

Consumer Preferences in Social Health Insurance

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Abstract

Allowing consumers greater choice of health plans is believed to be the key to high quality and low costs in social health insurance. This study investigates consumer preferences (361 persons, response rate 43%) for hypothetical health plans, which differed across twelve characteristics (premium, deductibles, no-claim discount, extension of insurance and financial services, red tape involved, medical help-desk, choice of family physicians and hospitals, dental benefits, physical therapy benefits, benefits for prescription drugs and homeopathy). In 90% the health plan with the most attractive characteristics was preferred over health plans, indicating a predominantly rational kind of choice. The most decisive characteristics for preference were: complete dental benefits, followed by zero deductibles and free choice of hospitals.

Keywords: managed competition, consumer preferences, health insurance

Introduction

Allowing consumers greater choice of health plans is currently seen as the key to high quality and low costs [7]. During the past decade several European countries have allowed consumers choice in their social health insurance scheme as a part of introducing managed competition [1, 6, 14, 21, 33]. Its main objective is to stimulate social health insurance organizations to become more consumer oriented and more proactive in managing the provision of health care.

Preconditions for managed competition are: an annual opportunity for subscribers to enroll in one of several competing health plans; an obligation for insurers to accept anyone (irrespective of health status) on the same terms; a standardized benefits package and an adequate system of risk adjusted payments to insurance organizations for part of their expenses. Insurance organizations could then engage in a value-for-money competition [11].

Recent reforms of the Dutch social health insurance system seem to be close to introducing managed competition in health care, because the conditions for competition cited above have been secured [20, 26, 32, 34, 36]. In 1992, freedom to choose a health insurance fund was introduced. At the same time the premium structure was changed from wholly income-dependent to partly income-dependent and partly flat rate. Health insurance funds became responsible for an increasing share (currently 50%) of their expenses, leading to different flat rate premiums between funds [19]. The difference between the cheapest and the most expensive fund is about 150 Euro per year. Social health insurance is the main insurance type in the Netherlands; more than 64% of the population is registered with one of the 24 social health insurance organizations (See box 1).

Box 1 about here

A basic assumption of introducing health plan choice is that consumers can make informed choices about competing health plans. This requires knowledge of important health plan characteristics, like specific services covered by the plan as well as premium, co-payment and deductibles. A review of the literature produces the following characteristics: insurance premiums almost always have a statistically significant negative effect on the probability of enrolling in a health plan [2, 9, 10, 22, 23, 25, 30, 31]. But consumers are most price-sensitive when their new health plan is similar to their old health plan [4]. About two-thirds of the persons who change plans stay in the same plan type [8]. Feldman et al. [12] also point to the fact that changing prices leads to health plan switching within similar health plans.

Various other studies have indicated that people value not only price but also benefits and the availability and quality of physicians [13, 16, 24, 35]. Only a few studies have taken all these variables into account [5, 15]. Chakraborty et al. [5] report the coverage of hospital care to be the main determinant in health plan choice. Followed by choice of doctors, price, dental coverage, and choice of hospitals.

When Dutch consumers change from one health insurance fund to another, conditions are similar and benefits uniform, see box 1. So they change to a very similar type of health plan. Because of these similarities, we would expect the premium to exert an influence on the switching of insurers. The basic benefit package in Dutch social health insurance is uniform, but all funds offer several

supplementary voluntarily insurance schemes that can vary. See box 1. About 95% of the compulsory insured have bought supplementary insurance [38]. And because of the differences among healthcare insurers concerning the supplementary benefit packages, we also would expect the supplementary benefits and the supplementary premium to play a role in the considerations of switchers.

The research questions are:

1. What are consumer's preferences with regard to different hypothetical health plans (scenarios) with different characteristics?
2. Which of the scenario characteristics are associated with these preferences?
3. Which personal characteristics are associated with these preferences?

In general we assume that health plans with favorable characteristics are more popular than health plans with less favorable characteristics. The selected characteristics are in four domains: monetary costs, convenience, freedom of choice, and benefits. Based on rational choice the following hypotheses are formulated:

H1: Scenarios with low monetary costs (in terms of premium, deductibles and no-claim discount) are more popular than scenarios with higher monetary costs;

H2: Scenarios with favorable convenience characteristics (amount of services, no red tape involved, presence of medical help-desk) are more popular than scenarios with less favorable convenience characteristics;

H3: Scenarios with freedom of choice (family physicians, hospital) are more popular than scenarios with less freedom of choice;

H4: Scenarios with full benefits (dental, physical therapy, prescription drugs, and homeopathy) are more popular than scenarios with fewer benefits.

The mutual relationship between the selected characteristics is explored, but earlier research concluded that when people change in the Netherlands, they are more guided by the benefits of the supplementary insurance than by the fixed premium [18]. This leads to one other hypothesis:

H5: Scenarios with full benefits (dental, physical therapy, prescription drugs, and homeopathy) are more popular than scenarios with low monetary costs, especially for older and less healthy persons.

In table 2 characteristics are encoded in terms of expected favorableness (1 being most favorable, 3 being least favorable).

Methods

There are several ways to investigate the reasons why people value particular health plans in relation to health plan characteristics. Buchmueller & Feldstein [4] made use of a natural experiment for investigating how consumers respond to financial incentives for choosing health plans when the University of California changed their employee's choice of health plans. On average, premiums for fee-for-service plans increased by \$70 per month resulting in a 42% change of health plans. Premiums for different HMO plans increased by \$19 per month resulting in a 22% change for one HMO plan, and a 67% change for another, indicating that consumers were most sensitive to price when a close substitute for their original plan was available [4]. The advantage of this approach is

that people are studied in making real choices. The disadvantage is that only a small number of competing health plans was involved.

Another general approach is to present respondents, in person or over the telephone, with a list of potential criteria and to ask them to rate the importance of each feature in selecting among alternative health plans [29]. In most studies respondents tend to rate most characteristics as very important which is an obvious drawback of this approach. Booske et al. [3] asked subjects to enter words or phrases into the computer that described health plan attributes important to them as a first step to determine consumer's preference structures.

A third method is to present a number of hypothetical plan choices (scenarios) and to use conjoint analysis to examine these choices and to infer consumer's preferences from them. For example, Hershey et al. [15] developed scenarios that differed in the levels of deductible amounts, coinsurance rates and limits, maximum out of pocket liability and price, followed by conjoint analysis to derive preference curves for each of the features. More recently Chakraborty et al.[4] used conjoint analysis to analyze responses of 562 Maryland state employees. Choice-based conjoint analyses are held to be acceptable to individuals on the basis that they present them with the type of decisions they face on a daily basis [27].

In this study we will explore the use of a special form of conjoint analysis to investigate consumer preferences in the Dutch social health insurance system. This special form is known as 'discrete choice experiments'. Discrete choice experiments are based on the premise that, firstly, any good or service can be described by its characteristics (or attributes) and, secondly, the extent to which an individual values a good or service depends upon the nature and levels of these characteristics. The technique involves presenting individuals with choices of scenarios described in terms of characteristics and associated levels. For each choice they are asked to choose their preferred scenario [28].

Characteristics and levels

On the basis of the health care marketing literature and specific circumstances of the Dutch social health insurance system we have included the characteristics of table 2. This table also displays the various level of the characteristics.

Scenarios

The total number of scenarios is equal to the number of combinations of the various characteristic levels, which amounts to $3^{11} \times 2 = 2,662$. However, it is not necessary to cover all the combinations in order to perform the analyses. The number of scenarios can be reduced depending on the order of relevant interaction terms between characteristics. We have used an alternative to the full factorial design, called an orthogonal array. This orthogonal array is a subset of all of the possible combinations that still allows estimation of the part-worths for all main – and first-order interaction effects. Second-order interactions, where the part-worth for a level of one factor depends on the levels of two other factors, are assumed to be negligible. In the orthogonal array, each level of one factor occurs with each level of another factor with equal frequencies (3, in our case), assuring independence of the main effects [28]. An orthogonal array represents the most parsimonious way to estimate all main effects. Even though it is true that estimation improves as the number of profiles increases, information is not really lost by omitting some combinations. This is because part-worths

(utilities) for each factor level, can be used to predict equations for those combinations that subjects did not evaluate. One restriction on the number of profiles is that it must sufficiently exceed the number of factors to allow for error degrees of freedom.

In this study a fractional factorial design was used, calculated by means of SPSS orthoplan. This procedure reduced the number of scenarios to 27 whilst still allowing preferences to be inferred for all combinations of levels and attributes. A pair wise comparison of 27 scenarios results in $27 \times 26 = 702$ combinations, which is of course far too many for anyone to handle. Therefore every individual made only four pair wise comparisons, while each scenario in a pair was chosen at random from the 27. More than four pair wise comparisons would probably make the choices too repetitive.

Statistical Model

In order to analyze the attributes' utility in relation to the discrete choices a non-linear additive model was specified, which assumes that the overall utility derived from any combination of attributes is given by the sum of the separate part-worths of the attributes [28]:

$$U_i = \beta_0 + \beta_1 Fpm_10 + \beta_2 Fpm_15 + \beta_3 Dpy_0 + \beta_4 Dpy_100 + \beta_5 Nocl_10\% + \beta_6 Nocl_5\% + \beta_7 Tif_if + \beta_8 Tif_i + \beta_9 Tff_0 + \beta_{10} Tff_10 + \beta_{11} Minfo_y + \beta_{12} Cfp_fc + \beta_{13} Cfp_50\% + \beta_{14} Cho_fc + \beta_{15} Cho_50\% + \beta_{16} Dbf_c + \beta_{17} Dbf_p + \beta_{18} Ptbfc_c + \beta_{19} Ptbfc_18 + \beta_{20} Bfpd_c + \beta_{21} Bfpd_pem + \beta_{22} Bfhp_c + \beta_{23} Bfhp_50\% + e \quad (1)$$

Where

- U_i = the utility or preference score for a scenario with a given level of each attribute in terms of the probability;
- $\beta_0 \dots \beta_{12}$ = part-worths estimated from the regression analyses;
- $Fp_m_10, Fpm_15 \dots Bfhp_50\%$ are variables representing levels of characteristics. These are all dummy variables (0,1). Three level characteristics are represented by two dummies (for instance, the fixed premium per month is represented by Fpm_10 , 10 euro per month, and Fpm_15 , 15 euro per month). The third level is the reference category (in this case 20 euro).
- e = the unobserved error term.

Logistic analysis was used to estimate the above equation, because the dependent variable is binary (1=preferred, 0=not preferred). We started with the full model and then deleted characteristics that did not have a statistically significant relation with the discrete choices (backward elimination, $p < .05$). Because the information regarding one characteristic with three levels is contained in two dummy variables, both dummies are presented, when at least one of the dummies is statistically significant with $p < .05$.

In analyzing the association of the scenarios characteristics with the personal characteristics, interaction variables were tested in another series of logistic analyses with the discrete choice again as dependent variable.

Subjects

A total number of 847 persons of one of the major Dutch health insurance funds were approached with a mailed questionnaire and 361 persons responded (response rate 42.6%). Non-respondents

were contacted three times. The first time with a written questionnaire, the second time with a letter and the third time again with a questionnaire. Besides eight scenarios, the questionnaire contained questions about the health insurance fund and about personal and family characteristics. Respondents are on average 2.2 years older than non-respondents (data not in table). Gender did not differ statistically significant between both groups.

Table 1 shows the personal (or family) characteristics of respondents. The mean age is 40.6 years. The percentage of males and females is about fifty-fifty. The health status of the vast majority is good (or very good or excellent). The modal form of education is medium level vocational training. Most persons have a partner and children. The modal net family income is 1,501 through 2,000 euro per month. The percentage of persons that ever went through a period of chronic illness (or with a chronic condition) is about 54%. For instance, 20.5% went through a period of depression, 18.8% went through a period of anxiety, and 10% have a persistent neck/shoulder disorder.

Results

A total of 2,888 scenarios were paired and presented to 361 persons. Every person had to evaluate four pairs, but not everyone did so. Eleven respondents did not want to choose at all, four chose only once, eleven chose twice, twenty respondents chose between three pairs. The vast majority (316) evaluated four pairs. 24 respondents (6.7%) rated the questionnaire as (very) difficult. On average, each scenario is compared 107 (2,888/27) times with another scenario. The number of comparisons ranged from 95 through 123 times. Scenario 2 is the optimal form of insurance, with the most valuable levels of all characteristics (lowest premium, no deductibles, highest no-claim discount, complete benefits, etc.). Compared to scenario 2, the preferences of other scenarios are non-rational. Scenario 2 is compared 112 times to another scenario. In 101 instances scenario 2 is preferred over other scenarios (101/112 is .902). Eleven times another scenario was preferred over scenario 2. So non-rational choices are 9.8%. Scenario 21 and scenario 5 are the least popular choices. They combine the largest amount of deductibles with limited dental benefits (data not in table).

Which of the scenario characteristics are associated with these preferences? To investigate the relative importance of the various characteristics separately, table 2 is formed. For every characteristic a 2 x 3 cross table is made, where the first dimension relates to preferred/not preferred and the second dimension relates to the levels of each characteristic (the medical help-desk has a 2 x 2 cross table, because it has only two levels). The statistical significance of the associations is calculated by means of the Chi²-test.

Table 2

Table 2 shows the preferences of scenarios according to the 12 characteristics and values of characteristics. Scenarios with a fixed premium of 10 euro are preferred in 52.1% of the choices over other (random) scenarios. Because other scenarios can also have fixed premiums of 10 euro, the comparison is not strictly between 10-euro scenarios and 15 or 20-euro scenarios. Compared to 15-euro or 20-euro scenarios, 10-euro scenarios are preferred in 56.1% and 56.9% of the choices

(data not in table). Scenarios with 15 or 20-euro fixed premiums are preferred in 45.2% and 43.0% respectively over other scenarios. Thus, more expensive scenarios are obviously less popular, although the difference between 15 and 20-euro scenarios is rather small.

In 56.1% of the choices, scenarios without deductibles are preferred over other (random) scenarios. 200-euro deductible scenarios are only preferred in 37.2% of the choices over other scenarios. Accordingly, scenarios with relatively high deductibles are less popular. Deductibles seem to be more important than fixed premiums because the difference between the most attractive value (no deductibles) and the least attractive value (200 euro) is 18.9% (56.1 minus 37.2). With fixed premiums this difference is smaller (9.1%). The percentage of no-claim discount seems to make no difference. Therefore, scenarios with low monetary costs are more popular than more expensive scenarios regarding premium and deductibles, but not so regarding no-claim discount (hypotheses H1).

Two of the three characteristics that represent convenience do not matter. Only the amount of red tape involved shows a statistically significant relation with the preferences. However scenarios where it takes ten minutes to fill in a form are more popular than scenarios with benefits in kind (no time needed to fill in forms), which clearly contradicts the second hypothesis (H2).

Scenarios with free choice of hospitals are more popular than scenarios with limited choice of hospitals. The differences for the free choice of family physicians are much smaller but in the same direction, indicating a confirmation of the third hypothesis (H3).

Dental benefits seem the most decisive characteristic because the difference between the most attractive value and the least attractive value is greatest. Scenarios with complete dental benefits are preferred in 62.0% of the choices over other scenarios. Scenarios without dental benefits are preferred in only 30.2% of the choices. Decreasing dental benefits imply less popular scenarios. The same goes for two other kinds of benefits (prescription drugs and homeopathy) but to a far lesser extent. Physical therapy benefits do not show a statistically significant relation with the preferences, but for the other benefits hypothesis four (H4) is confirmed.

To investigate the relative importance of the various characteristics jointly, a logistic regression analysis was performed, based on equation (1). The following three characteristics did not show a statistically significant relation with the discrete choices: no-claim discount, extension of insurance and financial services, and the presence of a medical help-desk.

Table 3

Table 3 displays logistic regressions coefficients, their associated standard errors, Wald statistics (of each characteristic and of each characteristic value) and their statistical significance. Because the information regarding one characteristic with three levels is contained in two dummy variables, both dummies are presented, when one of the dummies is statistically significant with $p < .05$. The rightmost column displays odds ratios (ORs). The fixed premium is associated with the preferences of scenarios. 10-euro scenarios have an OR of 1.5 compared to 20-euro scenarios (20 euro is the least attractive value of the fixed premium). 15-euro scenarios are not statistically significant different from 20-euro scenarios, so these scenarios are approximately equally popular. This is clearly a non-linear effect. The amount of red tape involved and the benefits for prescription drugs also have non-linear effects. As a matter of fact, the estimates for these characteristics seem to be illogical because

scenarios where it takes 10 minutes to fill in forms are (slightly) preferred over scenarios without forms. The difference, however, is only small and not statistically significant. There is one negative estimate associated with co-payment for expensive medication compared to co-payment of 2 euro for every receipt. In this case the ordering of the levels is not a priori clear, while some people might prefer a certain loss of two euro for each receipt to the uncertain loss of an unspecified amount of co-payment for expensive medicines. The rest of the characteristics showed linear effects (as can be observed by the estimates B).

The OR of scenarios without deductibles is about 2.4 compared to 200-euro scenarios. The OR of 100-euro scenarios is 1.5 compared to 200-euro scenarios. The highest OR (4.3) is found with complete dental benefits compared to non-dental benefits scenarios. Obviously, levels with large ORs are more important than levels with ORs near 1.

The third research question is about the association of personal characteristics and the scenario characteristics, analyzed by means of logistic regression models with interaction terms of every personal characteristic and (one by one) every scenario characteristic (data not in table).

Age and illness are not associated with any of the scenario characteristics, but health status is associated with fixed premiums and benefits for prescription drugs. Persons with relatively poor or fair (subjective) health do not differentiate between 15 and 20-euro scenarios while they prefer scenarios with co-payment of expensive medication above scenarios with co-payment for every receipt, compared to persons with relatively good health (but scenarios with complete benefits for prescription medication are still most popular). Thus, the fifth hypothesis (H5) is partly confirmed.

Gender has an association only with deductibles. 100-euro scenarios are a little more popular among women than men. No-deductible scenarios and 200-euro scenarios are equally popular for women and men.

Less well-educated persons differentiate somewhat less between fixed premiums and prefer complete dental benefits more often compared to higher educated persons. Families with children more often prefer scenarios with complete benefits for prescription medication than families without children. Single-parent families prefer complete benefits for physical therapy more often than others. Low-income persons are relatively more opposed to scenarios with co-payment for expensive medication. All in all eight associations between nine scenario characteristics and seven personal characteristics were statistically significant, out of a total of 63 (9 x 7) possible associations.

Conclusion and Discussion

This article has described preferences of persons with social health insurance for 27 different hypothetical insurance schemes (scenarios) that differed across 12 characteristics. Respondents made discrete choices regarding four random pairs of scenarios. Response data are modeled within benefit (or satisfaction) functions that provide information on whether or not the given characteristics are important; the relative importance of characteristics and the rate at which individuals are willing to trade between characteristics. This method is in accordance with real life situations where people have to make choices from different health insurance plans. For most respondents this task was not difficult. Only eleven persons (out of 361) did not want to make any choice at all. The set of characteristics appears to be rather large (and therefore complex). However in choosing health plans this set is realistic because health plans are characterized by a large set of attributes. Thus, the large set of attributes may contribute to the validity of choices. Furthermore, such a large set of attributes is not without exception in the health care literature [4].

Apart from the medical help-desk, every characteristic had three different values. For instance, the value of fixed premiums was 10, 15 or 20 euros per month. These were realistic amounts at the time of data collection (2002). The scenario with the most attractive values was preferred in 90% over other scenarios, indicating a predominantly rational kind of choice. The most decisive characteristic was dental benefits, followed by (2) deductibles, (3) choice of hospitals, (4) benefits for homeopathy, (5) fixed nominal premium, (6) benefits for prescription medication, (7) benefits for physical therapy, (8) red tape involved, and (9) choice of family physicians. Three characteristics did not show any association with the preferences: No-claim discount, the extension of insurance and financial services, and the availability of a medical help-desk. The general conclusion is that people's choices are mostly guided by benefits. Deductibles are not popular and the fixed premium is not one of the most important characteristics. This result is in line with earlier research among a group of persons who had actually changed from one insurance company to another. If people switch they are more guided by the benefits of the supplementary insurance than by the fixed premium [18].

The last part of this article focuses on the relationship between preferences and personal characteristics. These correlations were absent or only limited and did not give a very clear picture. Therefore, we did not find much evidence that different kinds of people had different kinds of preferences. This is not due to a lack of statistical power because there is sufficient power to detect an odds ratio of about 1.22 (or a change in preference, for instance, from .30 to .35).

We have started the logistic regression analyses in a random effects model (with the statistical package MLWin) to account for the fact the choices are hierarchically nested under respondents. We have calculated the random error across respondents as well as across answers from the same respondent. However, we have found no effect of the random error across respondents.

Why are the benefits more important than the fixed premium? Most of the benefits in social health insurance are uniform and do not differentiate between insurance companies. But in the last decade some benefits were deleted from the social health insurance scheme (for instance dental benefits - except for preventive services - and some physical therapy). As a reaction to this, insurance companies increased their supplementary health insurance plans. Nowadays most insurance

companies have three or four different supplementary packages, including dental benefits and physical therapy benefits. Differences in fixed premiums increased only gradually in the years before 2003. Thus, in recent years the focus was more on differences in supplementary benefits than on differences in the fixed premium (almost all of the social health insurance population has supplementary insurance plans).

Why is the free choice of hospitals more important than the free choice of family physicians? In the Netherlands, family physicians practice in small primary care practices. Most family physicians work single handedly or in partnership. People choose a nearby family physician only a few times in their lifetime and don't change very often. Furthermore, a patient is registered with a primary care practice, but not with a hospital. On referral by a family physician, most patients choose a hospital nearby, but often there is a choice of hospitals. So for every serious health problem patients can choose between hospitals or medical specialists. Because nowadays there are long waiting lists for certain health problems, people will choose a more remote hospital with shorter waiting lists. Most insurance companies are willing to mediate to get someone into a hospital with shorter waiting lists. Therefore, the choice of hospital is more often important than the choice of family physician. An alternative explanation is perhaps the difference in the phrasing of the least valuable answering categories. For the choice of family physicians this was "20% of physicians nearby", leaving choice, albeit limited. For the choice of hospitals this was "One hospital nearby", leaving no choice at all. These categories were deliberately different, because "one physician nearby" is almost never a valid option in our country, and "20% of the hospitals nearby" is almost always less than one. But of course these differences in phrasing can influence the results about the relative importance of these two characteristics.

In contrast to private health insurance, there are no deductibles in social health insurance. The Dutch government is currently making plans to change the health insurance system, and one of the changes is the introduction of deductibles. How does this relate to our results? A scenario without deductibles is of course more popular than a scenario with deductibles, all other things being equal. But an insurance plan without deductibles most often has a higher premium. We have found an odds ratio of about 1.5 for a 100-euro yearly deductible scenario compared to a 200-euro scenario. This odds ratio is almost equal to that of the difference between a 10-euro monthly premium compared to that of a 20-euro scenario. A health plan with a 10-euro monthly premium and a 100-euro yearly deductible costs at most 220 euro per year. This is always less than a 20-euro premium health plan without deductibles, which amounts to 240 euro per year. Although the difference of 20 euro per year is only modest, people seems to be willing to accept deductibles for premium reduction. It is remarkable that people do not prefer 15-euro premium scenarios to 20-euro premium scenarios. Apparently the fixed premium is not linearly associated with preferences, which makes it difficult to compare extra benefits with a willingness to pay additional premium. Therefore we cannot conclude on basis of the odds ratios of the dental benefits that people are willing to pay 15 or 20 euro per month for dental services (in 2002 the average premium for supplementary dental benefits is about 7 euros - ranging from 3 through 20 euros, depending on the benefits package).

The respondents were randomly drawn from the list of one of the 24 Dutch health insurance funds and the response rate was only 42.6%. To what extent can the results be generalized? In earlier

research we found that the response rate of people who had recently switched from our healthcare insurer to another was high (63.4%) compared to people who did not (47.2%) [18]. This seems to indicate that persons who are not actively involved in changing their healthcare insurer do not bother much about health insurance issues and are not eager to respond to a questionnaire about health insurance.

Our respondents are from only one health insurance fund. But there is no reason to believe that the mix of their insured population is different from that of other insurance funds. On the contrary, Kerssens et al. [17] concluded that the Dutch population is rather homogeneous regarding their satisfaction with insurance funds and opinions about the premium. Furthermore the Dutch population does not perceive many differences between healthcare insurers.

This study has some limitations. Firstly, the selected characteristics are all in the rational domain of the process of choice. But non-rational arguments are important as well. For example, the image of the health insurance company or the fact that people are familiar with the healthcare insurer. The results of some of our earlier research point to the fact that the most frequently cited reason to enter a health insurance company in early adulthood is a recommendation from friends and relatives [17]. Secondly, in the Netherlands, there is a clear distinction between social and private health insurance. For instance, in private health insurance deductibles are nearly always part of the insurance plan. Because our respondents are not familiar with deductibles, their reaction to deductibles may be adverse. It would be interesting to expand the method of discrete choice experiments into the private health insurance market to determine differences and similarities with the social health insurance system.

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References

1. Altenstetter C, Bjorkman JW (1997) Health policy reform, national variations and globalization. London: MacMillan
2. Barringer MW, Mitchell OS (1994) Workers' preferences among company provided health insurance plans. *Industrial and Labor Relations Review* 48:141-152
3. Booske BC, Sainfort F, Schoofs Hundt A (1999) Eliciting Consumer preferences for health plans. *Health Serv Res* 34:839-854
4. Buchmueller TC, Feldstein PJ (1996) Consumer's sensitivity to health plan premiums: evidence from a natural experiment in California. *Health Aff* 15:143-151.
5. Chakraborty G, Ettenson R, Gaeth G (1994) How consumers choose health insurance. *J Health Care Mark* 14:21-33
6. Colombo F (2001) Towards more choice in social protection? Individual choice of insurer in basic mandatory health insurance in Switzerland. *Labour market and social policy occasional papers no.53*, Paris: OECD
7. Cunningham PJ, Denk C, Sinclair M (2001) Do consumers know how their health plan works? *Health Aff* 20:159-66
8. Cunningham PJ, Kohn L (2000) Health plan switching: choice or circumstance? *Health Aff* 19:158-164
9. Cutler DM, Reber SJ (1998) Paying for health insurance: the trade-off between competition and adverse selection. *Quart J Econ* 113:433-466
10. Dowd B, Feldman R (1994) Premium elasticities of health plan choice. *Inquiry* 31: 438-444
11. Enthoven AC (1993) The history and principles of managed competition. *Health Aff* 12:(Suppl.)24-48

12. Feldman R, Finch M, Dowd B, Cassou S (1989) The demand for employment based health insurance plans. *J Human Res* 24:115-142
13. Gibbs DA, Sangl JA, Burrus B (1996) Consumer perspectives on information needs for health plan choice. *Health Care Financ Rev* 18:55-73
14. Gress S, Groenewegen P, Kerssens J, Braun B, Wasem J (2002) Free choice of sickness funds in regulated competition: evidence from Germany and The Netherlands. *Health Policy* 60: 235-254
15. Hershey JC, Kunreuther H, Schwartz JS, Williams SV (1984) Health insurance under competition: would people choose what is expected? *Inquiry* 21:349-60
16. Hibbard JH, Jewett JJ (1997) Will quality report cards help consumers? *Health Aff* 16:218-28
17. Kerssens JJ, Delnoij DMJ, Verweij JA, Schee E van der (2002) De keuze van ziekenfondsverzekerden voor een zorgverzekeraar (Consumer preferences for particular social health insurers). *Tijdschrift voor Sociale Gezondheidszorg* 80:35-42
18. Kerssens JJ, Groenewegen PP (2003) Consumer choice of social health insurance in managed competition. *Health Expect* 312-322
19. Lamers LM, Vliet RCJA van, Ven WPMM van de (2003) Risk adjustment premium subsidies and risk sharing: key elements of the competitive sickness fund market in the Netherlands. *Health Policy* 65:49-62
20. Lieverdink H (2000) The marginal success of regulated competition policy in The Netherlands. *Soc Sci Med* 52:1183-1194
21. Light DW (2001) Comparative institutional response to economic policy managed competition and governmentality. *Soc Sci Med* 52:1151-1166.
22. Long SH, Settle RF, Wrightson CW (1988) Employee premiums, availability of alternative plans, and HMO disenrollment. *Med Care* 26:927-938
23. McGuire TG (1981) Price and membership in a prepaid group medical practice. *Med Care* 19:172-183
24. Robinson S, Brodie M (1997) Understanding the quality challenge for health consumers: the Kaiser/AHCPR Survey. *J Qual Improv* 23:239-44
25. Royalty AB, Solomon N (1999) Health plan choice. Price elasticities in a managed competition setting. *J Human Res* 34:1-41
26. Rutten F, Buschbach J van (2001) How to define a basic package of health services for a tax funded or social insurance based health care system? *European J Health Econ* 2:45-46
27. Ryan M, Bate A, Eastmond CJ, Ludbrook A (2001) Use of discrete choice experiments to elicit preferences. *Qual Health Care* 10: Suppl 1:i55 60
28. Ryan M, McIntosh E, Shackley P (1998) Using conjoint analyses to elicit the views of health service users: an application to the patient card. *Health Expect* 1:117-129
29. Scammon DL (1989) Self-funded health benefits plans: marketing implications for PPOs and employers. *J Health Care Mark* 9:5-14
30. Scanlon DP, Chernew M, Lave JR (1997) Consumer health plan choice: current knowledge and future directions. *Annu Rev Public Health* 507-28
31. Short PF, Taylor AK (1989) Premiums, benefits, and employee choice of health insurance options. *J Health Econ* 8:293-311
32. Schut FT (1996) Health care systems in transition: The Netherlands. Part I: Health care reforms in The Netherlands: miracle or mirage? *J Pub Health Med* 18:278-84
33. Schut FT, Doorslaer EKA van (1999) Towards a reinforced agency role of health insurers in Belgium and the Netherlands. *Health Policy* 48:47-67
34. Schut FT, Hassink WHJ (2002) Managed competition and consumer price sensitivity in social health insurance. *J Health Econ* 21:1009-1029
35. Smith HL, Rogers RD (1986) Factors influencing consumers' selection of health insurance carriers. *J Health Care Mark* 6:6-14
36. Ven WPPM van de (2001) Risk selection on the sickness fund market. *European J Health Econ* 2:91-95
37. Welch WP (1986) The elasticity of demand for health maintenance organizations. *J Human Res* 21:252-266
38. ZFR/CTU (1999) Onderzoek effecten aanvullende verzekering (Investigation of the effects of supplementary insurance). Amstelveen: ZFR/CTU

Box 1: Health Insurance System in the Netherlands in 2003

Health Insurance System	<p>Exceptional Medical Expenses Act (AWBZ) provides cover for expensive and long-term health care for all residents (40% of total expenditure);</p> <p>More than 64% of the population are compulsory members of a social health insurance fund (37% of total expenditure). Nearly all members (95%) have supplementary health insurance (2% of total expenditure);</p> <p>Some 31% of the population have taken out private insurance voluntarily and the remaining 5% have medical insurance under a public law scheme (together 19% of total expenditure);</p>
Membership of health insurance funds	<p>Obligatory for employees under the income ceiling of 31750 Euro (2003) and their families, some groups of social security dependents, old age pensioners (income ceiling 20200 Euro), self-employed (income ceiling 20250 Euro);</p>
Benefits of health insurance funds	<p>Uniform benefits, like: medical care, pharmaceutical prescriptions, hospital care, dental care <18 years.</p> <p>Supplementary, voluntary insurance possible (e.g. for dental care >18 years and parts of physiotherapy). Supplementary benefits differ between funds;</p>
Premium	<p>Income dependent part is uniform, paid by employees and employers to the central fund, distributed with risk-adjustment to individual funds. Flat-rate part of premium determined by the individual funds. Difference between cheapest and most expensive is 150 Euro per year (2003)</p> <p>Supplementary insurance premium determined by individual funds;</p>
Number	<p>24 different health insurance organizations;</p>

Table 1 Personal characteristics		
Age (M,SD)	40.6	9.6
Gender		
% male	49.6	
% female	50.4	
Health status		
% excellent, (very) good	84.6	
% fair, poor	15.4	
Education		
% low vocational training	25.8	
% secondary education	14.9	
% secondary education (high)	10.6	
% medium vocational training	27.8	
% high vocational training or university	20.9	
Family situation		
% partners without children	14.9	
% partners with children	69.1	
% single parent family	14.0	
% other	2.0	
Net family income (Euro)		
% less than 1000,-	11.8	
% 1001,- through 1500,-	23.3	
% 1501,- through 2000,-	24.5	
% 2001,- through 2500,-	17.6	
% 2501,- through 3000,-	13.3	
% 3001,- through 3500,-	4.5	
% more than 3500,-	4.8	
Illness		
% none	45.7	
% one or more	54.3	

Table 2 Percentage of scenarios that is preferred over other scenarios according to characteristics and levels of characteristics

characteristics	Labels	Code	Levels	% preferred over other scenarios
Fixed premium per month***	Fpm	1	10 euro per person	52.1
		2	15 euro per person	45.2
		3	20 euro per person	43.0
Deductibles per year***	Dpy	1	None	56.1
		2	100 euro per policy	46.9
		3	200 euro per policy	37.2
No-claim discount (n.s.)	Nocl	1	10% discount	46.3
		2	5% discount	46.9
		3	None	47.1
Extension of services (n.s.)	Tif	1	insurance and financial services	44.7
		2	all kind of insurances	49.2
		3	health insurance only	46.3
Amount of red tape*	Tff	1	None	47.4
		2	10 minutes per form	49.3
		3	20 minutes per form	43.6
Medical help-desk (n.s.)	Minfo	1	Yes	46.5
		2	No	47.2
Choice of family physicians (n.s.)	Cfp	1	Free choice	48.3
		2	50% of physicians nearby	47.5
		3	20% of physicians nearby	44.5
Choice of hospitals***	Cho	1	All hospitals	53.6
		2	Half of hospitals nearby	48.0
		3	One hospital nearby	38.5
Dental benefits***	Dbf	1	Complete (incl. caps etc.)	62.0
		2	Preventive services only	47.9
		3	None	30.2
Physical therapy benefits (n.s.)	Ptbf	1	Complete	48.8
		2	Maximum 18 sessions per year	46.7
		3	Maximum 9 sessions per year	44.7
Benefits for prescription drugs*	Bfpd	1	Complete	50.6
		2	Co-payment for expensive medication	45.0
		3	Co-payment 2 euro per receipt	44.5
Benefits for homeopathy**	Bfhm	1	Complete	50.8
		2	Co-payment 50%	47.1
		3	None	42.2

*** p<.001; ** p<.01; * p<.05; Chi²-test

Table 3 Results of logistic analysis of nine characteristics with the probability of preferring scenarios

	B	S.E.	Wald	df	Sig.	Odds Ratio
Fixed premium per month						
10 euro	.413	.101	16.793	1	.000	1.511
15 euro	.075	.097	.603	1	.437	1.078
Deductibles per year						
None	.867	.099	76.188	1	.000	2.379
100 euro	.403	.099	16.517	1	.000	1.496
Amount of red tape						
None	.251	.100	6.329	1	.012	1.285
10 minutes	.296	.099	9.004	1	.003	1.344
Choice of family physicians						
All	.214	.100	4.636	1	.031	1.239
Half	.124	.098	1.612	1	.204	1.132
Choice of hospitals						
All	.680	.101	45.527	1	.000	1.973
Half	.430	.097	19.491	1	.000	1.538
Dental benefits						
Complete	1.474	.103	203.845	1	.000	4.366
Preventive services only	.788	.099	63.953	1	.000	2.199
Physical therapy benefits						
Complete	.268	.103	6.808	1	.009	1.307
Maximum of 18 sessions	.165	.098	2.818	1	.093	1.179
Benefits for prescription drugs						
Complete	.334	.098	11.588	1	.001	1.397
Co-payment for expensive medication	-.010	.098	.011	1	.917	.990
Benefits for homeopathy						
Complete	.454	.101	2.235	1	.000	1.574
Co-payment 50%	.215	.098	4.831	1	.028	1.240
Constant	-2.613	.192				

Reference category for each characteristic is in table 2 (encoded 3).