scheme. Again under public pressure, insurers extended this agreement to 2007 [44]. In 2008,

[11] Both the Dutch Healthcare Authority (NZa) [15] and members of Parliament [32] proposed to intervene in the supplementary insurance market to prohibit various tying arrangements. The government stipulated, however, that the proposed interventions were not feasible because of EU regulations (see Sect. "Health insurance in the Netherlands").

[12] We did not take into account specific questions about dental health, which are used by most health insurers when people apply for extensive dental coverage. Since these questions are commonly used and are not related to specific unprofitable risk groups in basic insurance, it is unlikely that they are used for risk selection in basic health insurance.

Table 4 Percentage of health insurers requiring health status information

Number of insurers	2006		2007		2008		2009	
	32		33		30		29	
	% of insurers	Market share[b]	% of insurers	Market share[b]	% of insurers	Market share[b]	% of insurers	Market share[b]
Health questionnaires[a] with questions about:	22	30	12	22	27	30	21	23
Health care utilization[c]	22 (2)		12 (3)		27 (6)		21 (8)	
Specific conditions[c]	6 (2)		3 (1)		16 (11)		14 (15)	
General health status	0		0		13		13	
Drug utilization	3		3		10		10	

[a] In general, health history questionnaires are only required for the most comprehensive supplementary health insurances or for applicants that apply for supplementary health insurance, without applying for basic health insurance as well

[b] Approximate market share health insurers are based on data provided by NZa [13, 15, 16] and annual reports of several health insurers

[c] Average number of questions in parentheses

however, the agreement was no longer continued, which may explain the subsequent increase in the number of health insurers using these health questionnaires. Nevertheless, the use of health questionnaires is still way below the level prior to the reform, and even slightly decreased again in 2009. This may have to do with a second potential explanation for the observed insurer behavior. This explanation is that since the reform health insurers are more closely watched by the Dutch Health Authority (NZa), consumer organizations and the press, and consequently insurers are much more exposed to bad reputation effects of unpopular behavior such as risk selection. For instance, since 2006 both the NZa and the Netherlands Patients and Consumers Federation (NPCF) annually monitor health insurer behavior and disseminate their findings in publicly available reports [2, 3, 22, 23]. The NPCF in particular focuses on health insurers' underwriting practices in supplementary insurance. Due to the increased competition, health insurers may have become more sensitive to damaging reputation effects of bad publicity. For instance, many health insurers now have client panels to directly involve the opinion of their customers in decision making.

A third explanation for the limited use of selective underwriting in supplementary health insurance is that switching rates are rather low[13] and most switchers are relatively healthy.[14] Potential reasons for low switching rates among high-risk individuals are discussed below. The low proportion of high-risk individuals applying for supplementary health insurance reduces the usefulness of medical underwriting as a selection device.

A second way to use supplementary health insurance as a tool for risk selection in basic insurance is to design supplementary benefit packages in such a way as to attract favorable risk groups. We investigated whether insurers target benefits to risk groups that are expected to be profitable at the prevailing risk-adjusted capitation payments. We find that an increasing percentage of insurers (with a total market share increasing from 36% in 2006 to 67% in 2009—see table 5) targeted supplementary benefits at specific groups (e.g. families, young couples without children or people aged 50+). As such these groups are defined too broad and heterogeneous to be useful for risk selection in basic health insurance. However, several benefits packages appear to be designed to attract the relatively healthy individuals within the group (e.g. prevention or sport medical advice).

Hence, although there is some evidence of self-selection via supplementary insurance, the extent seems to be limited so far.

In sum, we find limited evidence of supplementary health insurance being used as tool for risk selection in basic insurance, despite substantial incentives for insurers to do so. Fear of bad reputation and a limited number of switchers are the most likely explanations for the limited use of supplementary insurance for risk selection.

Does supplementary health insurance result in a lock-in of high-risk individuals?

The limited mobility of high-risk individuals might be related to lock-in effects in the supplementary health insurance market. There are three potential reasons for

[13] The overall switching rate dropped after an all-time-high rate of 18% in 2006 (as a result of the introduction of the new Health Insurance Act) to 4.4% in 2007, 3.6% in 2008 and 3.5% in 2009 [14, 25].

[14] Our survey results have shown that switchers report a better health status than non-switchers. This is a common result in many studies both in the Netherlands and in other countries (see e.g. [5]).

Table 5 Percentage of insurers targeting supplementary benefits at specific groups (product differentiation)

	2006		2007		2008		2009	
Number of insurers	32		33		30		29	
	% of insurers	Market share[a]	% of insurers	Market share[a]	% of insurers	Market share[a]	% of insurers	Market share[a]
Product differentiation[b]	22	36	27	52	50	67	62	69

[a] Approximate market shares of health insurers are based on data provided by NZa [13, 15, 16] and annual reports of several health insurers

[b] In general, the benefits are targeted at broad and heterogeneous groups

limited mobility of high-risk individuals. First, empirical research (e.g. [4, 5, 24, 30, 33]) has shown that high-risk individuals, in general, are less likely to switch due to higher switching costs, potentially as a result of cognitive or physical impairments. Second, high-risk individuals may not be able to switch to another, more attractive (priced) supplementary health insurance contract, due to either unavailability of good alternatives or selective underwriting. Third, high-risk individuals may not consider switching because they expect to be rejected.

As noted above, our survey results have shown that switchers report a better health status than non-switchers. This is a common result in many studies both in the Netherlands and in other countries (see e.g. [5]). We examined whether the lower switching rates can be explained by high-risk individuals experiencing difficulties in switching to another supplementary insurance contract.

In fact, most supplementary health insurance contracts are quite attractive for high-risk individuals because premiums are typically community rated and only differentiated by a few broad age classes. Furthermore, each insurer offers supplementary health insurance contracts with a wide range of benefits. Since we find that still only a minority of the health insurers uses health questionnaires, high-risk individuals may encounter limited problems in switching to another contract.

Indeed, as shown in Table 6, the results of our annual surveys indicate that only a limited number of people (less than 0.5%) were refused when applying for health insurance. However, this low proportion can be misleading, since only a limited number of people actually apply for an (other) supplementary insurance contract. If we relate the number of refusals to the number of switchers, we find a substantial increase in 2008 and a subsequent reduction in 2009 (though still halting at a much higher level than in 2007). This finding is consistent with the use of health questionnaires in 2008 and 2009 (see Table 4). The vast majority of refused applications are related to supplementary dental health insurance and comprehensive supplementary insurance contracts.

Although high-risk individuals may be able to switch to another attractive supplementary insurance contract, they may still face a lock-in problem if they are not aware of this opportunity. As pointed out by Dormont et al. [5], holding supplementary insurance may also act as a barrier to switch if customers who consider themselves as a bad risk believe that insurers reject applications on these grounds. When individuals with poor health do not even try to switch, health insurers do not have to select risks. In case of Switzerland, Dormont et al. [5] found support for such behavior, since holding supplementary insurance had no significant effect on switching when the enrollee's self-assessed health was 'very good', but significantly decreased when the enrollee's self-assessed health was 'poor'. Hence, the likelihood of switching decreases when subjective health status deteriorates [5]. For two reasons, however, this evidence is not conclusive about the role of consumer beliefs. First, people in poor health may simply have higher subjective switching cost, which make them more reluctant to switch. Second, the lower switching rate among people with poor health may also be the result of health insurers' underwriting practices.

In our research, we directly tested for the role of consumer beliefs about insurer willingness to offer supplementary insurance by including questions about these beliefs in our annual surveys. We specifically asked respondents who did not switch whether the reason for not switching was because they expected not being accepted by the insurer because of their age or health status.

As shown in Table 7, for a substantial and increasing proportion (4–7%—the increase is statistically significant at the 1% level) of the non-switching respondents (being the vast majority of the respondents), the belief not being accepted by health insurers because of age or health status was a reason for not switching.[15] Given the total adult Dutch population of 12 million people this implies that in

[15] In our surveys the proportion of elderly (over 65) among respondents of 18 years and older is about 25%, which is somewhat higher than in the general Dutch population (about 20%). The proportion of respondents reporting fair or poor health is about 17%, while the proportion of elderly respondents reporting fair or poor health is 24%. In sum, about 36% of the respondents is over 65 and/or has a self-assessed health status that is fair or poor. In 2009 about one-fifth of these respondents (i.e. 7/36) report that one of the reasons for not switching was that they believed that they would not be accepted by the insurer because of their age or health status.

Table 6 Refusals, coverage restrictions and/or premium surcharges

	2006	2007	2008	2009
Number of respondents	2,118	2,118	1,682	1,733
Refused applications (% of respondents)	0.3	0.2	0.5	0.2
Enrollees faced with coverage restrictions and/or premium surcharges (% of respondents)	n.a.	0.7	4.5	2.5
Number of switching respondents	343	102	44	53
Refused applications (% of switching respondents)	1.8	3.8	18.0	7.5

Table 7 Impact on switching behavior of consumer beliefs about not being accepted by health insurers because of age or health status

	2006	2007	2008	2009
Number of respondents that did not switch	1,059	1,876	1,518	1,599
One of the reasons for not switching was the belief not being accepted because of age or health status (%)	4.0	3.7	6.3	6.9
Most important reason for not switching was the belief not being accepted because of age or health status (%)	1.5	1.6	2.8	3.4
Number of respondents that did not switch but seriously considered to do so	409	121	126	74
One of the reasons for not switching was the belief not being accepted because of age or health status (%)	4.7	5.0	6.4	5.4
Most important reason for not switching was the belief not being accepted because of age or health status (%)	3.2	2.5	2.9	4.1

2009 for about 800,000 people the belief not being accepted because of age or health status was one of the reasons for not switching, and for about 400,000 people this was even the most important reason. Hence, a substantial number of primarily high-risk individuals (the elderly and those in poor health) believe being locked-in in their current supplementary health insurance contract, despite the still quite lenient underwriting practices of most health insurers.

Given the strong links between supplementary and basic insurance, the beliefs among many high-risk individuals about not being able to switch to another supplementary insurance contract is likely to reduce their choice of basic insurance as well. Thus, for high-risk individuals the principle of free choice underlying the basic health insurance scheme is seriously undermined by the perceived lack of choice in the supplementary health insurance market.

Conclusion and discussion

In this paper, we explained that the presence of supplementary insurance may have two negative spillover effects on basic insurance: (1) it can be used as a tool for risk selection in basic insurance, and (2) it can reduce choice for high-risk individuals in the market for basic health insurance.

Although health insurers in the Netherlands have strong incentives and opportunities to use supplementary health insurance as a tool for risk selection in basic insurance, we find only limited evidence of supplementary insurance actually being used this way. One of the reasons for this is the insurers' agreement not to select during the first years of the reform. Furthermore, switching rates are rather low, especially among high-risk individuals. This reduces the usefulness of supplementary insurance as a selection device. Also, health insurers might fear the damaging effect of such behavior on their reputation.

Nevertheless, we find that many high-risk individuals do not (consider to) switch because they believe that they will not be accepted on another supplementary contract. Hence, high-risk individuals believe they are locked-in in their current supplementary insurance contract. Moreover, we find that the proportion of the population facing such a lock-in has increased over time, from about 4 to 7% of the adult Dutch population. Since we also find that supplementary and basic insurance are increasingly sold as a joint product, this lock-in effect also extends to basic insurance. This implies that the choice for high-risk individuals in basic insurance market is substantially reduced by the presence of supplementary insurance, undermining the principle of free choice of basic health insurance and reducing incentives for health insurers to offer attractive basic health insurance contracts for high-risk individuals

(e.g. by contracting the best providers or to organize integrated care for specific chronic diseases).

From the empirical evidence we conclude that the second spillover effect (reduced choice of basic insurance) is much stronger than the first spillover effect (risk selection in basic insurance). As a matter of fact, the presence of a strong second spillover effect may even counteract the first spillover effect, since the lack of mobility among high-risk individuals reduces the usefulness of supplementary insurance as a tool for risk selection.

Strategies to reduce spillover effects

What could be effective strategies for policymakers to reduce the lock-in effect for high-risk individuals?

First, the most radical strategy would be to completely remove the prevailing links between basic and supplementary insurance, for instance by a legal requirement that both types of insurance have to offered by strictly separated legal entities. Such a strict separation, however, would raise consumers' search costs and would inhibit an effective coordination of complementary services covered by basic and supplementary health insurance [20]. A second strategy would be to limit the role of supplementary health insurance in health care. A confinement of the role of supplementary insurance to 'luxury' benefits (e.g. cosmetic surgery, spa treatments, first class hospital services) would make this type of insurance dispensable also for high-risk individuals, which would reduce the lock-in effect. Limiting the role of supplementary insurance, however, may directly conflict with the policymakers' aim to reduce the share of public health care expenditure. Given the negative spillover effects of expanding the role of supplementary insurance by reducing the basic benefits package, alternative strategies to contain public expenditures might be more attractive, such as the introduction of shifted deductibles for basic insurance, as proposed by Van Kleef et al. [34]. A third strategy to reduce the lock-in effect for high-risk individuals would be to monitor insurers' underwriting practices and to make the results public, as is in the Netherlands annually done by both the Netherlands Patients and Consumers Federation (NPCF) and the Dutch Healthcare Authority (NZa). As our findings indicate, this strategy could make insurers reluctant to engage in stringent underwriting practices because they want to avoid a loss of reputation. A fourth strategy would be to improve consumer information about insurers' underwriting practices. Our findings demonstrate that many high-risk individuals do not (consider to) switch because they believe that they will not be accepted when applying for another supplementary insurance contract, despite only a minority of the health insurers actually seem to do so. To decrease the substantial discrepancy between consumer beliefs and actual practice, policymakers could be more active in disseminating information about actual switching opportunities, particularly to high-risk individuals.

When a combination of the above-mentioned strategies is effective in reducing the lock-in effect, high-risk individuals will encounter less restrictions to switch to another basic and supplementary insurance contract. By removing restrictions of free choice for high-risk individuals, however, supplementary health insurance may become a more effective tool for risk selection in basic insurance.

As long as health insurers face incentives for risk selection in basic insurance, strategies to reduce the lock-in effect for high-risk individuals may be counteracted by increasing use of supplementary insurance as a selection device. Hence, strategies to reduce the second spillover effect may reinforce the first spillover effect. This implies that for any strategy to be successful in the long-run, the incentives for risk selection in basic health insurance should be largely eliminated. The most effective way to accomplish this is by further improving the prevailing method of risk equalization.

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