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I BRAND AND REPUTATION AS QUALITY SIGNALS ON REGULATED MARKETS

Abstract

Legislation put into effect in 2009 has dramatically altered the health insurance system in Germany by introducing premium equality in order to foster new competition between the German statutory health insurance funds based on quality rather than price. The statutory health insurance (SHI) funds have reacted quickly by offering new benefits and services. However, we assume that consumers are influenced not only by product attributes but also by signals of quality, such as those delivered by corporate reputation, which can act as an information surrogate. The results of our choice-based conjoint experiment show that benefits such as elective tariffs, bonus programs, complementary insurance offers, voluntary coverage, and extended services significantly influence consumer choice of statutory health insurance. These findings argue for the success of the public policy strategy of the German government. Our findings indicate that reputation is fairly important in product choice when compared with product-based attributes. As a consequence of these findings, funds should not only adapt their offerings with regard to the benefits that insurants value the most but also place emphasis on corporate reputation management.

1 Introduction

Throughout the prior research dealing with the decision process of choosing or changing health insurance funds, price has been found to be the most distinguishing and important criterion when compared with other product attributes such as benefit details or services (BRAU and LIPPI BRUNI, 2008, MARQUIS et al., 2007, NOORDEWIER et al., 1989, THOMSON and DIXON, 2006). Within the first three years after the 1996 reform that introduced freedom of choice into the formerly non-competitive¹ German SHI system, approximately 7% of Germans insured in statutory health insurance (SHI) funds changed their sickness fund (ZOK, 1999). Research has shown that the main reason for changing the SHI fund depended on the basic question of whether equal healthcare coverage can be obtained for a better price (GREß et al., 2002, ZOK, 1999).

However, at the beginning of 2009, the most important criterion of a health insurance product — its price — was eliminated in Germany with the introduction of the *Act to Strengthen Competition (Wettbewerbsstärkungsgesetz)*. Since then, German SHI funds, which currently cover approximately 90% of the German population (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2011), are forced by law to quote the same price, which is to say (in terms of the German SHI system), to quote the same percentage from insurants' gross income for their health insurance packages (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2011). The basic goal of this law and the related fixed contribution rates was to create a SHI system that is highly differentiated by offered benefits as well as a new basis for competition in terms of quality rather than price (GERMAN BUNDESTAG, 2006).

Health insurance funds are allowed to charge an additional contribution in case the granted financial means do not suffice (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2011). 7% of the German SHI funds currently make use of this option (HEALTH INSURANCE GERMANY, 2011). As a consequence, they have lost insurants to other funds that do not charge any additional contribution (FRIEDRICHS et al., 2009). This customer migration shifts the market focus and this paper's focus further to the major competition between SHI funds that charge equal premiums.

Because SHI funds on this market can no longer compete via the price of their offerings, they have reacted quickly to the new market situation and to rising pressure² by trying to attract

¹ Before 1996, Germans' SHI affiliations were determined by their jobs, their employers, and their place of residence (BUSSE and RIESBERG, 2005).

² The rising economic pressure caused by the introduction of the *Act to Strengthen Competition* is reflected in a disappearance of 65 insurance funds in the first 36 months after the law passed the German Bundestag, which

customers via new product attributes in the benefit sector and the service sector. On the basis of extensive desk research and an interview with an expert from the field (the head of customer services at Germany's biggest SHI fund *Barmer GEK*), we found five attributes of current health insurance packages that are increasingly used for differentiation: elective tariffs, bonus programs, complementary insurance, voluntary coverage, and customer services. Prior research from countries other than Germany has highlighted the importance of some of the abovementioned attributes for health insurance decisions. For example, some authors have found a statistically significant influence of customer service on choice decisions in the US and the Netherlands (CHAKRABORTY et al., 1994, VAN DEN BERG et al., 2008). BRAU and LIPPI BRUNI (2008) confirmed the importance of additional voluntary coverage in their study of health insurance in Italy.

We propose that, aside from these benefit details, the reputation of an SHI fund can have a major impact on its choice. Corporate reputation serves as a signal for the quality of products (FOMBRUN and SHANLEY, 1990), especially in a service industry (YOON et al., 1993) such as (health) insurance, where the offerings are difficult to evaluate before actually having to use them and, moreover, are rather complex in their nature. Corporate reputation can consequently act as an information surrogate and displace price as the most important criterion in the choice of SHI. GATES et al. (2000) included real health insurance brands as providers of insurance products in their study of the US market and found a significant influence of brand name on the choice of health insurance. However, in their study, GATES et al. (2000) have not linked this effect to the reputation of the providers nor have they excluded price from their study's set-up and concerns.

Our research sets out to determine the factors that influence the choice of SHI in an environment of premium equality, particularly in Germany. We aim to answer the following questions: Do insurants choose the best offer in terms of quality, and if so, which attributes are the main drivers of choice? Or do they, rather, rely on a mere indicator of quality (i.e., corporate reputation) in order to make their choices?

After elaborating the theoretical framework for our study, we design and conduct a choice-based conjoint experiment to answer our research questions. From our results, we are able to draw two primary implications: On the one hand, in the current situation of premium equality, health insurance funds obtain valuable information on how to design their offerings and on the

equals a decline of about 30% of all German SHI funds (THE NATIONAL ASSOCIATION OF STATUTORY HEALTH INSURANCE FUNDS, 2011).

importance of their corporate reputation. On the other hand, we provide policy makers in Germany and in countries with similar healthcare systems with insight into the evaluation of recent reforms as well as the improvement in the design of future reforms.

2 Theoretical Background

2.1 Effects of Benefit Differentiation

Elective tariffs. To create a more flexible landscape of health insurance packages, elective tariffs were introduced in 2007 (SCHULZE EHRING and WEBER, 2007). As a result, insurants have the opportunity to reduce health insurance costs for themselves and for providers by designing a more customized healthcare coverage fitting their individual demands and use of health services (SCHULZE EHRING and KÖSTER, 2010). There are mandatory elective tariffs that have to be offered by each SHI fund, such as special care provision tariffs (e.g., integrated care programs) or sick payment tariffs for members who are not entitled to statutory sick pay. Aside from these mandatory elective tariffs, SHI funds are free to offer voluntary elective tariffs (PASSON et al., 2009, SCHULZE EHRING and WEBER, 2007, GERMAN FEDERAL DEPARTMENT OF HEALTH, 2010). The most common voluntary elective tariffs (accompanied by short descriptions) are displayed in Table 1.

<i>(Voluntary) elective tariff</i>	<i>Description</i>
<i>Deductible Tariff</i>	Bonus payments for taking over a cost deductible
<i>Contribution Refund Tariff</i>	Refund of contributions for not using any medical services besides preventive check-ups
<i>Cost Reimbursement Tariff</i>	Bonus payments for payment of health services out of own pocket and monetary reimbursement later on

Table 1: Overview of Voluntary Elective Tariffs

Although they are not a completely new feature, elective tariffs gained importance as a differentiation factor based on the *Act to Strengthen Competition* (PAQUET, 2007, SCHULZE EHRING and WEBER, 2007). Research shows that elective tariffs are reasonable from an economic point of view. For example, deductible tariffs reduce the volume of insurance claims (MANNING et al., 1987, PÜTZ and HAGIST, 2006, VAN VLIET, 2004). Elective tariffs are, however, only effective if they are accepted by and attractive for (potential) customers, leading us to our first research question.

RQ1: Does the offer of voluntary elective tariffs influence the choice of SHI?

Bonus programs. Bonus programs reward health-conscious behavior, such as participation in approved health-promoting activities, sports club memberships, and regular preventive check-ups. Insurants receive monetary bonus payments or payments in kind through which gifts can be selected according to the achieved number of bonus points at the end of the year (SCHULZE EHRING and KÖSTER, 2010). Shortly after legislation opened up this possibility in 2004, sickness funds rapidly introduced bonus programs (HÖPPNER et al., 2005). Since premium equality was introduced at the beginning of 2009, a great number of marketing campaigns and advertising strategies have come to use bonus programs as a differentiation factor (SCHULZE EHRING and KÖSTER, 2010, FRIEDEL and NÜRNBERGER, 2010). In addition to indicating the goal of saving costs³, this clearly reveals the SHI funds' hope of attracting new customers (SCHULZE EHRING and KÖSTER, 2010). ZOK (2005) found in his representative survey of German SHI insurants that more than 50% appreciate the offer of bonus programs. However, to date, there is no empirical investigation of the effect of bonus programs on the choice of SHI, which leads to our second research question.

RQ2: Does the offer of bonus programs influence the choice of SHI?

Complementary insurance. Complementary insurance offers refer to additional health insurance contracts insurants can choose: for example, for traveling abroad, for full coverage of dental care, for vision aids, or for a daily hospital allowance. With the offer of complementary insurance contracts, SHI funds provide insurants with benefits previously only available through additional contracts with private health insurers (HÖPPNER et al., 2005, ZOK, 2005). Complementary insurance is supposed to be advantageous for both the insurance companies as well as their customers: the insurers receive additional premiums (SCHULZE EHRING and WEBER, 2007), and the insurants get more than just the basic SHI package from one provider (ZOK, 2005). ZOK (2009) shows in his recent customer survey conducted after the introduction of premium equality that almost 40% of SHI customers appreciate the availability of complementary insurance packages. Moreover, DORMONT et al. (2009) and KERSSENS and GROENEWEGEN (2005) prove the importance of complementary insurance offers for customers' SHI choice decisions in the Netherlands and Switzerland, respectively. We therefore propose that the offer of complementary insurance packages is an important determinant in the decision process for or against a health insurance provider.

³ FRIEDRICHS et al. (2009) show that bonus programs yield an annual benefit of €129 per insurant. However, the long-term effects and effectiveness of bonus programs still remain to be examined.

H₁: The offer of complementary insurance positively influences the choice of SHI.

Voluntary coverage. The German government strictly regulates which health services are covered by SHI funds. The lists of drugs, treatment methods, outpatient care, and so forth, as well as the coverage rates a SHI company has to reimburse, are predefined by law and form the so-called standard benefit catalogue (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2011). Within those rigid reimbursement guidelines, approximately 98% of benefits are defined as mandatory payments that a SHI fund is required to reimburse. The remaining 2% of voluntary coverage options, also predefined by law, allow for differentiation between SHI funds. Consequently, voluntary coverage takes place in a very narrow field (HÖPPNER et al., 2005, SCHULZE EHRING and KÖSTER, 2010). However, it still provides SHI funds with the option of adjusting their benefit portfolio towards special needs (e.g., travel vaccinations, professional tooth cleaning, or direct cost transfers for constitutional courses) or special customers (e.g., women, families). Because voluntary coverage is free of charge for the customer, it is expected to enhance the attractiveness of health insurance packages (ZOK, 1999). International research proves that voluntary coverage indeed drives the choice of SHI funds (BRAU and LIPPI BRUNI, 2008, DORMONT et al., 2009, GATES et al., 2000, KERSSSENS and GROENEWEGEN, 2005, MARQUIS et al., 2007). We therefore formulate our second hypothesis regarding the effect of voluntary coverage on the choice of SHI.

H₂: The offer of voluntary coverage positively influences the choice of SHI.

Customer service. A day-and-night or medical consulting service hotline or a branch network with many local subsidiaries are only a few varieties of customer service features. Prior international research on the choice of health insurance mainly supports the influence of customer service on choice behavior (CHAKRABORTY et al., 1994, VAN DEN BERG et al., 2008).

H₃: The offer of extended customer services positively influences the choice of SHI.

Although their impact was proven by CHAKRABORTY et al. (1994) as well as VAN DEN BERG et al. (2008), customer services were less important compared with other product attributes. KERSSSENS and GROENEWEGEN (2005) found, for example, the service feature ‘availability of a medical help-desk’ to be uncorrelated with insurants’ preferences. These findings indicate that the product core, that is, the benefits included in a SHI package, is more important to the customer than additional service aspects. Given the fact that the offer of complementary insurance might be important only for certain customer groups with special needs we suppose

that voluntary coverage (i.e., additional coverage free of charge) is the product attribute with the greatest overall value for insurants.

H4: The offer of voluntary coverage has the greatest effect on the choice of SHI compared with other product attributes.

2.2 Effects of Corporate Reputation

The current market situation in Germany makes it almost impossible to keep track of the various and highly differentiated offerings of SHI funds. Aside from the increasing number of different benefits, inconsistent names and labels for the same insurance offerings make it difficult to compare SHI offerings and to distinguish between mandatory and voluntary offers. Generally, the large majority of insurants lack detailed knowledge about the SHI funds' offerings (GREß et al., 2008, HAENECKE, 2001). Therefore, explaining consumers' choice behavior with facts (i.e., the offerings' characteristics) is not enough. Rather, people may be looking for a way to reduce market complexity similar to the role played by price before the introduction of premium equality. Corporate reputation is seen as just such a surrogate for this information (EBERL and SCHWAIGER, 2008, FOMBRUN and VAN RIEL, 1997, MARQUIS et al., 2007, ANDERSEN and SCHWARZE, 1998).

Corporate reputation "can be a major factor in achieving competitive advantage through differentiation" (HALL, 1992, p. 138). It impacts buying intention and attracts new customers (GOTSI and WILSON, 2001, GROENLAND, 2002, YOON et al., 1993, GARDBERG and FOMBRUN, 2002) because it serves as a signal for the quality of the corporation's offerings (NELSON, 1970, SHAPIRO, 1982, FOMBRUN and SHANLEY, 1990). This effect becomes increasingly important in service industries (YOON et al., 1993), such as the health insurance sector, in which consumers know very little about the product before actually having to use them (KOLSTAD and CHERNEW, 2009). For consumers of such experience goods, it is natural for purchase decisions to be based on a firm's reputation (ROB and FISHMAN, 2005). In their US-based study, GATES et al. (2000) found a comparably small but statistically significant influence of brand in their choice experiment. However, they do not make a connection between this influence and the respective companies' reputations. This theoretical argumentation leads us to our fifth hypothesis concerning the effect of corporate reputation:

H5: The favorable corporate reputation of a SHI fund positively influences its choice.

3 Method and Measures

3.1 Method: Choice-based Conjoint Analysis (CBCA)

In order to answer our research questions and to test our hypotheses, we rely on the approach of conjoint analysis (CA). The basic intention of CA is to evaluate the utility of product alternatives that consist of a number of different attributes and levels (RAO, 2008). The contributions of the various attributes and levels or their manifestations to the utility of a stimulus are obtained from a global rating, ranking or discrete choice task (GUSTAFSSON et al., 2007, RAO, 2008): While all attributes of a stimulus are *considered jointly* by test persons, part-worth utilities (PWUs) for the single attribute levels are estimated in a decompositional approach later on (GREEN and SRINIVASAN, 1990). Following HAAIJER and WEDEL (2007), it is commonly assumed that the overall utility of a stimulus is constructed by adding the preferences for the attribute levels. This implies a compensatory preference model, in which a low, possibly negative score of a certain attribute, which reduces the overall utility of a product, can be compensated by a high score of another attribute (HAAIJER and WEDEL, 2007).

The approach of CA is well established in the healthcare literature: by using conjoint analysis, we follow previous research on the choice of health insurance (BRAU and LIPPI BRUNI, 2008, CHAKRABORTY et al., 1994, NOORDEWIER et al., 1989, STENSRUD et al., 1997, VAN DEN BERG et al., 2008). Consistent with the studies of BRAU and LIPPI BRUNI (2008) and CHAKRABORTY et al. (1994) in particular, we applied a choice-based conjoint analysis (CBCA, also: discrete choice analysis) in order to determine the utility of individual attribute levels from global responses to a set of alternatives (PRACEJUS and OLSEN, 2004). As opposed to traditional conjoint analysis and related approaches, which rely on ranking or rating tasks to evaluate stimuli, CBCA applies the concept of choice. In a CBCA task, the test person is asked to select his or her preferred stimulus within a presented choice set (GREEN et al., 2001). The choice (or rejection) of a product as an expression of “ultimate interest” (ELROD et al., 1992, p. 368) is, as the natural behavior of consumers, supposed to be more intuitive and more realistic than the rating or ranking of single product attributes and their levels (LOUVIERE and WOODWORTH, 1983). These methodological traits have led to the general assumption of CBCA’s high validity (CARSON et al., 1994, LOUVIERE and WOODWORTH, 1983, MOORE et al., 1998, RYAN et al., 1998).

To avoid misleading results, the number of attributes and levels should be kept low in conjoint analysis set-ups. Within CBCA studies, an average of six to ten attributes is common (WITTINK

et al., 1989, ORME, 2006). Table 2 shows a list of the (six) attributes and the corresponding levels that we included into our CBCA set-up.

#	Attribute	#	Level
1	<i>SHI Brand</i>	1	AOK
		2	Barmer GEK
		3	DAK
		4	TK
2	<i>Elective Tariffs</i>	1	Not offered
		2	Deductible tariff
		3	Contribution refund tariff
		4	Cost reimbursement tariff
3	<i>Bonus Program</i>	1	Not offered
		2	Nonmonetary rewards
		3	Monetary rewards
4	<i>Complementary Insurance</i>	1	Not offered
		2	Offered
5	<i>Voluntary Coverage</i>	1	Not offered
		2	Travel vaccinations
		3	Professional tooth cleaning
		4	Constitutional course
		5	Travel vaccinations and professional tooth cleaning
		6	Travel vaccinations and constitutional course
		7	Professional tooth cleaning and constitutional course
6	<i>Service Package</i>	1	Standard services
		2	Extended services

Table 2: CBCA Attributes and Levels

To test the effects of a SHI fund's corporate reputation, we used real SHI fund brands analogously to GATES et al. (2000). We chose four of the five biggest nationwide operating SHI funds in terms of coverage of German SHI insurants: *AOK* (34.7%), *Barmer GEK* (12.3%), *TK* (11.1%), and *DAK* (8.6%) (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2011). We did not include company health insurance funds (*BKKs*) into our study set-up, although they, taken together, insure 18.6% of the German SHI insurants (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2011), because company insurance funds are not represented by a common brand. Data, which was available to us, provided by the YouGovPsychonomics AG, which monitors 550 brands in 20 sectors by surveying approximately 1,000 consumers from all relevant demographic groups on a daily basis, indicated both differences in reputation and high levels of recognition among the German public for the four chosen SHI funds.

As levels for the second attribute 'elective tariffs,' we included the three voluntary elective tariff options we identified earlier (see Table 1) into the design. Despite a huge variety in the design of bonus programs, we were able to easily identify two different types on the basis of

their reliance on either monetary or nonmonetary rewards. We used these two types together with a ‘not offered’ alternative as the levels for our third attribute. As shown in chapter 2.1, there are miscellaneous types of complementary insurances. SHI funds are usually able to offer the whole range of complementary insurances once they have set up cooperation with a private health insurance company. Consequently, the basic question is whether particular SHI funds cooperate with a private health insurer and whether they offer complementary insurance packages in general. Thus, we reduced the levels for this attribute to a simple ‘yes or no’ scenario. We identified travel vaccinations, professional tooth cleaning, and cost transfers for constitutional courses as the three most popular voluntary benefits. We completed our CBCA set-up with these three items, their combinations, and a ‘not offered’ alternative as the levels for the attribute voluntary coverage. Furthermore, we included two levels for the attribute service (standard and extended).

3.2 Empirical Design

Our questionnaire started with a screening question to exclude those people insured in private health insurance funds from the survey. After some introductory questions concerning various social demographics (e.g., sex, age, education, and occupation), the respondents had to indicate whether they knew the four selected SHI fund brands (see chapter 3.1) which we displayed in randomized order, including their respective logos. We used this question as a filter, allowing only those persons who recognized the four SHI fund brands to complete the experiment.

The part of the survey that followed consisted of the actual choice experiment. Respondents were asked to choose one from among four possible alternatives (for an exemplary choice task, see Figure 2 in the appendix) for which information on all attributes and levels could be found in hyperlinked pop-up windows. This choice task was repeated seven times. Because of the number of attribute levels in our study, not all theoretically possible stimuli⁴ could be displayed to our respondents. We had to select an appropriate subset of stimuli through the computer-based algorithms provided by Sawtooth Software. The corresponding efficiency values ranged between .997 and 1.002 (see Table 6 in the appendix), indicating almost equal standard errors for our reduced design and a perfectly orthogonal main effect plan. These efficiency values easily met the standards (KUHFIELD et al., 1994). Thus, our design was determined to be highly capable of collecting valid choice data.

⁴ Because each level can be present or absent for a given stimulus, a complete design comprises 2^J stimuli, with J being the number of all attributes’ levels (LOUVIERE and WOODWORTH, 1983). In our case, a complete design would comprise $2^{22} = 4,194,304$ different stimuli.

We decided not to include a none-option, which would be the option to choose none of the offered alternatives, something that is possible in CBCA settings. This decision rested upon three deliberations: first, research shows that some respondents pick the none-option to reduce complexity (HAAIJER and WEDEL, 2007), something that could happen easily because of the complexity inherent in the choice of SHI. Second, the inclusion of a none-option produces missing data, which would have been a critical problem for our analysis, especially for the application of a Hierarchical Bayes regression to calculate pseudo-individual utilities (HAAIJER et al., 2001, JOHNSON and ORME, 2003). Third, in the German SHI environment a none-option does not exist: every German is legally obliged to pick one of the available SHI funds (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2011).

After having completed the choice experiment, respondents were asked to indicate the reputation of the four SHI funds. We used the corporate reputation scale of SCHWAIGER (2004). The cognitive and emotional dimensions of this reputation construct (competence and likeability) are operationalized with three reflective items each (on seven-point Likert scales). We adjusted one item concerning the international importance of the company or the SHI fund because this international focus does not apply to German SHI funds. The values collected on a seven-point scale were standardized between the (hypothetical) values of one and 100, where higher numbers indicate a better reputation. The separate values for competence and likeability were merged into a single overall corporate reputation score following a factor analysis approach (SCHWAIGER, 2004).

Furthermore, respondents were asked for information on their current health status (e.g., general health status and existence of chronic diseases), their current SHI provider, and their intention to change their SHI fund in the near future.

The data for our study were collected via an online survey in November 2010. In total, 286 SHI insurants responded to our questionnaire, of which 36 had to be excluded, mainly because they were not familiar with all four SHI brands used in our CBCA design. Table 7 in the appendix presents a profile of the resulting 250 interviewees. Male participants were underrepresented (37.2% in the sample compared with 48.9% in Germany). The sample was (with an average age of 30.8 years) younger than the German average of 43.2 and was shifted toward higher education (GERMAN FEDERAL BUREAU OF STATISTICS, 2011). In all, 67.2% of respondents were insured within one of the four SHI funds included into the CBCA, adequately representing the proportion in the current German SHI market situation (see Figure 1). 79.2% of the respondents were insured with their respective insurer for more than three years, and satisfaction with their

current SHI provider was high⁵. Consistent with this finding, participants showed limited intentions of changing their providers: 10.0% planned to change their SHI fund within the next 12 months and another 12.4% had not decided yet. These numbers are consistent with the findings of a recent representative study⁶ of the German SHI market by YouGovPsychonomics AG.

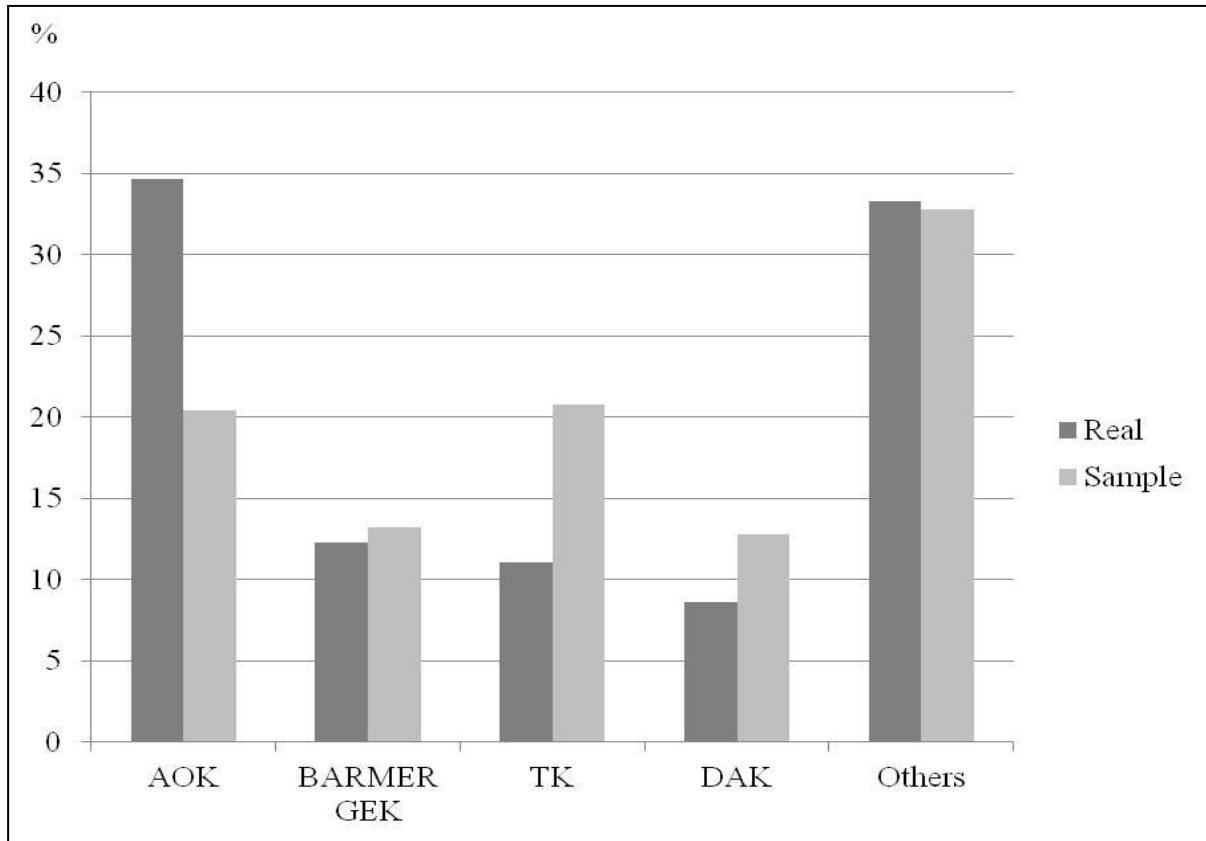


Figure 1: SHI Membership Distribution (Sample vs. Reality)

4 Analysis and Results

A Chi-Square Independency Test of the count analysis shows that the choice decision depends significantly on the levels for all of the attributes ($p < .01$; see Table 8 in the appendix). Therefore, the selection of attributes and levels for modeling a SHI choice decision within the conducted CBCA can be regarded as valid. For assessing the PWUs of the single attributes and levels in the aggregated dataset, we employed a multinomial logit model. As mentioned above, the basic information produced by the CBCA consists of dichotomous choice data. Following random utility theory (LOUVIERE and WOODWORTH, 1983), we considered latent utility

⁵ Mean = 5.5 ($n = 250$) on a seven-point Likert scale from 1 = “unsatisfied” to 7 = “completely satisfied”.

⁶ www.psychonomics.de/filemanager/download/2471/

preferences, which finally trigger the choice of alternative p out of a set of alternatives A , to consist of an explicable, deterministic utility component V_p and a non-explicable, stochastic error term e_p . U_p represents the latent true value of alternative p (KAMAKURA and RUSSELL, 1989).

$$U_p = V_p + e_p$$

Random utility theory assumes a behavior of pure utility maximization in which respondents always select the alternative with the highest perceived total utility. The deterministic, representative utility component V_{pq} can be seen as the additive result of all single PWU β_{jiq} of attribute j 's level i within respondent q 's mindset. The following equation shows this additive connection with s_{pjiq} as the vector of individual characteristics of person q at stimulus p (MCFADDEN, 1974).

$$V_{pq} = \sum_{j=1}^J \beta_{jiq} s_{pjiq}$$

The multinomial logit model tests all levels regarding their relevancy within the actual choice decision and each level's contribution to the perceived total utility of a stimulus presented for the average respondent. Table 3 shows the part-worth utility estimations that can be regarded as the value a single level adds to the already existing core utility of SHI. For research question RQ_1 regarding the inclusion of elective tariffs, we see that the contribution refund tariff and the cost reimbursement tariff both increase the value of a SHI offer. The deductible tariff, which offers payments for taking over a cost deductible, and not offering an elective tariff reduce the value of a health insurance package. We also discover the effects of the inclusion of bonus programs into healthcare packages (RQ_2). Whereas monetary rewards provide insurants with additional value, nonmonetary rewards (i.e., payments in kind) do not add to the value of an insurance product. Declining to offer a bonus program at all diminishes an offer's value significantly. We confirm Hypothesis H_1 regarding the positive effects of the offer of complementary insurance. The same is true for voluntary coverage (H_2) that is free of charge for insurants. Combinations of different voluntary coverage features are highly appreciated. In other words, the more free coverage an insurance package contains, the higher is its value for insurants. Thereby, the absorption of costs for professional tooth cleaning by the insurer yields the greatest value per se which is also reflected in its combinations with the other voluntary

coverage levels. Consumers also appreciate extended services packages, further confirming Hypothesis H_3 .

<i>Attribute</i>	<i>Level</i>	<i>Effect</i>	<i>Std. err.</i>	<i>t-ratio</i>
<i>SHI Brand</i>	AOK	-.023	.046	-.511
	Barmer GEK	-.054	.046	-1.164
	DAK	-.091*	.047	-1.954
	TK	.169***	.044	3.873
<i>Elective Tariff</i>	Not offered	-.497***	.053	-9.355
	Deductible tariff	-.184***	.048	-3.812
	Contribution refund tariff	.451***	.042	10.836
	Cost reimbursement tariff	.231***	.043	5.312
<i>Bonus Program</i>	Not offered	-.363***	.041	-8.789
	Non-monetary rewards	.003	.039	.099
	Monetary rewards	.359***	.037	9.808
<i>Complementary Insurance</i>	Yes	.259***	.027	9.684
	No	-.259***	.027	-9.684
<i>Voluntary Coverage</i>	Not offered	-1.166***	.103	-11.319
	Only travel vaccinations (1)	-.396***	.078	-5.101
	Only professional tooth cleaning (2)	.205***	.066	3.095
	Only constitutional course (3)	-.444***	.078	-5.674
	(1) and (2)	.676***	.061	11.007
	(1) and (3)	.396***	.064	6.185
	(2) and (3)	.729***	.061	12.027
<i>Service Package</i>	Standard services	-.143***	.026	-5.396
	Extended services	.143***	.026	5.396

Table 3: Part-Worth Utilities (Multinomial-Logit Model)

The choice of SHI also depends significantly on the SHI brand offering the product: whereas the value of the healthcare package is enhanced when the provider is *TK*, it is reduced when *DAK* is the provider. This finding is consistent with the reputational assessments of the SHI funds in our sample. The respondents assign significantly higher values for reputation to *TK* and the lowest reputation to *DAK* (see Table 4), indicating the confirmation of Hypothesis H_4 .

<i>Means</i>	<i>AOK</i>	<i>Barmer GEK</i>	<i>DAK</i>	<i>TK</i>
<i>Competence</i>	51.11 ^a	55.08 ^a	52.54 ^a	65.29 ^b
<i>Likeability</i>	45.29 ^a	44.42 ^a	42.13 ^a	52.66 ^b
<i>Reputation</i>	48.37 ^a	50.06 ^a	47.64 ^a	59.35 ^b

Note: Means on a scale from 0 to 100. Standard deviations in parentheses. Numbers with different superscripts in a given row are significantly different at the level of $p < .01$.

Table 4: Reputational Assessments of SHI Brands

However, to properly answer Hypothesis H_5 , we had to draw inferences about the individual reputational assessments of the SHI funds that underlie the individual choices instead of analyzing data on an aggregated level. Because of the CBCA settings' limited data at the individual level, we applied a Hierarchical Bayes model, which is often used in marketing research to provide estimates of quasi individual-level parameters (ROSSI and ALLENBY, 2003), and which is supposed to perform better than alternative methods (LENK et al., 1996). Within Hierarchical Bayes models, pseudo-individual utilities are computed via an iterative process in which missing preference data for each test person are replaced by preference data of other respondents (ROSSI and ALLENBY, 2003). The resulting individual part-worth utilities for the different attribute levels of 'SHI brand' and the corresponding reputational assessments of each individual are significantly correlated ($r_{AOK} = .227$, $r_{BarmerGEK} = .247$, $r_{DAK} = .194$, $r_{TK} = .285$; $p < .01$), confirming Hypothesis H_5 regarding the effect of a SHI fund's reputation on its choice⁷.

We use the calculated Hierarchical Bayes part-worth utilities to quantify the relative attribute importance W_j . For each attribute j , the so-called 'spread' I_j is calculated as $\left\{ \max_i(\beta_{ji}) - \min_i(\beta_{ji}) \right\}$ divided by the sum of all considered attributes' spreads, whereby β_{ji} is the part-worth utility of level i of attribute j (ORME, 2006). Table 5 shows the resulting means for the importance of the attributes included in our study. The SHI brand, with an average importance of about 15.0%, ranks third and therefore plays a fairly important role within SHI choice decisions. It ranges behind voluntary coverage options as the most important attribute (confirming Hypothesis H_4) and the offer of elective tariffs. The brand is, however, more important than bonus programs, complementary insurances, and service packages, even though all of these are significant drivers in choice decisions (see Table 3).

⁷ The correlations of the individual part-worth utilities of the brands and the two components of corporate reputation, competence ($r_{AOK} = .161$, $r_{BarmerGEK} = .183$, $r_{DAK} = .166$, $r_{TK} = .199$; $p < .05$), and likeability ($r_{AOK} = .234$, $r_{BarmerGEK} = .248$, $r_{DAK} = .163$, $r_{TK} = .286$; $p < .05$), are also significant.

We conducted additional analyses to examine whether demographic factors and the current health situation influence an individual's preferences for a specific attribute or SHI fund. These analyses show that elective tariffs are more important for male persons ($\text{mean}_{\text{female}} = 18.0$, $\text{mean}_{\text{male}} = 22.2$; $p < .01$) and healthier persons ($\text{mean}_{\text{unhealthy}} = 19.0$, $\text{mean}_{\text{healthy}} = 21.8$; $p < .05$). Complementary insurance offers are more important for women than for men ($\text{mean}_{\text{male}} = 7.5$, $\text{mean}_{\text{female}} = 9.3$; $p < .05$). The importance of the brand offering the insurance package is correlated with age ($r = .209$; $p < .01$). The brand is, moreover, more important for the less educated share of respondents ($\text{mean}_{\text{high}} = 14.3$, $\text{mean}_{\text{low}} = 17.0$; $p < .05$). Attribute importance is not affected by SHI membership with two exceptions (see Table 9): the brand offering the insurance package is less important for DAK members (remember that DAK has the lowest values for corporate reputation in our sample) and voluntary coverage options are less important for TK members than for AOK/DAK members.

<i>Attribute</i>	<i>Mean importance (%)</i>	<i>Std. dev.</i>
<i>Voluntary Coverage</i>	35.89	9.21
<i>Elective Tariff</i>	19.55	8.54
<i>SHI Brand</i>	14.95	8.76
<i>Bonus Program</i>	13.78	7.53
<i>Complementary Insurance</i>	8.62	5.66
<i>Service Package</i>	7.20	5.00

Table 5: Importance Scores

5 Discussion

Regarding the design of health insurance packages, the most important attribute is the benefits that are offered voluntarily by the SHI fund (voluntary coverage), which is to say, health services free of charge for the insurants. The high importance of voluntary coverage, which is consistent with prior research, leads to the assumption that the former search for 'the same coverage for a better price' is replaced by the search for 'more coverage for the same price' since the introduction of premium equality into the market.

Consistent with this indirect price focus, the offer of elective tariffs, which allows saving costs, is the second most important feature in the process of choosing a SHI fund — a possibility which is more appreciated by men. Healthcare expenditures are higher for female insurants (NÖTHEN and BÖHM, 2009) for whom it is, therefore, possibly less attractive to make payments in advance as required by cost reimbursement tariffs. Moreover, men are generally more willing to take risks (WEBER et al., 2002) such as are inherent in deductible or cost reimbursement tariffs. The higher risk aversion of women is also reflected in the fact that they value the offer of

complementary insurance more than men do. The finding that elective tariffs are more attractive for healthier persons is not surprising given the fact that, for example, in contribution refund tariffs, costs can only be saved if no medical services other than preventive check-ups are demanded.

Moreover, because of the obviously high price sensitivity, bonus programs are only attractive if the rewards are of a monetary nature. The offers of complementary insurance as well as an extended services package add significantly to the value of a health insurance package, although both features are relatively unimportant compared with the other attributes included in our study.

In summary, we found support for all of our research questions and confirmed all of our hypotheses concerning the effects of benefit differentiation. People value the different attributes of health insurance packages more or less and select their SHI fund accordingly. However, they are also influenced by a SHI fund's reputation. The brand offering the insurance product is the third most important criterion when choosing SHI. A comparatively low corporate reputation, such as that of *DAK*, leads to a reduction of the utility of an insurance product whereas a high reputation such as that of *TK* increases the product's perceived utility. As hypothesized, corporate reputation plays the role of an information surrogate that signals the quality of a company's (complex and immaterial) offerings to its consumers. This assumption is further backed by the fact that less educated and older people rely more on the brand than the more educated and younger consumers who can grasp the complex matter more easily.

6 Limitations and Implications

As seen above, even in times of premium equality, price still plays a major role in the selection of a SHI fund. It is indirectly included in product attributes such as voluntary coverage, where insureds aspire to obtain more coverage for the same price, and elective tariffs, which provide insureds with the possibility of getting their contributions back. Moreover, the sustained existence of price as a direct criterion cannot be neglected. Insureds can, for example, compare prices and premiums for complementary insurance offers. According to SCHULZE EHRING and KÖSTER (2010), complementary insurance can, given a scenario of premium equality, even serve as pricing substitute, a possibility that seems completely plausible that we could not account for in our empirical analysis.

Even though CBCA is generally ascribed high validity, the reality of the market for SHI is much more complex. To keep our CBCA set-up reliable, we could only include a fraction of all the

existing attributes and levels of SHI products. It is, moreover, a truly difficult task to compare the SHI funds' offerings, which use various labels for the same features and often provide insufficient information to render a comprehensive comparison possible. In our conjoint analysis, in contrast, we provided participants with not only complete information on all offers but also hyperlinked descriptions in case they were unsure about the attributes' and levels' meanings. Approximately 50% of our respondents made use of these additional pieces of information. Against this background of high opacity in the SHI market, corporate reputation as an information surrogate might gain in importance in a real-life setting.

Even though the above presented importance scores (e.g., the low importance of customer service) are plausible and in line with prior research, we cannot completely rule out the possibility of a (slight) number-of-levels effect (STEENKAMP and WITTINK, 1994) according to which, in CA, respondents assign more importance to the attributes with more levels.

The proportion of those participants who intend to change their SHI fund is rather low. Even though this proportion might increase because of the collection of additional contributions by some funds, causing customer churn (see chapter 1), SHI funds still face the dilemma of wanting to attract only those customers associated with low risk, which is to say, good health because compensations from the government for high risk customers are generally considered to be too low (PIMPERTZ, 2007). Our finding that elective tariffs attract healthier people can possibly make a contribution to the easing of this conflict.

In spite of the strict regulation of what is possible within the field of voluntary coverage, SHI funds should take over the costs for at least some health-promoting activities (e.g., professional tooth cleaning). In light of the customers' high price sensitivity, it seems a promising approach to feature such measures as well as bonus programs with monetary rewards prominently in marketing communications. A SHI fund's marketing communications and public relations should also place substantial emphasis on corporate reputation management, because customers rely on the brand as a signal of quality when they choose a SHI fund. Managing and closely tracking the development of the SHI fund's reputation, therefore, is essential. However, funds have to keep in mind that, if they charge their insureds with additional contributions, this mechanism is possibly overridden — given the high price sensitivity of Germans with regards to health insurance. Further research will have to examine the new market situation if more and more companies charge additional contributions.

If necessary, costs should be cut at the expense of the offered customer services or complementary insurance. However, marketing managers in SHI funds should keep in mind that these attributes, despite being less important in the decision process, significantly influence the choice of SHI. Both features can tip the balance for or against a specific offer in a direct comparison of alternatives or act as a compensatory element of customer choice.

The German public policy strategy behind the *Act to Strengthen Competition*, which aims to encourage more quality-based competition between SHI funds, has shown its first successes. The recent reform is more effective than earlier essential modifications of the German SHI market such as the introduction of freedom of choice in 1996 that only caused insurants to look elsewhere for equal coverage for a better price. The new competition that has emerged from the *Act to Strengthen Competition* has led to changes in the benefits delivered to the insurants. Our study shows that, in the new environment of premium equality, customers indeed base their SHI choice decisions on these new features to a great extent.

Appendix

Please choose your favorite alternative from the four offers below.




	 DAK Unternehmen Leben	 BARMER GEK die gesund experten	 AOK Die Gesundheitskasse	 Techniker Krankenkasse Gesund in die Zukunft.
SHI fund				
Elective tariffs	Deductible tariff	Cost reimbursement tariff	Cost reimbursement tariff	Not offered
Bonus program	Monetary rewards	Non-monetary rewards	Not offered	Non-monetary rewards
Complementary insurance availability	No	No	Yes	Yes
Service package	Standard services	Standard services	Extended services	Extended services
Voluntary coverage	Professional tooth cleaning and constitutional course <input type="radio"/>	Not offered <input type="radio"/>	Professional tooth cleaning <input type="radio"/>	Travel vaccinations <input type="radio"/>

Figure 2: Exemplary Choice Task

<i>Attr./lev.</i>	<i>Level</i>	<i>Frequency</i>	<i>Actual</i>	<i>Ideal</i>	<i>Efficiency</i>
1 1	AOK	1750			
1 2	Barmer GEK	1750	0.034	0.034	1.000
1 3	DAK	1750	0.034	0.034	1.000
1 4	TK	1750	0.034	0.034	1.000
2 1	Deductible tariff	1750			
2 2	Contribution refund tariff	1750	0.034	0.034	1.000
2 3	Cost reimbursement tariff	1750	0.034	0.034	1.000
2 4	Not offered	1750	0.034	0.034	1.000
3 1	Non-monetary rewards	2333			
3 2	Monetary rewards	2333	0.030	0.030	1.000
3 3	Not offered	2334	0.030	0.030	1.000
4 1	Yes	3500			
4 2	No	3500	0.024	0.024	1.000
5 1	Standard services	3500			
5 2	Extended services	3500	0.024	0.024	1.000
6 1	Travel vaccinations	1000			
6 2	Professional tooth cleaning	1000	0.048	0.048	1.001
6 3	Constitutional course	1000	0.048	0.048	1.001
6 4	Travel vaccinations & prof. tooth cleaning	1000	0.048	0.048	1.002
6 5	Travel vaccinations & constitutional course	1000	0.048	0.048	1.001
6 6	Prof. tooth cleaning & constitutional course	1000	0.048	0.048	0.997
6 7	Not offered	1000	0.048	0.048	0.998

Note: 'Complete Enumeration task' generation method, based on 250 versions, includes 1,750 total choice tasks (7 per version). Each choice task includes four alternatives with six attributes each.

Table 6: Efficiency Calculation

<i>Variable</i>	<i>Level</i>	<i>n</i>	<i>%</i>
<i>Sex</i>	Male	93	37.20
	Female	157	62.80
<i>Age</i> Mean: 30.80 Std. dev.: 11.00 Min: 18.00 Max: 79.00	<20	5	2.00
	20-24	73	29.20
	25-29	85	34.00
	30-34	27	10.80
	35-39	12	4.80
	40-44	10	4.00
	45-49	12	4.80
	50-54	15	6.00
	55-59	7	2.80
	60-64	2	.80
	≥65	2	.80
<i>Family Status</i>	Single	191	76.40
	In a relationship/married	48	19.20
	Divorced/separated/widowed	11	4.40
<i>Education</i>	No formal education	0	.00
	Basic secondary school	13	5.20
	Middle school	49	19.60
	High school diploma	111	44.40
	College/university	71	28.40
	Post graduate degree	6	2.40
<i>Employment Status</i>	School student	2	.80
	Trainee	0	.00
	Blue-collar worker	6	2.40
	Employee	105	42.00
	Public offer	3	1.20
	Entrepreneur	10	4.00
	Student (undergraduate)	115	46.00
	Retiree	2	.80
	Job seeker	1	.40
	Homemaker	3	1.20
	Others	3	1.20
<i>Monthly net Household Income (after taxes and social insurance)</i>	< € 1,000	64	25.60
	€ 1,001 - € 1,500	26	10.40
	€ 1,501 - € 2,000	42	16.80
	€ 2,001 - € 2,500	28	11.20
	€ 2,501 - € 3,000	22	8.80
	€ 3,001 - € 3,500	12	4.80
	€ 3,501 - € 4,000	7	2.80
	€ 4,001 - € 4,500	10	4.00
	€ 4,501 - € 5,000	4	1.60
	> € 5,000	4	1.60
	Not Specified	31	12.40
<i>Current SHI Provider</i>	AOK	51	20.40
	BARMER GEK	33	13.20
	DAK	32	12.80
	TK	52	20.80
	Others	82	32.80

Table 7: Selected Demographic Data (n = 250)

<i>Attribute</i>		<i>Within attribute χ^2</i>	<i>df</i>	<i>Significance</i>
<i>SHI Brand</i> (n = 250)		14.42	3	p < .01
AOK	.25			
Barmer GEK	.24			
DAK	.23			
TK	.29			
<i>Elective Tariff</i> (n = 250)		172.03	3	p < .01
Deductible tariff	.20			
Contribution refund tariff	.35			
Cost reimbursement tariff	.29			
Not offered	.15			
<i>Bonus Program</i> (n = 250)		96.32	2	p < .01
Non-monetary rewards	.24			
Monetary rewards	.32			
Not offered	.18			
<i>Complementary Insurance</i> (n = 250)		80.79	1	p < .01
Yes	.30			
No	.20			
<i>Voluntary Coverage</i> (n = 250)		349.50	6	p < .01
Travel vaccinations (1)	.16			
Professional tooth cleaning (2)	.26			
Constitutional course (3)	.16			
(1) and (2)	.38			
(1) and (3)	.30			
(2) and (3)	.40			
Not offered	.08			
<i>Service Package</i> (n = 250)		25.20	1	p < .01
Standard services	.22			
Extended services	.28			

Table 8: Count Analysis

<i>Means</i>	<i>AOK</i>	<i>Barmer GEK</i>	<i>DAK</i>	<i>TK</i>	<i>Others</i>
<i>SHI Brand</i>	16.13 ^b	14.37 ^{a,b}	10.77 ^a	16.90 ^b	14.86 ^b
<i>Elective Tariff</i>	18.38	20.13	19.04	20.60	19.58
<i>Bonus Program</i>	12.93	13.23	15.71	13.44	13.99
<i>Complementary Insurance</i>	8.97	9.86	8.44	8.21	8.24
<i>Voluntary Coverage</i>	37.92 ^b	34.97 ^{a,b}	38.58 ^b	33.02 ^a	35.77 ^{a,b}
<i>Service Package</i>	5.67	7.45	7.47	7.83	7.56

Note: Mean attribute importance. Numbers with different superscripts in a given row are significantly different at the level of $p < .05$.

Table 9: Attribute Importance per SHI Membership Group

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