Risk selection in a regulated health insurance market: a review of the concept, possibilities and effects

Richard C van Kleef*, Wynand PMM van de Ven and René CJA van Vliet

Institute of Health Policy and Management, Erasmus University Rotterdam, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands
*Author for correspondence:
Tel.: +31 10 408 8950
vankleef@bmg.eur.nl

The Dutch basic health insurance is based on the principles of regulated competition. This implies that insurers and providers compete on price and quality while the regulator sets certain rules to achieve public objectives such as solidarity. Two regulatory aspects of this scheme are that insurers are not allowed to risk rate their premiums and are compensated for predictable variation in individual medical expenses (i.e., risk equalization). Research, however, indicates that the current risk equalization is imperfect, which confronts insurers and consumers with incentives for risk selection. The goal of this paper is to review the concept, possibilities and potential effects of risk selection in the Dutch basic health insurance. We conclude that the possibilities for risk selection are numerous and a potential threat to solidarity, efficiency and quality of care. Regulators should be aware that measurement of risk selection is a methodological and data-demanding challenge.

The Dutch basic health insurance is based on the principles of regulated competition. This implies that insurers and providers of care compete on price and quality while the government sets certain rules to guarantee public objectives. The ultimate goal of this scheme is to combine solidarity with 'incentives for insurers and providers to continuously improve the quality and efficiency of healthcare' [1–3]. Solidarity can be income-solidarity (between income groups) and/or risk-solidarity (between risk groups). In this paper, we only focus on risk-solidarity, that is, the (implicit) cross-subsidies from low-risk individuals (e.g., the healthy) to high-risk individuals (e.g., the chronically ill) as *intended* by the regulator, which we will shortly refer to as solidarity. The major motive for market-based incentives is to achieve a sustainable healthcare system providing value for money.

The Dutch regulator aims at achieving solidarity by applying premium regulation and risk equalization. Premium regulation implies that insurers are not allowed to risk rate their premiums (i.e., they are obliged to charge community-rated premiums per health plan).

Risk equalization means that insurers are compensated for predictable variation in individual medical expenses. Such compensation is necessary since community rating *per se* confronts insurers with predictable profits (on the healthy) and predictable losses (on the chronically ill). Recent research has shown, however, that the current risk-equalization model (2012) substantially undercompensates insurers for particular subgroups in the population [4], resulting in incentives for risk selection.

The presence of incentives for risk selection does not necessarily mean that insurers and consumers will actually engage in risk selection. Insurers, for instance, may have several motives for abstaining from (certain forms of) risk selection such as reputational damage (since the general public considers risk selection as unacceptable), the costs of risk selection (which – particularly in case of nearly perfect risk equalization – may exceed the benefits of risk selection [5]), and the expectation that risk equalization will be improved in the near future. In addition, the insurers may not be pure profit maximizers and the insurance market may not

be perfectly competitive, for example, because of market frictions such as the consumers' switching costs. Nevertheless, because of the potentially threatening effects of risk selection (see below), a crucial question for the regulator is whether in practice insurers and consumers do actually engage in risk selection.

Signals of risk selection may be reason for the regulator to improve the risk equalization model, to increase the level of risk sharing (i.e., providing insurers with *ex post* compensations for actual costs such that under/overcompensations are mitigated) and/or to allow some degree of risk rating (such that insurers can increase premiums for subgroups that are undercompensated). However, in order to effectively measure and evaluate signals of risk selection it is crucial to have a concrete definition of risk selection, to know the possible forms of risk selection and to know the potential effects of risk selection. The goal of this paper is to review the concept, possibilities and effects of risk selection in the context of regulated health insurance markets, such as the Dutch basic health insurance.

What is risk selection?

Newhouse [6] defines risk selection as 'actions by consumers and health plans to exploit unpriced risk heterogeneity and break pooling arrangements. Often the term selection is also used to refer to the outcome of these actions'. Since this definition is common in the field of health economics, we use it as the starting point for our review. This section explains Newhouse's definition and customizes it to the specific context of a regulated health insurance market (such as the Dutch basic health insurance), starting from an unregulated market.

Unregulated health insurance markets

Competitive, unregulated health insurance markets tend toward equivalence between the revenues and the expected costs per insurance contract [7]. The explanation is simple: if health plan X has a community-rated premium (reflecting the average expected costs of all enrollees), low-risk individuals have an incentive to leave X for health plan Y with similar coverage but a risk-rated premium or for health plan Z with less coverage and a lower premium; high-risk individuals have an incentive to stay with X. As the low-risk individuals leave X (and high-risk individuals stay with X), the average expected costs of X increase resulting in a higher premium and even more (low-risk) individuals leaving X, etcetera. To avoid such a 'death spiral' health plans are forced to engage in 'risk-rating per product' and/or 'risk selection'.
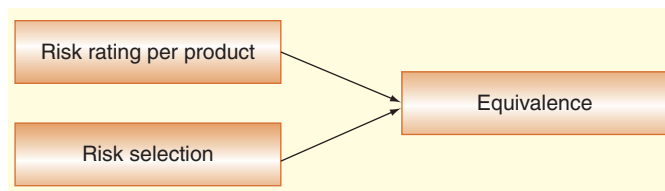

Figure 1. Two strategies to achieve equivalence in unregulated health insurance markets.

With risk rating per product we mean that an insurer classifies the (potential) enrollees into (homogenous) risk groups and differentiates the premium for a product accordingly. With 'product' we mean all contracts that are identical (e.g., in terms of coverage, deductible, co-insurance, quality and service). The more homogeneous risk groups are, the larger will be the difference in premium between the young/healthy and the elderly/chronically ill. In other words, risk rating reduces the pooling of heterogeneous risks. In practice, however, risk rating will probably never be perfect. Reasons may be that information to identify more homogenous risk groups is not available and/or that further refinement of risk groups is too costly.

An alternative way to achieve equivalence is risk selection. In simple words, the definition of Newhouse [6] refers to actions with the intention or the effect that low-risk and high-risk individuals within a premium-risk group are separated (i.e., 'exploit unpriced risk heterogeneity') and pooling of these groups is eliminated (i.e., 'break pooling arrangements'). An example of risk selection is refusal of applicants with a chronic disease. Another example is that insurers offer different products (e.g., varying in terms of coverage and premium) for different groups (e.g., high-deductible plans with low premiums will be more attractive for the healthy than for the chronically ill). As a result of risk selection, enrollees with different risk profiles may concentrate in different products with different premiums.

Thus, in unregulated competitive health insurance markets there are by definition two strategies to achieve equivalence: risk-rating per product and risk selection (**Figure 1**). In case of perfect risk-rating per product risk pools are completely homogeneous (or in Newhouse's words [6]: there is no unpriced risk heterogeneity), which implies that consumers and insurers – by definition – have no incentives for risk selection.

Given the previous consideration we rephrase the definition of risk selection into 'Actions (other than risk rating per product) by consumers and insurers with the intention and/or the effect that the costs of low-risk and high-risk individuals are not fully pooled'. In this definition, 'low-risk' and 'high-risk' are relative concepts depending on the level of risk-rating. For example, with community-rated premiums a healthy man of 70 years old has above-average expected costs within his premium/risk group (i.e., the entire population) and can be classified as 'high risk'; with age-related premiums this man has below-average expected costs in his premium/risk-group (i.e., his age group) and can be classified as 'low risk'.

Regulated health insurance markets

Solidarity requires pooling of heterogeneous risks. In a competitive health insurance market pooling is maximal if all enrollees would have *identical health plans* and pay *identical premiums*. As illustrated in the previous section, however, unregulated health insurance markets tend to eliminate pooling since – as a result of risk selection and risk rating – enrollees end up in *non-identical health plans* and/or pay *non-identical premiums*.

Ultimately, all premiums are perfectly in line with the expected costs per contract implying minimal pooling.

Even in regulated health insurance markets, however, maximal pooling may be unintended. Let us assume, for instance, that two subgroups of individuals are identical in terms of health status, but that – nevertheless – the expected costs differ because one subgroup has chosen an efficient managed care plan while the other has chosen a less efficient traditional plan. In this case, maximal pooling of the two subgroups may be unintended since the difference in efficiency between the two health plans should lead to a difference in premium between the two plans (which provides consumers with incentives to opt for the efficient plans, which – in turn – provides health plans with incentives to improve efficiency). Typically, regulators want to pool healthcare costs related to health status, but do not want to pool healthcare costs related to (in)efficiency. Literature refers to these categories as C-type (C = compensation) and R-type risk factors (R = responsibility), respectively [8,9]. It can be even more subtle if the regulator intends pooling for only a portion of a risk factor, such as for example, the Affordable Care Act in the USA which allows age rating among adults (ages 21–64) of 3–1 [McGuire *et al.* Unpublished Data].

In order to achieve solidarity, the Dutch regulator has established certain requirements regarding the basic health insurance. A first requirement is that all citizens are obliged to purchase insurance which – *ceteris paribus* – reduces the possibilities for risk selection by consumers. A second requirement is that health plans must cover a standard package of benefits which – *ceteris paribus* – reduces possibilities for risk selection by insurers (via product differentiation). Two major instruments for product differentiation remain: insurers are allowed to offer voluntary deductibles (i.e., 100, 200, 300, 400 or 500 euro per year) in return for a premium rebate and they are free to decide where, how and by whom healthcare in the benefit package is to be delivered. A third requirement is that health plans must apply open enrollment which – *ceteris paribus* – reduces the possibilities for risk selection (at the gate) by insurers. A fourth requirement is that health plans in The Netherlands must charge identical premiums to all insured opting for the same product (i.e., all contracts that are identical in terms of coverage, deductible, co-insurance, quality, service, etc.). Thus, insurers are not allowed to risk rate their premiums to any relevant risk factor, such as age, gender or health status, which substantially reduces the possibilities for risk-rating per product. Only two options for premium differentiation per product are allowed: a discount (0–10%) on the out-of-pocket premium for people who enroll via a group contract, a discount for enrollees who pay their premium on an annual (instead of monthly) basis. In addition, Dutch health plans are allowed to offer a variety of products, as variants of the standard benefits package, with different community-rated premiums (see below).

While the previous four requirements may reduce *possibilities* for risk selection, they – in principle – increase *incentives* for risk selection. The reason is twofold: these requirements increase the pooling of heterogeneous risks and leave insurers
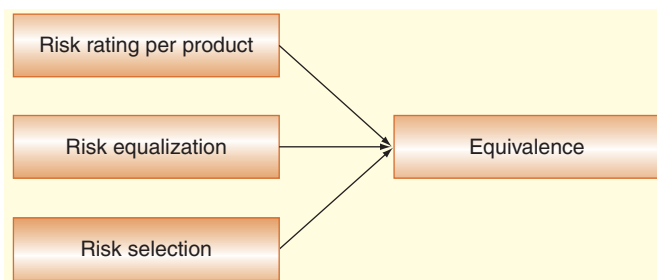

Figure 2. Three strategies to achieve equivalence in regulated health insurance markets.

with only one strategy to achieve equivalence, which is risk selection. In order to eliminate incentives for risk selection, the Dutch regulator applies a fifth requirement regarding the basic benefit package, that is, insurers are obliged to participate in a risk equalization scheme which compensates them for predictable variation in individual medical expenses, as far as this variation is related to age, gender and health status (for which pooling is intended) [10]. In concrete terms, risk equalization means that insurers receive a compensation for each enrollee on their list adjusted for individual risk characteristics. From the insurers' perspective, risk equalization reduces the pooling of heterogeneous risks and thereby reduces incentives for risk selection. When the risk classes in the risk equalization model are perfectly homogenous and adequately compensated, the expected costs (i.e., medical expenses minus the compensation) are equal for all enrollees.

Thus, in the Dutch basic health insurance there are three strategies to achieve equivalence between the revenues and the expected costs per insurance contract: risk-rating per product, risk selection and risk equalization (Figure 2). In case of perfect risk-rating per product or perfect risk equalization (or a perfect combination of both), consumers and insurers are not confronted with heterogeneous risk groups and therefore have no incentive for risk selection.

Given the previous consideration we customize Newhouse's [6] definition of risk selection in the case of regulated health insurance markets as follows: "Actions (other than risk rating per product) by consumers and insurers with the intention and/or the effect that solidarity is not fully achieved", where solidarity refers to the *intended* (i.e., as far as expressed in laws and legislation) pooling of low risks and high risks. Note that 'low risk' and 'high risk' are relative concepts depending on the level of risk-rating per product and the risk classes distinguished in the risk equalization model. For example, with community-rated premiums and no risk equalization a healthy man of 70 years old has above-average expected costs within his risk group (i.e., the entire population) and will therefore be classified as 'high risk'; with community-rated premiums and age-related risk equalization, however, this man has below-average expected costs in his risk group (i.e., his age group) and will be classified as 'low risk'.

Note that consistent policy requires that premium regulation and risk equalization exclusively apply to the *intended* pooling

(i.e., solidarity). For example, if the regulator intends not to compensate insurers via the risk equalization model for regional cost variation (unrelated to age, gender and health status) but insurers are not allowed to risk rate their premiums according to region either, incentives for risk selection remain. This curious type of risk selection – which can only result from inconsistent regulation – lies outside the scope of this paper.

Imperfect risk equalization

During the last two decades, the Dutch risk equalization model has evolved from a simple demographic model to a sophisticated health-based model including diagnoses- [11], pharmacy- [12] and cost-based risk adjusters [13]. Recent research, however, indicates that the current risk equalization model (substantially) undercompensates insurers for particular subgroups of people in poor health [4]. For example, the subgroup of people who reported a chronic condition in year t-1 (about one-third of the population) is undercompensated in year t by – on average – more than 400 euro per person per year. Since the risk equalization model is based on a zero-sum principle, this undercompensation implies an overcompensation of – on average – 200 euro per person per year for the subgroup of people who reported no chronic condition in year t-1 (about two-third of the population). These results imply that the current risk equalization model does not achieve equivalence between the revenues and the expected costs per insurance contract. Since a competitive market tends toward full equivalence (see previous section), imperfect risk equalization leaves insurers (and consumers) with incentives to engage in risk-rating per product and risk selection. Since the options for risk-rating per product are limited, the only remaining strategy is risk selection. Despite the individual mandate to buy insurance, standardization of the benefit package and open enrollment, regulation leaves room for various forms of risk selection. The next section provides a non-exhaustive overview of possible forms of risk selection in the Dutch basic health insurance.

What are the possible forms of risk selection?

The Dutch basic health insurance contains numerous tools for stimulating efficiency. The major instruments are free consumer choice of health plan and a functional description of the standardized benefit package. The latter means that – while the types of care in the benefit package are determined by the government (e.g., primary care, hospital care and prescribed drugs) – the insurer is free to decide where, how and by whom care is to be delivered. For example, insurers are obliged to cover a wide range of treatments, but per treatment they are free to contract with provider A and not with neighboring provider B. Another example: insurers are obliged to cover a wide range of pharmaceuticals, but if the (chemical) properties of pharmaceutical C are similar to that of pharmaceutical D insurers are free to cover only one of them (e.g., the cheapest). Free consumer choice and the functional description of the benefit package are meant to be the engines of competition: consumer choice results in competition among insurers and selective contracting by insurers results in competition among providers. In addition, the basic health insurance includes other elements to promote efficiency such as a mandatory deductible of 350 euro (level of 2013) per year for enrollees above the age of 18, the possibility to increase this deductible (voluntarily) to a maximum of 850 euro in return for a premium rebate, the possibility for insurers to waive (a part of) the deductible when enrollees make use of preferred providers, and the possibility for individuals to enroll in a group contract in return for a premium rebate [10,14]. While these instruments are intended to stimulate efficiency, they can also be used for (or result in) risk selection. This section provides an overview of the possible forms of risk selection in the Dutch basic health insurance.

Product differentiation

Although the benefit package is standardized, the Dutch basic health insurance leaves many possibilities for product differentiation. One option concerns the *coverage level* of health plans. Insurers are allowed to offer voluntary deductibles in return for a (community-rated) premium rebate. Empirical literature shows that individuals with relatively low expected expenses are more likely to enroll in deductible plans than those with relatively high expected expenses [15]. van Kleef *et al.* have indicated that the health-related cost variation between these groups is not fully compensated for by the risk equalization model [16]. As a result, the premium rebate for deductible plans (i.e., the difference in premium between deductible plans and non-deductible plans) will not only reflect differences in efficiency (i.e., moral hazard) and out-of-pocket payments but also differences in health. If the intention or the effect of coverage differentiation is that solidarity is not fully achieved, risk selection is present.

Another form of product differentiation concerns the *quality level* of health plans [17,18]. Let us assume that patients with health problem Y can be qualified as high-risk individuals because they are undercompensated by the risk equalization model. If plan A has contracted the first-best treatments (e.g., in terms of safety, outcomes and patient-satisfaction) for Y while plan B has contracted only the second-best treatments, patients with Y are more likely to opt for plan A than plan B. If patients with Y concentrate in plan A, plan A has to charge a higher premium than plan B, keeping all other things (including efficiency) equal. Risk selection via selective contracting is possible for all types of health problems and all types of treatments (e.g., surgery, therapy, pharmaceuticals, durable medical equipment).

A third form of product differentiation concerns the *service level* of health plans [17,18]. Service levels can differ, for instance, by the options for enrollees to contact the office (e.g., physically, by telephone and/or via the internet), query-response time, mediation efforts of insurers (e.g., helping enrollees with finding the best physician when they are in need of care). Presumably, the chronically ill (who are typically the high-risk individuals) are more likely to choose health plans with high service levels than the young/healthy (who are typically the low risks). As a result, low-risk and high-risk individuals may

concentrate in different health plans with different premiums (i.e., market segmentation).

A fourth form of product differentiation concerns the *contract period* of health plans. While the Dutch regulator requires a maximum contract period of 1 year (such that consumers can switch at least once a year) the law does not prescribe a minimum duration. The Dutch basic health insurance market shows examples of health plans combining deductible plans (with substantial rebates) with the option to resign from the contract at any moment. This creates the possibility for individuals with a deductible plan to switch to a non-deductible plan once he/she is in need of care. Consequently, the concentration of low-risk individuals in deductible plans will be even stronger than without this option.

A fifth form of product differentiation concerns *additional terms* of insurance contracts. Health plans are allowed to formulate additional terms such as the requirement to have a second opinion. If this requirement is not met then enrollees will not receive any reimbursement. Such additional terms may be relatively unattractive for people who expect to use substantial amounts of healthcare (typically the high-risk individuals). As a result, low-risk and high-risk individuals concentrate in different health plans with different premiums (i.e., market segmentation).

The above-mentioned forms of product differentiation may lead to market segmentation (i.e., low-risk and high-risk individuals concentrate in different health plans) resulting in a reduction of solidarity. Douven and Mannaerts provide an interesting example of service level distortion in the Dutch health insurance market that may lead to market segmentation: the so-called 'ZEKUR Health Plan' [19]. Since this health plan contracted relatively few hospitals, it is not attractive for women who are pregnant or want to get pregnant. Otter indicated that the costs of pregnancy and delivery are on average 7000 euros per birth [20]. Since the risk equalization model does not include an explicit risk adjuster for pregnancy/delivery, pregnant women are undercompensated (and non-pregnant women are – *ceteris paribus* – overcompensated). As the non-pregnant women concentrate in the ZEKUR Health Plan the premium can be lower than that of other health plans, keeping all other things (including efficiency) equal, which would imply risk selection.

Selective advertising & marketing
Another form of risk selection is selective advertising and marketing by insurers. This form can be illustrated by the following example. van Kleef *et al.* have shown that college students and university-educated people are overcompensated by the risk equalization model and therefore profitable for insurers [21]. This provides incentives to target advertisements and marketing strategies at these particular groups. If the intention or the effect of selective advertising and marketing is that solidarity is not fully achieved, risk selection is present.

Insurance brokers
Many people do not buy their basic health insurance directly from the insurer but via a broker, that is, an organization that advises and assists consumers regarding insurance products. Insurers often provide brokers with a bonus fee for each (new) applicant. Whereas insurers have to respect open enrollment this does not apply to brokers. Brokers can easily distinguish between low-risk and high-risk individuals (e.g., just by observing and asking questions about health status) and use this information when channeling applicants to insurers [22].

Group contracts
About two-third of the Dutch population is enrolled in the basic health insurance via a so-called group contract [23]. Such group contracts can be organized by any legal entity (e.g., employers, shops, sports clubs, patient organizations and private initiatives) [24]. Whereas insurers have to respect open enrolment, groups are free to reject applicants. For example, anyone can start a legal entity, gather a group of low-risk individuals and negotiate with insurers on a group contract. Benefits for group contracts can include a premium rebate for the basic health insurance (with a maximum of 10% of the out-of-pocket premium), premium rebates on other insurance products (e.g., supplementary health insurance) and a bonus fee for the organizer of the group contract. An example of risk selection via a group contract in the Dutch basic health insurance market may be 'Promovendum', that is, a group that has targeted its marketing, advertisement and acceptance policy at highly educated people [25]. As mentioned above, these people are on average overcompensated by the risk equalization model. This does not necessarily mean, however, that 'Promovendum' engages/results in risk selection. Our definition of risk selection says "actions other than risk-rating per product". In this context, it is important to note that the premium rebate of 10% for group contracts is a form of risk-rating per product. This implies that 'Promovendum' reduces solidarity only if the average overcompensation of people opting for Promovendum exceeds the premium rebate.

One-stop shopping
Another form of risk selection concerns supplementary health insurance (SHI) which is purchased by about 85% of the Dutch population. Since no regulation applies to SHI, insurers are free to reject applicants and/or to charge risk-rated premiums. Insurers can also require that new applicants for SHI fill out a health questionnaire. Duijmelinck and Van de Ven [26] found that nearly all people with SHI are likely to buy their SHI from the same insurance company as the basic health insurance. This provides possibilities for risk selection. For example, the outcomes of a health questionnaire will help insurers to distinguish between low-risk and high-risk applicants (regarding the basic health insurance). By rejecting high-risk individuals for SHI (or charge them excessive premiums for SHI), an insurer will be unattractive for these individuals. If the intention or the effect of SHI is that solidarity (in the basic health insurance) is not fully achieved, risk selection is present.

Another form of risk selection in this context concerns the health insurance for long-term care, the so-called AWBZ (i.e., the Act for Exceptional Medical Expenses). Whereas the basic health insurance covers curative (short-term) healthcare, AWBZ covers long-term care (e.g., care for the elderly and the mentally and physically disabled). The AWBZ is a mandatory public insurance scheme which is executed by insurers on a voluntary basis (i.e., insurers are free to decide whether or not they participate in this scheme). Although insurers have no financial risk with respect to the costs covered by the AWBZ (since all costs are retrospectively reimbursed by the regulator), insurers are confronted with disincentives to participate in the execution of this scheme. The reason is that people using AWBZ-care (e.g., the mentally and physically disabled) are substantially undercompensated in the basic health insurance. Thiel *et al.* have calculated that the average undercompensation for this group exceeds 380 euro per person per year (in 2012) [27]. This undercompensation provides strong incentives for risk selection. Probably, insurers can easily deter these patients by not executing the AWBZ, assuming that people using AWBZ-care have a preference for receiving (reimbursement for) healthcare covered by the basic health insurance and healthcare covered by the AWBZ from the same insurance company. If the intention or the effect of an insurer's decision not to participate in the AWBZ is that solidarity is not fully achieved, risk selection is present.

Patient channeling

A specific form of risk selection concerns the option to waive (a part of) the mandatory deductible when enrollees make use of preferred providers. Recall, for instance, the case of patients with health problem Y (who are on average undercompensated by the risk equalization model and can therefore be classified as high-risk individuals) and let us assume that patients with Y prefer physician C over physician D (e.g., because C uses state-of-the-art treatment techniques while D uses traditional techniques). If a health plan E waives the deductible when enrollees make use of D and not when they make use of C, E will be unattractive for patients with Y. As a result, patients with Y may systematically join health plans other than E.

Differentiation of personal approach

A more direct form of risk selection concerns differentiation of personal approach. For example, based on administrative data from prior years, health plans may be able to qualify an enrollee as a low-risk or a high-risk individual (e.g., by prior years costs and utilization). If an insurer knows that healthy individual H is a low risk, he may provide H with a 'welcome bonus'. Or – when H is already enrolled in the health plan – the insurer may please him/her (e.g., short response times and excellent mediation when H is in need of care) such that he/she feels comfortable with the insurer and renews his/her contract next year. And if an insurer knows that unhealthy individual U is a high risk he may intimidate

U (e.g., long response times or no/poor mediation when U is in need of healthcare) such that U feels uncomfortable with the insurer and switches to another health plan.

Risk selection by healthcare providers

As an instrument for efficiency insurers can negotiate on price and quality with healthcare providers. One option for insurers to stimulate efficiency is to organize some form of risk sharing with providers. This means that providers bear some financial risk with respect to healthcare costs. A common example of this type of risk sharing is the so-called bundled payment, for example, a fixed payment for all components of a treatment episode (or a capitation payment per patient). The essence of bundled payments is that providers are liable for the difference between the negotiated price and the actual costs per treatment episode per patient (or the actual costs per patient per period). However, this type of financial risk does not only provide incentives for efficiency but also incentives for risk selection. For example, if capitation payments are not sufficiently adjusted for individual risk characteristics providers have incentives to treat the low-risk patients (with relatively low expected costs) and not the high-risk patients (with relatively high expected costs). *Ceteris paribus*, the incentives for providers to engage in risk selection increase with the level of risk sharing and decrease with a better quality of the risk adjustment mechanism used for determining the bundled payment. This type of risk selection may become more feasible as insurers and providers merge (i.e., vertical integration) and/or in case of Health Maintenance Organization, since insurers will then have more possibilities to influence providers' decisions.

What are the effects of risk selection?

Van de Ven and Ellis distinguish between three major effects of risk selection [7]. In the first place, risk selection may reduce solidarity between low-risk and high-risk individuals. The simple explanation is that – due to the forms of risk selection described in the previous section – low-risk and high-risk individuals may end up in different health plans (i.e., products). As a result, the difference in premiums between these health plans will not only reflect differences in efficiency but also differences in health status, undermining solidarity.

Another potential effect of risk selection is a reduction of efficiency. When the expected returns on risk selection exceed those on efficiency improvements, insurers are confronted, at least in the short term, with financial incentives to invest in risk selection and not in strategies for improving efficiency. From societal and economic perspectives, each euro spent on risk selection (and not on improving the efficiency of care) can be considered as a welfare loss.

A third potential effect of risk selection is a reduction of the quality of care [17,18]. This effect may appear in two forms. First, insurers can apply several instruments to make

health plans unattractive for high-risk individuals (e.g., not contracting physicians preferred by high-risk individuals suffering from specific health problems). In the extreme case, healthcare providers are left without any contract despite their excellent quality. Second, insurers have no financial incentives to actively invest in the quality of care for high-risk individuals (suffering from specific health problems). Literature provides empirical examples of how risk selection can reduce (or discourage active investments in) quality of care. Shmueli and Nissan-Engelcin hypothesize that in case of incomplete (age-based) risk adjustment relatively healthy towns are more attractive for insurers than relatively unhealthy towns. This could result in strong competition and high availability of services in relatively healthy towns and low competition and low availability of services in relatively unhealthy towns. Using data from Israel they find strong support for their hypothesis, which is an obvious example of risk selection [28]. A second example is discussed by Beaulieu *et al.* and concerns a Health Maintenance Organization (HMO) in the USA [29]. This HMO organized a managed care program for diabetes patients offering efficient diabetes care resulting in better health outcomes for patients against lower costs (compared with traditional healthcare). After a few years, however, the HMO was confronted with substantial losses because it had attracted many diabetes patients while and the HMO was not compensated for the predictable high costs of these patients. This example shows how – in the absence of (accurate) risk equalization – a good reputation for the chronically ill can push insurers into financial problems. When insurers anticipate on such effects by not investing in healthcare for particular groups, improvements in quality of care will be seriously deteriorated. Van de Ven *et al.* provide examples of risk selection and their effects in five European countries [30,31].

Conclusion

Since the Dutch risk equalization model leads to substantial under/overcompensation of particular subgroups in the population, insurers and consumers are confronted with incentives for risk selection. A crucial question for policymakers is whether risk selection is actually present. This paper has provided a comprehensive review of the concept, possibilities and effects of risk selection in regulated competitive health insurance markets. We formulated a definition of risk selection, customized for regulated health insurance markets: "Actions (other than risk rating per product) with the intention and/or the effect that solidarity is not fully achieved", where solidarity refers to the intended pooling of low-risk and high-risk individuals. Our paper shows that the possibilities for risk selection are numerous. For example, all instruments for stimulating efficiency (e.g., product differentiation, voluntary deductibles, group contracts and patient channeling) are also instruments for risk selection. Risk selection, however, is not necessarily an (intended) action by

insurers but can also be (the result of) an action by consumers. For example, if insurers apply selective contracting – for reasons of stimulating efficiency – their plans may be more attractive for low-risk than high-risk individuals, resulting in risk selection. Regulators should be aware that risk selection is a serious threat to the public objectives since it may reduce solidarity, efficiency and quality of care. The conclusions of this paper are not only applicable to The Netherlands, but also to regulated health insurance markets in other countries, for example, Germany, Switzerland and the USA [McGuire *et al.*, Unpublished Data,31,32].

Expert commentary

Given the undesirable effects that risk selection may have on solidarity, efficiency and quality of care, it is crucially important to monitor signals of risk selection. Regulators can do this by monitoring 'actions' and/or 'effects'. Action-oriented monitoring may focus on developments in product differentiation, advertisement and marketing strategies, behavior of insurance brokers, group contracts, voluntary insurance markets, long-term care insurance, options for patient-channeling, personal approach; and behavior of healthcare providers. Effect-oriented monitoring may focus on developments in solidarity, efficiency and quality of care. The monitoring of risk selection (e.g., via actions and/or their effects), is a major challenge, which should not be underestimated by regulators. Based on our review, we provide five recommendations for effective monitoring of risk selection.

Recommendation 1: focus on switchers. A first recommendation for effective monitoring of risk selection is to focus on switchers, rather than all enrollees. A problem with measuring risk selection by focusing for example, on premium differences between health plans is that these differences may be a result of risk selection as well as (differences in) efficiency. For example, health plan E may have a lower premium than an 'average' health plan A because health plan E is more efficient than average, or because health plan E has relatively healthy enrollees. A solution, however, may be to focus on the average under/overcompensation of people who switch plans. Let us assume, for instance, that on January 1 of year t a group of people switches from several health plans to health plan S. For this group of switchers the average under/overcompensation in year t-1 may be a reasonable proxy for risk selection since this under/overcompensation is not influenced by the efficiency level of plan S. Alternatively, one could calculate the average under/overcompensation in year t for the group of people who switched from health plan S to other health plans on January 1 of year t. For this group, the average under/overcompensation in year t may be a reasonable proxy for risk selection since this under/overcompensation is not influenced by the efficiency level of plan S. Calculation of under/overcompensation of switchers per health plan requires individual-level information on enrollment, actual costs and compensations for multiple years.

Recommendation 2: do not solely focus on solidarity. Even in a world where solidarity is fully achieved, risk selection may be present. The explanation is that insurers and consumers may be equally successful in risk selection, resulting in hardly any market segmentation. As a result, solidarity may be fully achieved but efficiency and quality of care may still be harmed by the actions intended at risk selection. Therefore, monitoring should not only focus on solidarity, but also on intended actions and on specific effects (efficiency and quality).

Recommendation 3: know the quality of the risk equalization model. A third recommendation for effective monitoring of risk selection is to know the quality of the risk equalization model. A good indicator of the quality of the risk equalization model is the level of under/overcompensation for relevant subgroups in the population. For example, if an insurer has focused his products, advertisements and marketing on a certain subgroup in the population it is crucial to know whether and to what extent this particular subgroup is under/overcompensated by the risk equalization model. In the absence of under/overcompensations, these (selective marketing) activities are not to be qualified as risk selection. However, if there are under/overcompensations for this subgroup there is, by definition, risk selection. Therefore, it is important for the regulator to know the quality of the risk equalization and to have an appropriate tool for examining the under/overcompensation for a variety of relevant subgroups in the population [4].

Recommendation 4: do not solely focus on intended actions. A fourth recommendation for effective monitoring of risk selection is to focus not solely on intended actions. It may be possible that insurers introduce differentiated products for other reasons than risk selection (e.g., for improving the efficiency and quality of care for particular groups of patients) but that this product differentiation results in a reduction of solidarity because the target groups are overrepresented by either low-risk or high-risk individuals. According to our customized definition, this type of product differentiation is qualified as risk selection (since the effect is that solidarity will not be fully achieved), although the action of the insurers (or consumers) is not intended to reduce solidarity. This example illustrates that risk selection is more than just 'intended actions of insurers and consumers'. Even in a world without intended risk selection by insurers and consumers, risk selection may be present.

Recommendation 5: be aware of the fact that it is impossible to prove the absence of (the effects of) risk selection. The reason is threefold. First, it is impossible to prove that none of all potential subgroups in the population is under- or overcompensated. Second, in the case of imperfect risk equalization it is not always possible to determine whether action X is intended to reduce solidarity (risk selection) or applied for other reasons (e.g., to stimulate efficiency), and it is not always possible to show that solidarity is not fully achieved. Third, it is impossible to determine whether and to what extent insurers do not invest in improving the quality and efficiency of care, since an insurer's decision not to invest in healthcare will in most cases be invisible to the regulator and effects on quality and efficiency are hard to measure because one will never know what the quality and efficiency levels would have been in a world without risk selection.

Five-year view

Since the introduction of the Dutch basic health insurance in 2006, the insurance market has become more and more dynamic. For example, product differentiation has increased and marketing strategies are targeted more and more on particular subgroups in the population (particularly via group contracts and brokers). In 2012, an independent committee evaluated risk equalization and risk selection in the Dutch basic health insurance [32]. The committee reported, among others, that group contracts are a serious threat for solidarity because some groups do not apply open enrollment. In addition, the largest insurer in The Netherlands has sent a warning letter to the Dutch parliament that the current risk equalization model is imperfect and that insurers are discouraged to invest in the quality of care for people with chronic conditions [33]. Apparently, the absence of (serious) risk selection in the past (e.g., the early years of the basic health insurance) provides no guarantee for the future. As a result of these wake-up calls, risk selection has found its way to the top of policy agendas. Due to political pressure we expect that – in the next 5 years – the regulator will invest in monitoring and evaluating risk selection. Given that it will be practically impossible to focus on all possibilities and effects, this paper may be helpful in setting the priorities right.

Disclaimer

The opinions and views expressed in this paper are those of the authors and do not necessarily reflect the opinions or views of the NZa or those of the persons mentioned above. The responsibility for the content of this article fully rests with the authors.

Key issues

- The Dutch basic health insurance is based on the principles of regulated competition.
- Two major regulatory aspects of this scheme are premium regulation and risk equalization.
- The current risk equalization model is imperfect resulting in incentives for risk selection.
- We customize Newhouse's [6] definition of risk selection to the context of regulated health insurance markets: "Actions (other than risk rating per product) by consumers and insurers with the intention and/or the effect that solidarity is not fully achieved".
- Solidarity is the level of (implicit) cross-subsidies from low-risk individuals (e.g., the healthy) to high-risk individuals (e.g., the chronically ill) as intended by the regulator.
- In the Dutch basic health insurance, numerous forms of risk selection are possible (e.g., all instruments for product differentiation are instruments for risk selection).
- Risk selection reduces solidarity if – as a result of market segmentation – low-risk and high-risk individuals concentrate in different health plans with different premiums.
- Risk selection can reduce the efficiency of health plans since insurers may be discouraged to invest in efficiency when the expected returns on risk selection are larger.
- Risk selection can reduce the quality of care since insurers have no incentives to organize the best care for patients who are undercompensated by the risk equalization model.
- Measurement of risk selection is a major methodological and data-demanding challenge.
- The absence of discernible risk selection in the past is no guarantee for the future.
- It is impossible to prove the absence of risk selection.

References

Papers of special note have been highlighted as:
- of interest
- of considerable interest

1   Enthoven AC. Consumer-choice health plan – a national-health-insurance proposal based on regulated competition in the private sector. *N Engl. J. Med.* 298, 709–720 (1978).

2   Enthoven AC. The history and principles of managed competition. *Health Aff.* 12, 24–48 (1993).

••   **Describes the principles of managed competition.**

3   Enthoven AC, Van de Ven WPMM. Going Dutch – managed-competition health insurance in The Netherlands. *N Engl. J. Med.* 357, 2421–2423 (2007).

••   **Describes how managed competition has been applied in the Netherlands.**

4   van Kleef RC, Van Vliet RCJA, Van de Ven WPMM. Risk equalization in The Netherlands: an empirical evaluation. *Working paper* (2013).

5   Van de Ven WPMM, Van Vliet RCJA, Lamers LM. Health-adjusted premium subsidies in The Netherlands. *Health Aff.* 23, 45–55 (2004).

6   Newhouse JP. Reimbursing health plans and health providers: efficiency in production versus selection. *J. Economic Lit.* 34, 1236–1263 (1996).

••   **Provides a definition of risk selection which is now common in the field of health economics.**

7   Van de Ven WPMM, Ellis RP. Risk adjustment in competitive health insurance markets. In: *Handbook of Health Economics.* Culyer AJ, Newhouse JP (Ed.), Amsterdam, The Netherlands, 755–845 (2000).

••   **Provides a conceptual framework on risk equalization (i.e., risk adjustment) in competitive health insurance markets.**

8   Schokkaert E, Dhaene G, Van de Voorde C. Risk adjustment and the trade-off between efficiency and risk selection: an application of the theory of fair compensation. *Health Econ.* 7, 465–480 (1998).

9   Stam PJA. *Testing The Effectiveness Of Risk Equalization Models In Health Insurance: A New Method And Its Application.* Dissertation, Erasmus University Rotterdam, The Netherlands (2007).

10   Besluit Zorgverzekering (English translation: Decree on health insurance). Version 2013.

11   Lamers LM. Risk-adjusted capitation payments: developing a diagnostic cost groups classification for the dutch situation. *Health Policy* 45, 15–32 (1998).

12   Lamers LM. Pharmacy costs groups: a risk adjuster for capitation payments based on the use of prescribed drugs. *Med. Care* 37, 824–830 (1999).

13   van Kleef RC, Van Vliet RCJA. Improving risk equalization using multiple-year high cost as a health indicator. *Med. Care* 50, 140–144 (2012).

14   Zorgverzekeringswet (English translation: Health Insurance Act). Version 2013.

15   Trottmann M, Zweifel P, Beck K. Supply-side and demand-side cost sharing in deregulated social health insurance: Which is more effective? *J. Health Econ.* 31, 231–242 (2012).

16   van Kleef RC, Beck K, Van de Ven WPMM, Van Vliet RCJA. Risk equalization and voluntary deductibles: a complex interaction. *J. Health Econ.* 27, 427–443 (2008).

17   Glazer J, McGuire TG. Optimal risk adjustment in markets with adverse selection: an application to managed care. *Am. Econ. Rev.* 90, 1055–1071 (2000).

18   Glazer J, McGuire TG. Setting health plan premiums to ensure efficient quality in health care: minimum variance optimal risk adjustment. *J. Health Econ.* 84, 153–173 (2002).

19   Douven RCMH, Mannaerts H. Doelmatige zorg versus risicoselectie. (English translation: Efficiency in the delivery of care versus risk selection.) *Economisch Statistische Berichten* 93, 132–135 (2008).

20   Otter B. *The Dutch Risk Equalization Model And Predictable Profits: Are Students And Higher Educated Individuals Profitable?*

Master thesis at Erasmus University Rotterdam, The Netherlands (2012).

21 van Kleef RC, Van Vliet RCJA, Van de Ven WPMM. *Risicoverevening 2012: Een Analyse Van Voorspelbare Winsten En Verliezen Op Subgroepniveau.* (English translation: Risk equalization 2012: An analysis of predictable profits and losses at subgroup level.) Research report (in Dutch), Erasmus University Rotterdam, The Netherlands (2012).

22 Herzlinger RE, Parsa-Parsi R. Consumer-driven health care. lessons from switzerland. *J. Am. Med. Ass.* 292, 1213–1220 (2004).

23 Roos A, Schut FT. *Evaluatie aanvullende en collectieve ziektekostenverzekeringen 2009.* (English translation: Evaluation of supplementary insurance and collective contracts 2009.) Research report, Erasmus University Rotterdam, The Netherlands (2009).

24 Ruth L, De Jong JD, Groenewegen PP. *De rol van collectiviteiten in het nieuwe zorgstelsel.* (English translation: The role of collective contracts in the new health care system). Research report, NIVEL, Utrecht (2007).

25 Van de Ven WPMM, Risicoselectie bedreiging voor kwaliteit van zorg. (English translation: Risk selection threats quality of care.) *Economisch Statistische Berichten* 97, 358–361 (2012).

26 Duijmelinck DMID, Van de Ven WPMM. Beperking keuzevrijheid zorgpolis door aanvullende verzekering. (English translation: Supplementary insurance restricts freedom of choice regarding the basic health insurance by supplementary.) *Economisch Statistische Berichten* 96, 634–637 (2011).

27 Thiel JH, Van Asselt MM, Goudriaan R. *Een analyse van de vereveningsresultaten van geïndiceerde AWBZ-cliënten in de Zorgverzekeringswet.* (English translation: An analysis of risk equalization outcomes in the basic health insurance for people using long-term health care covered by the Exceptional Medical Expenses Act.) Research report APE, The Hague (2012).

28 Shmueli A, Nissan-Engelcin E. Local availability of physicians' services as a tool for implicit risk selection. *Soc. Sci. Med.* 84, 53–60 (2013).

•   **Provides an empirical example of how risk selection can result in a reduction of quality of healthcare.**

29 Beaulieu N, Cutler DM, Ho K *et al.* The business case for diabetes disease management for managed care organizations. *Forum Health Econ. Policy* 9, 1–36 (2006).

•   **Provides an empirical example of how risk selection can result in a reduction of quality of healthcare.**

30 Van de Ven WPMM, Beck K, Buchner F *et al.* Risk adjustment and risk selection on the sickness fund insurance market in five European countries. *Health Policy* 65, 75–98 (2003).

31 Van de Ven WPMM, Beck K, Van de Voorde C, Wasem J, Zmora I. Risk adjustment and risk selection in Europe: 6 years later. *Health Policy* 83, 162–179 (2007).

32 Commissie Don. *Commissie evaluatie risicoverevening zorgverzekeringswet.* (English translation: Commission Don. Commission evaluation risk equalization health insurance act.) The Hague, The Netherlands, June 2012.

33 Achmea. Brief van Achmea aan de leden van de Vaste Commissie voor Volksgezondheid, Welzijn en Sport (English translation: Letter from Achmea to the members of the permanent Commission of Health, Welfare and Sports). September 7, 2011 (2011).