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Markus Kick

I THE PRICE PREMIUM INDUCED BY BRANDING: A HEALTH CARE CASE STUDY

Abstract

Germany's statutory health insurance (SHI) system has been radically changed in the year 2009 by the introduction of premium equality across all SHI funds. As of today, all funds charge the same price, which is 15.5% of each insurant's gross income. The option to charge additional contributions as a flat, monthly per head amount in case funds cannot cover their costs has only scarcely been used so far. However, research predicts that this current state of premium equality is soon to be changed (PFISTER, 2009, EIBICH et al., 2011). Based on KICK and LITTICH (2011), I conduct a choice-based conjoint experiment and include the new pricing signal of additional contributions. I find that price is not the dominating criterion on the current market, but equally important to voluntary coverage options. Corporate reputation and a provider's brand name lose importance, but are still a major quality signal within consumers' choice decisions. The brand name TK (*Technical Health Insurance Fund*), as reputational leader, provides additional value for insurants. TK is able to charge up to €1.46 additional contributions from each insurant per month without falling behind their competitors. Compared to the general contribution rate of 15.5% of each insurant's gross income, of course, €1.46 seems rather low. However, the statutory health insurance funds that already charged additional contributions from their members collected between €5 and €16 per month and head. Using this rational reveals that TK is able to charge close to 10% of the additional contribution range simply due to their reputational advantage. Thus, corporate reputation proves to enhance a fund's bargaining position towards its potential insurants, as it allows charging and justifying price premiums. A second empirical study reveals that people lack knowledge about funds' benefit and coverage portfolios and the SHI system in general. Insurants consistently overestimate funds with comparably higher corporate reputation regarding their benefit and coverage details of selected performance categories. Implications for practitioners and policy makers are discussed.

1 Motivation

The German statutory health insurance (SHI) market before the year 2009 has historically been highly price driven. Contribution rates were by far more important than any benefit, coverage, or service details. Research also confirms that the main reason for insurants to change or pick their SHI fund depended on the basic question whether equal healthcare coverage can be obtained for a better price (GREB et al., 2002, ZOK, 1999). As funds constantly tried to underprice each other, the market situation fostered a high tendency towards a positive risk selection behavior and was even labeled “manacled” or “constrained” competition (cf. BROWN and AMELUNG, 1999, p. 76, REINHARDT, 1999, p. 92). In other words, it was best for SHI companies to acquire only low risk assets, meaning healthy people that are not costly, to keep prices down (BODE, 2003, p. 439, PIMPERTZ, 2007, p. 24).

With the introduction of the *Act to Strengthen Competition (Wettbewerbsstärkungsgesetz)* in 2009, the German government tried to counteract the mainly price driven competition on the SHI market (MARQUIS et al., 2007, NOORDEWIER et al., 1989). By setting contribution rates equally to 15.5% of each insurant’s gross income, the reform’s intention was to create a SHI system that is especially differentiated by offered benefits. The reform aimed to create a new basis for competition in terms of quality rather than price on both the primary (i.e., SHI and insurants) as well as the secondary (i.e., SHI and health care providers) market (GERMAN BUNDESTAG, 2006). Since price as the major differentiation criterion broke away, SHI funds had to react promptly to counteract a potential loss of insurants. They quickly established a diverse benefit and service environment to retain their customer base.

KICK and LITICH (2011) show that under the situation of premium equality, consumers indeed attach more importance to benefit and coverage details. The authors identified elective tariffs, bonus programs, complementary insurance, voluntary coverage, and customer services as the main drivers of consumer choice. They further state that voluntary coverage options are the most important criterion within consumers’ choice decisions with about 35%. Thus, the basic message on a market of premium equality comes back to the simple question where to get the best coverage options and benefits for the same price. The brand name, and subsequently a fund’s corporate reputation, ranked third with an importance score of about 15% following elective tariffs with approximately 20%. Brand and reputation can, therefore, be seen as one of the most important aspects for funds to differentiate on the current market and proved to be of higher importance than extended customer service, bonus programs and complementary insurance offers. Thus, brand name and reputation help to take over the signaling effect on a

former price dominated market within a SHI landscape of premium equality and help insurants to reduce the high market complexity in the SHI system (FOMBRUN and VAN RIEL, 1997, GERLINGER et al., 2007, PASSON et al., 2009).

However, by passing the *SHI-Financial Act (GKV-Finanzierungsgesetz)* in 2010, the German government opened up the possibility to deviate from the premium equality of 15.5% (GERMAN BUNDESTAG, 2010). In case SHI funds are no longer able to cover their costs, they can charge an additional contribution from their insurants. This additional payment, in contrast to the regular contribution, does not depend on insurants' income, but is invoiced from every insured person within one specific SHI fund to a maximum of 1% of the earnings ceiling for mandatory SHI, which is around € 40 per month (BUCHNER and WASEM, 2009). The meaning and importance of these additional premiums can be separated into two effects. First, a strong psychological effect, which arises out of directly charging a flat, monetary amount from the insurant, second, a strong pricing signal which allows comparison of plain sums of money instead of net percentages from gross income (SCHULZE EHRING and KÖSTER, 2010). Right now, coffers of SHI funds are well-stocked and the new opportunity of additional contributions is only scarcely used on today's market¹. The German Department of Health states that for the years 2010, 2011, and 2012 only a few (7 out of 145) SHI funds already have or will charge additional premiums (GERMAN FEDERAL DEPARTMENT OF HEALTH, 2010). However, the situation is expected to change during the next years. An economical downswing and a rise in health care expenditures are just two reasons for the prediction of experts that funds cannot avoid charging additional contributions from their members in the near future (PFISTER, 2009, EIBICH et al., 2011, BUCHNER and WASEM, 2009). Press and media also widely discussed the new pricing signal and shaped consumers' perceptions about the imminent market with additional contributions.

The reintroduction of a new pricing signal on the German SHI market is expected to change the current SHI system and will show a major impact on health insurance choices. In this light, the study at hand wants to contribute to previous research in a fourfold way. First, I revisit the

¹ Please note that "today" refers to the market situation in 2012. Two major reasons made it necessary to not focus on the current market situation in 2014. First, data of both empirical studies were collected in 2012 under the light of the former market situation and after insurants have had first experiences with additional contributions. Second, in the year 2014, none of the SHI funds charge additional contributions. In fact, financial resources of SHI funds currently even allow reimbursing contributions back to SHI insurants. For example, TK reimbursed €80 to each member in the year 2013 (TECHNIKER KRANKENKASSE, 2014). As research clearly predicts a prospective increase in health care expenditures and a return to a market with additional contributions (cf. PFISTER, 2009, EIBICH et al., 2011), the focus of this paper lays on the 2012 market situation where in October 2012, one out of 145 SHI funds was charging additional contributions from their members but insurants have become highly aware of this new opportunity.

approach of KICK and LITTICH (2011) and replicate their findings on drivers of SHI choices on the German market. Second, I provide insights about the SHI choice decision under the new situation with additional contributions. I enhance the choice-based conjoint approach of KICK and LITTICH (2011) by including the attribute “additional contribution” as the new price signal and contrast the results to the market of premium equality. One main focus will be put on the interplay between price and corporate reputation, as corporate reputation was taking over the signaling role of price on a market with no price differences. Third, including a monetary amount into the choice experiment enables to extract detailed information for SHI funds about product design and pricing aspects. I derive insights about the monetary equivalents, certain coverage options or quality signals are able to compensate and shed light on the question of what the ideal SHI bundle looks like when additional contributions come into play. Fourth and last, through conducting a second empirical study, I verify the choice-based conjoint approaches of KICK and LITTICH (2011) and the study at hand. I reveal that consumers indeed lack knowledge about the SHI funds offerings (cf. e.g., HAENECKE, 2001, TSCHEULIN and DIETRICH, 2010) and face enormous market complexity (cf. e.g., DEVLIN, 2007) that argues in favor of signaling mechanisms like brand name or corporate reputation and confirms the appropriateness of the choice-based conjoint approaches.

After elaborating the theoretical framework for my study, I design and conduct a choice-based conjoint experiment to answer my hypotheses. The result section will show that the replication under premium equality has been successful, that additional contributions, indeed, change SHI choices, and that benefit, coverage, and service details as well as corporate reputation and the brand name are able to compensate additional contributions. Next, the design and results of the second empirical study are presented and discussed. The final chapter of the paper at hand presents final implications for practitioners and policy makers. Health insurance funds obtain valuable information on how to design their offerings in the predicted situation of premium inequality and on the changing importance of their corporate reputation. Furthermore, I provide policy makers in Germany and in countries with similar healthcare systems (e.g., Netherlands) with insights about the effectiveness of recent reforms as well as possible improvements in the design of future reforms.

2 Theoretical Background and Hypotheses

2.1 Effects of Benefit Differentiation

Especially after the *Act to Strengthen Competition* took effect in 2009, many small SHI funds that followed a low-price strategy felt increased pressure. Their unique differentiation criterion was taken away by premium equality. Hence, small SHI funds had and still have to expand their portfolio of benefits and services drastically to keep pace with the big SHI funds, which already have a stable and well equipped benefit and service system in place. Basically, it comes back to the concept of “bargaining power”, where funds have to negotiate attractive group contracts with the actual health care service providers like hospitals, pharmaceutical industry or physicians to keep costs down. Thus, a big wave of mergers and acquisitions could be seen as a logical consequence. The “*Central Federal Association of Health Insurance Funds*” recorded a disappearance of 52 SHI funds from 221 in 2008 to 169 in spring 2010 (GKV-SPITZENVERBAND, 2012). Up to the end of 2012, they predict that the number of statutory sickness funds even declines to a total of 145. The change of thinking away from pure pricing aspects to a balanced benefit, coverage, and service system resulted in a variety of different benefit and service bundles and individualization possibilities. Press reports shortly after the introduction left the impression that SHI funds wanted to outdo each other in quickly offering more and more variable elective tariffs, bonus programs, or complementary insurances with an ubiquitous number of different names and labels (cf. e.g., SCHULZE EHRING and WEBER, 2007, SCHULZE EHRING and KÖSTER, 2010, HÖPPNER et al., 2005).

KICK and LITTICH (2011) identified five major differentiation attributes that funds use to fill the gap of a missing pricing signal². In the benefit and service sector, the most important differentiation attributes that arose out of the premium equality on the German SHI market are: *Elective Tariffs, Bonus Programs, Complementary Insurance, Customer Service, and Voluntary Benefits/Coverage*³.

Extensive desk research confirmed that all of the upper differentiation attributes are still valid and play a crucial role in communication and marketing activities of sickness funds on today’s market. Consequently, I expect the same coverage and service attributes to still show a

² Recent SHI research confirms this selection (cf. e.g., BRAU and LIPPI BRUNI, 2008, GATES et al., 2000, GREB et al., 2002, KERSSENS and GROENEWEGEN, 2005, KOLSTAD and CHERNEW, 2009, SCHULZE EHRING and KÖSTER, 2010, SCHULZE EHRING and WEBER, 2007, VAN DEN BERG et al., 2008).

³ For detailed information of differentiation attributes please refer to KICK and LITTICH (2011). The paper can also be found as the first document in this dissertation.

significant influence onto insurants' SHI choice decision when additional contributions come into play. Therefore, I hypothesize:

H_{1a-e}: The offer of (a) elective tariffs, (b) bonus programs, (c) complementary insurance, (d) customer service aspects, and (e) voluntary benefits/coverage still positively influences the choice of SHI on a market with additional contributions.

As the influence of these attributes was shown by KICK and LITTICH (2011) under premium equality, I expect the new pricing signal to take over a dominant role within SHI choice decisions again (cf. MARQUIS et al., 2007, NOORDEWIER et al., 1989)⁴. Consequently, I propose that benefit and service differentiation attributes will lose importance in a market with additional contributions:

H_{1f-j}: (f) Elective tariffs, (g) bonus programs, (h) complementary insurance, (i) customer service aspects, and (j) voluntary benefits/coverage will be less important in a market with contribution differences than in a market of premium equality.

2.2 Quality Signals in Consumer Choice Decisions on the SHI Market

Throughout the last decades, consumers' choice decisions have been one of the key concepts in marketing research, and they are undoubtedly one of the main drivers of sales and corporate performance (MEFFERT, 2000, KELLER and LEHMANN, 2006). Being a very complex process in consumers' minds, consumers' choice was subject of extensive research throughout various industries and product categories. Research tried to shed light onto aspects that influence people's choice decisions and give advice for market participants on how to design and construct their products and services as well as their communication and marketing efforts in order to enhance the likelihood of a positive consumer choice (JACOBY et al., 1974, KROEBER-RIEL, 1992, THALER, 1985, TROMMSDORFF, 2004). When reasoning consumer behavior with the "Standard Economic model", we always deal with a rational consumer. "Homo Oeconomicus" "[...] choose[s] the best things [he] can afford" (VARIAN, 2006, p. 33). But what exactly is meant by "the best things they can afford"? From a theoretical point of view, this would mean a pure trust on obvious and rational product/service hard facts that create consumer specific value based on their individual preference functions. More precisely, the only important drivers of a rational consumer's choice decision should be observable product characteristics like price, quality or other criteria that all together form a total value that, compared to alternative options, tips the balance pro or con a certain product or service. An additional

⁴ Detailed deliberations regarding the dominating role of price can be found in the subsequent paragraph.

assumption is the unrestricted and immediate access to information on the product/ service market without transaction costs (VARIAN, 2006). These assumptions of rationality, of course, cannot be met in reality, because a lot of product characteristics and information are not directly observable, not accessible or simply not possible to evaluate or experience. Thus, most consumer decisions are made intuitively and are mostly derived in an elusive and inexplicable way. Almost all decisions are systematically biased by cognitive and especially emotional influences that are difficult to observe (ETZIONI, 2011, HO et al., 2006, JACOBY et al., 1974, KAHNEMANN, 2003). Consumers are exposed to a vast amount of information and marketing signals when considering the most suitable product. Due to limited processing capacity and the resulting information overload, consumers often do not have well-defined existing preferences, but construct them by using a variety of strategies and heuristics contingent on task demands (BETTMANN et al., 1998). These preferences vary from consumer to consumer, but the challenge for marketers is always the same. The key is to focus on marketing strategies which maximize the number of people willing to buy a certain product. Literature could identify experienced quality, followed by price, product attributes and marketing signals like brand names and corporate reputation as the most important drivers for consumers' choice (KIRIMANI and RAO, 2000, ZEITHAML, 1988). In case of a credence good like SHI⁵, quality of a specific product/service cannot be observed beforehand. Thus, consumers' focus shifts from experienced quality to the construct of perceived quality. In order to create a high perceived quality among customers, signals are an appropriate mechanism to convey unobservable quality of a product or service (KIRIMANI and RAO, 2000). Signaling may be particularly effective in complex markets, markets for relatively new products or services, or in markets for products about which the consumer is relatively uninformed and has no possibilities of accessing information (KIRIMANI and RAO, 2000, BETTMANN et al., 1998). They argue that as the complexity of the product/service increases, consumers are likely to resort to simpler heuristics and selective information processing, often reducing decision effectiveness (cf. also CHERNEV, 2003). Marketing literature provides important insights into quality signaling mechanisms and their related trade-offs with observable and comprehensible product attributes. Price, as the

⁵ Literature provides three product categories on the basis of the ability to evaluate the quality of goods and services before and after utilization: search, experience and credence goods (DARBY and KARNI, 1973). Regarding search products, consumers are able to get full information of the quality before making their buying decision. For experience goods, the quality cannot be evaluated before but after the product was purchased and consumed. SHI plans could, thus, be seen as classical experience goods. However, the quality and features of a SHI contract cannot be observed immediately after the product was purchased. Insurance cases are needed to actually evaluate the quality of a respective health insurance plan (cf. DARBY and KARNI, 1973, EMONS, 1997). As an insurance case cannot be predicted or planned in advance, I argue that the category of credence goods fits SHI best.

most important quality proxy, is highly important when it is the only available cue, but shows a fast decrease of importance when more quality indicators are available (RAO et al., 1999, ZEITHAML, 1988). In the consumer mindset, a higher price automatically transfers into a higher perceived quality of the offered products and services. However, on the market of SHI the situation is different. The German government (still) strictly regulates which health services are covered by SHI funds. The lists of drugs, treatment methods, outpatient care etc. as well as the respective 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 (HÖPPNER et al., 2005, SCHULZE EHRING and KÖSTER, 2010). These strict regulations act like a safety net for insureds in a way since they do not have to worry about the major benefits and services as long as they are insured with any SHI fund. As the majority of benefits and services are independent from any price variation, I hypothesize:

H_{2a}: Additional contributions negatively influence the choice of a SHI fund.

The German market for SHI has been dominated by price before premium equality of 2009 (MARQUIS et al., 2007, NOORDEWIER et al., 1989). Now that a new price signal in forms of additional contributions is returning to the market, I propose that the German SHI market will, again, react very price sensitive (cf. SCHUT et al., 2003) and hypothesize:

H_{2b}: Additional contributions will be the most important attribute within SHI choices.

The marketing and quality signal corporate reputation, and a company's brand name respectively, serve as an important proxy for more detailed quality evaluations and judgments. A superior brand's claim about unobservable quality will likely be true, because a well-known brand name could not be established if the products or services did not fulfill certain quality standards. The same argument holds true for other basically intangible product attributes like warranty (ERDEM and SWAIT, 1998, KIRIMANI and RAO, 2000, TIROLE, 1988). This effect becomes increasingly important in service industries (YOON et al., 1993, KOTHA et al., 2001), such as the SHI sector, in which consumers know very little about the product and face a high market complexity (DEVLIN, 2007, HAENECKE, 2001). I consequently hypothesize:

H_{3a}: A SHI fund's brand name, and its favorable corporate reputation respectively, significantly influences the choice of SHI on a market with additional contribution.

Following KICK and LITTICH (2011), corporate reputation and a company's brand name took over the most important signaling role on the market of premium equality. I expect additional contributions to reverse this effect — away from “more coverage for the same price” to a pre-2009 situation of “where to get the same coverage for a better price”. Therefore, I hypothesize that the brand name and corporate reputation of a SHI fund also lose importance within SHI choice decisions when additional contributions come into play:

H_{3b}: A SHI fund's brand name and its favorable corporate reputation respectively, will lose importance on a market with additional contributions compared to the situation of premium equality.

3 Study I: Additional Contributions and Consumer Choice

3.1 Design

To model consumers' choice decisions in a realistic way (cf. CHAKRABORTY et al., 1994), I use conjoint analysis to investigate consumers' choice decisions on the SHI market. In particular, a choice-based conjoint analysis (CBCA, also: discrete choice analysis) is applied, similar to related research in the health care sector (cf. e.g., STENSRUD et al., 1997, VAN DEN BERG et al., 2008, BRAU and LIPPI BRUNI, 2008). Following KICK and LITTICH (2011), I replicate the approach and feed all six attributes (i.e., *SHI brand, elective tariff, bonus program, complementary insurance, voluntary coverage, service package*) with their respective levels into the CBCA. All attributes and levels were again confirmed by extensive desk research to assure a proper modeling of the current SHI choice decision. Given the fact that respondents might lack knowledge about the different options of SHI funds, information screens were presented in the CBCA choice task. A detailed description of the single attributes and their respective levels were included via hyperlinks into the choice screens. Thus, participants always had the possibility to gather additional information. Similar to KICK and LITTICH (2011), close to 50% of participants used these options to clarify attributes and levels when making choice decisions⁶.

SHI Brand. As corporate reputation scores cannot be directly implemented into the CBCA screen, SHI brand names are used. For replication purposes I also decided to use real SHI brands analogously to GATES et al. (2000). Brand names of the four biggest nationwide SHI funds in

⁶ The numbers were generated based on the click-rates on the info-screen links divided by all participants. 250 respondents participated in the CBCA-online survey and the individual click-rate of each screen, on average, was 108.

terms of coverage of German SHI insurants were included: *AOK* (27.1%), *Barmer GEK* (12.3%), *TK* (11.5%), and *DAK* (9.5%) (cf. AOK BUNDESVERBAND, 2012, BARMER GEK, 2012, DAK GESUNDHEIT, 2012, TECHNIKER KRANKENKASSE, 2012).

Elective Tariffs. Analogous to KICK and LITTICH (2011), I included the three major voluntary elective tariff options into the CBCA design. The deductible tariff offers bonus payments for taking over a cost deductible; the contribution refund tariff pays back up to one month's premium (i.e., 15.5% of an insurant's gross income) in case no medical services are used besides routine check-ups; the cost reimbursement tariff grants bonus payments in case medical services are paid in advance out of each insurant's own pocket which are partly reimbursed by the SHI fund later.

Bonus Program. Bonus programs basically reward health-conscious behavior like fitness club memberships, regular check-ups, or courses on nutrition or mental health. Insurants collect points similar to loyalty programs that can be exchanged in monetary or non-monetary rewards.

Complementary Insurance. In cooperation with private health insurers in the background, SHI funds can act as a broker for complementary insurance offers. As the variety of different possible complementary insurances is huge, I follow KICK and LITTICH (2011) and include binary Yes/No levels in case SHI funds have or have not set up cooperation models to offer complementary insurances.

Voluntary Coverage. As the German government strictly regulates about 98% of all health care services a SHI fund is bound to reimburse, only the remaining 2% allow for individual differentiation among funds. Even though there is also a catalogue defining what is possible within the 2%, it is up to each fund to pick certain options of that scope and enhance their offerings. The most important and popular voluntary coverage options are: travel vaccinations, professional tooth cleaning, and cost transfer for constitutional health courses. All three are included into the CBCA as well as their respective combinations. Literature provides no evidence that including combinations of levels within a single attribute harms the CBCA results. Moreover, it seems to be accepted among scholars (cf. e.g., D'SOUZA and RAO, 1995).

Service package. Again, different service options across all SHI funds show a huge variety that cannot be included into the CBCA at hand to keep the designs complexity low. Rather, I included the two levels standard and extended service package.

Additional Contribution. First, the new attribute that is fed into the CBCA approach at hand had to be in line with the overall design. In other words, the number of levels had to be similar to the other attributes. Therefore, four levels representing the additional monetary component seemed sufficient. Second, research provides evidence about realistic levels of additional contribution. A representative study among SHI insurants featuring different SHI fund characteristics revealed that funds that already have charged additional contributions from their members, on average, collected €8 per month and head (ZOK, 2011). The maximum amount that was charged on the market stems from the SHI fund “*BKK Publik*” with €16 per month and head in the year 2010 (EURO-INFORMATIONEN GBR, n.d.). For this reason, I decided to include four different levels of the attribute additional contribution all invoiced per head⁷ and month: €0 representing no additional contribution charged, €5, €10, and €15 as the representative level close to the maximum that has been on the market so far. Due to the additive utility construction underlying the CBCA approach, levels of additional contribution were chosen equidistantly. Table 1 provides an overview of the attributes and levels included into the CBCA.

#	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	Yes
		2	No
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
7	<i>Additional Contributions</i>	1	€0 / month
		2	€5 / month
		3	€10 / month

⁷ The term “per head” refers to SHI members of a fund excluding co-insured people (e.g., children or homemakers) of a dependents’ SHI contract.

Table 1: CBCA Attributes and Levels

The actual choice experiment formed the middle part of an online survey collected in September 2012. The questionnaire started with a screener question to assure respondents were insured at a SHI fund and not part of the private health insurance sector. In addition, respondents had to be aware of the four included SHI brands. After some introductory demographic questions, participants had to run through seven choice tasks with four alternatives each. A none-option was not included due to the inherent choice complexity and comparability issues. Figure 1 provides an exemplary choice task. Efficiency scores of the underlying CBCA design range between 0.997 und 1.002 and, therefore, show the design's capability of collecting valid choice data⁸.

Please choose your favorite alternative from the four offers below.

	 Unternehmen Leben	 die gesund experten	 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	Not offered	Professional tooth cleaning	Travel vaccinations
Additional contribution	€0 / month	€15 / month	€5 / month	€10 / month
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 1: Exemplary Choice Task

After the CBCA part, respondents had to indicate the corporate reputation of the four SHI funds. I used the corporate reputation scale of SCHWAIGER (2004). The scores of the six reflective items were collected on seven-point Likert scales and standardized between zero and 100. In the last section of the online survey, respondents were asked for information on their current health status and their current SHI provider. In total, 250 SHI insurants responded to our questionnaire. Looking at the demographic data reveals that the current sample is comparable to the sample of KICK and LITTICH (2011). Respondents are mainly female (58.8%), highly educated (around 80% at least have a high school diploma), and mostly undergraduate students (46.4%). The average age of participants with 31.86 is still younger than the German average

⁸ Table 11 in the appendix shows the detailed efficiency calculations.

(GERMAN FEDERAL BUREAU OF STATISTICS, 2011) but comparable to the average age of 30.8 in the study of KICK and LITTICH (2011)⁹. Insurants show a high satisfaction with their SHI funds (M = 5.34 on a seven point scale from 1 = “not at all” to 7 = “fully satisfied”) and a low intention to change their SHI provider (7.2% indicate that they want to change within the next 12 month and another 11.6% are still undecided). In line with the sample’s younger age, their perceived health situation was fairly good (M = 5.56 from 1 = “very bad” to 7 = “very good”). The membership distribution across different SHI funds showed that 8.4% of participants were members of DAK, 11.6% of Barmer GEK, another 22.0% of AOK, and an additional 26.4% of TK. The remaining 31.6% were insured at other SHI funds not included into the CBCA. Figure 2 shows the SHI membership distribution of both samples from KICK and LITTICH (2011) and the current study contrasted to the real membership distribution.

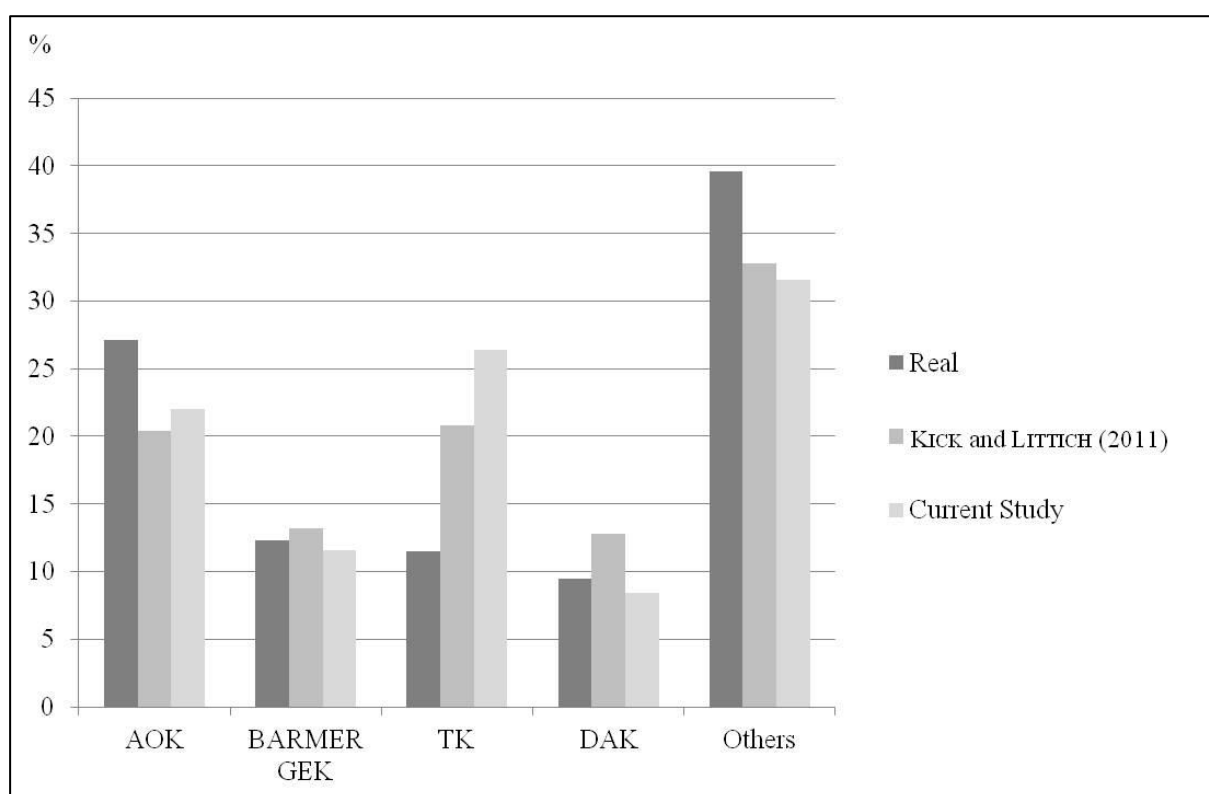


Figure 2: SHI Membership Distribution

3.2 Analysis and Results

Count Analysis

⁹ A detailed overview of the collected socio-demographic data can be found in Table 9 in the appendix.

To answer the question if benefit differentiation aspects still show a significant effect on people's choice behavior (cf. Hypotheses H_{1a-e}), count analysis with its underlying χ^2 -test is applied. Table 10 in the appendix shows the complete output of the conducted count analysis. Results reveal that the choices of participants depend on the presented benefit and service attributes and level. Elective tariffs ($\chi^2 = 58.21$, $df = 3$), bonus programs ($\chi^2 = 18.60$, $df = 2$), complementary insurance offers ($\chi^2 = 46.09$, $df = 1$), service offers ($\chi^2 = 15.75$, $df = 1$), and voluntary coverage options ($\chi^2 = 204.74$, $df = 6$) all exceed the theoretical χ^2 value for an α -level of 1%. It can be concluded that the attributes and levels chosen by KICK and LITTICH (2011) are still valid in 2012 under the new market situation of additional contributions, which supports Hypotheses H_{1a-e} .

Count analysis further helps to answer the question if a SHI brand name still has a significant influence on SHI choices of participants as raised in Hypothesis H_{3a} . Results indicate that with $df = 3$, the respective within attribute $\chi^2 = 7.53 > \chi^2_{\text{theoretical}} (df = 3; p = 0.1) = 6.25$. Therefore, the attribute brand shows a significant influence on SHI choice decisions only on a 10% level. Looking at the detailed results of the count analysis reveals that DAK, Barmer GEK, and AOK were chosen in 24% of all choice tasks. TK was picked in 28% of all decisions. This not only reflects participants' preferences, but also the already existing market share of TK in the sample at hand (cf. Figure 2). However, if choice decisions are biased by the SHI membership of the sample at hand, the calculated importance scores would also be skewed. Additional calculations revealed that participants' actual SHI memberships have no effect on the reported importance scores (cf. Table 12 in the appendix). For this reason, the sample is capable of providing information about the consumer preferences where the Technical Health Insurance Fund (i.e., TK) seems to attract people more than the remaining brands. However, the difference was not large enough to turn the whole attribute brand highly significant. Therefore, I find weak evidence for the influence of the overall attribute "*SHI brand*" on the respective choice behavior. To properly comment on H_{3a} , the link between the CBCA attribute brand name and a SHI fund's corporate reputation has to be established. Hypothesis H_{3a} will be finally discussed after individual part-worth utilities have been created and connected to a fund's corporate reputation scores.

Reputational Assessments

Under the situation of premium equality, the SHI fund TK was found to be far ahead in terms of corporate reputation (KICK and LITTICH, 2011). Those findings are also confirmed by the study at hand and, thus, support the results of the count analysis above. Table 2 presents the

reputational assessments of the included SHI brands. Overall, TK, again, proves to be significantly ahead of the remaining SHI providers, which argues in favor of their superior quality signals. The other SHI funds cannot be separated from each other regarding their corporate reputation.

<i>Means</i>	<i>AOK</i>	<i>Barmer GEK</i>	<i>DAK</i>	<i>TK</i>
<i>Competence</i>	56.20 ^a (27.84)	58.17 ^a (23.39)	55.57 ^a (22.01)	68.39 ^b (26.01)
<i>Likeability</i>	39.14 ^a (33.29)	35.98 ^a (28.66)	36.75 ^a (27.01)	50.48 ^b (32.77)
<i>Reputation</i>	48.17 ^a (25.35)	47.73 ^a (21.15)	46.71 ^a (19.51)	59.96 ^b (24.13)

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 2: Reputational Assessments of SHI brands

The comparison of reputational assessments of KICK and LITTICH (2011) and the current study can be found in Figure 4 in the appendix. It reveals that all SHI funds gained competence, but clearly lost on the likeability dimension. However, overall reputational assessments calculated by means of a factor analytical approach out of both dimensions (i.e., likeability and competence) almost remain constant. A contradictory movement of likeability and competence, of course, might be reasoned within sample compositions of both studies. However, chapter 3.1 could already rule out obvious sample biases as this study's sample is comparable to the composition of KICK and LITTICH (2011). Nevertheless, there could be unobserved variables in the background that might have biased reputational perceptions. On the contrary, there are also two reasons that argue in favor of the observed competence and likeability movement. First, between 2010 and 2012 insurants have become highly aware of the possibility for SHI funds to charge additional contributions. As only a small minority of funds was charging additional contributions through that time, this positively fed into the competence dimension. However, the mere possibility to charge additional contributions even though the general contribution rate was adjusted to 15.5% in 2009 might have led to a drop in the likeability dimension. Second, during that time, the majority of funds reported tremendously good financial statements. The coffers of SHI funds were well stocked and they generated high profits which positively influenced competence perceptions. However, the SHI system is strictly non-profit. Not reimbursing and distributing profits but still being highly regulative with their benefit and service coverage might seem unappealing to the majority of insurants which can explain the drop in likeability.

Multinomial-Logit Model

After analyzing count data and looking at the reputational assessment of SHI funds, a multinomial logit model to assess the part-worth utility (PWU) for the single levels of each attribute is employed¹⁰. If positive, the PWU-estimates add to the already existing core utility of SHI. If negative, they decrease to overall utility and diminish the attractiveness of a certain bundle or option. They form the average “effect” of each level onto the average participant’s perceived utility. Table 3 shows all included attributes and levels with their respective PWU estimations (i.e., effect scores).

Within elective tariffs, the contribution refund option, where insurants can get up to one month premium back if not using any medical services besides preventive checkups options, enhances the perceived value within consumers’ choice decision significantly (+.338). In contrast, offering a deductible tariff option (-.224) turns out to be even worse than not offering any voluntary elective tariffs at all (-.169). To take over medical treatment costs up to a certain deductible out of their own pocket seems to contradict participants’ preferences.

A monetary bonus program, in which insurants can enroll and basically earn rewards for health-conscious behavior like participation in approved health-promoting activities and regular preventive checkups, positively adds to a fund’s offer. Further, complementary insurances as well as an extended service package show a significant positive influence onto insurants’ health plan choices.

The voluntary coverage option of travel vaccinations in combination with professional tooth cleaning creates a high positive contribution for SHI offers. With an effect score of .701 it is the most considerable level throughout all benefit and service details on the current market.

¹⁰ A detailed description of the CBCA rationale and approach can be found in KICK and LITICH (2011).

<i>Attribute</i>	<i>Level</i>	<i>Effect</i>	<i>Std. err.</i>	<i>t-ratio</i>
<i>SHI Brand</i>	AOK	-.056	.046	-1.220
	Barmer GEK	-.032	.046	-0.689
	DAK	-.056	.046	-1.229
	TK	.145***	.044	3.289
<i>Elective Tariff</i>	Not offered	-.169***	.047	-3.566
	Deductible tariff	-.224***	.048	-4.641
	Contribution refund tariff	.338***	.042	7.942
	Cost reimbursement tariff	.054	.045	1.212
<i>Bonus Program</i>	Not offered	-.159***	.039	-4.004
	Non-monetary rewards	.013	.038	0.332
	Monetary rewards	.146***	.038	3.892
<i>Complementary Insurance</i>	Yes	.200***	.026	7.497
	No	-.200***	.026	-7.497
<i>Voluntary Coverage</i>	Not offered	-.665***	.083	-8.005
	[Only] travel vaccinations (1)	-.032	.070	-0.453
	[Only] professional tooth cleaning (2)	-.082	.070	-1.172
	[Only] constitutional course (3)	-.568***	.080	-7.057
	(1) and (2)	.701***	.061	11.464
	(1) and (3)	.332***	.064	5.1435
	(2) and (3)	.314***	.064	4.878
<i>Service Package</i>	Standard services	-.115***	.026	-4.355
	Extended services	.115***	.026	4.355
<i>Additional Contributions</i>	€0 / month	.785***	.040	19.603
	€5 / month	.201***	.040	4.509
	€10 / month	-.277***	.051	-5.452
	€15 / month	-.709***	.058	-12.098

Table 3: Part-worth Utilities (Multinomial-logit Model)

Deliberations above, together with the results of count analysis and its underlying χ^2 -independency test, proved that respondents' choices depend on the presented benefit and service attributes and levels. This is in line with our Hypotheses H_{1a-e} , which finds additional support through the multinomial-logit model.

Looking at the attribute SHI brand name, PWUs show that only the *Technical Health Insurance Fund* is able to create positive value for the respondent. All other brands do hardly differentiate from a consumer perspective and do not enhance the underlying utility of an SHI contract. This is confirmed by the respective reputational assessments and count analysis and also argues in line with Hypothesis H_{3a} . SHI brand, indeed, can trigger the balance pro or con a certain offer. H_{3a} again receives support.

Additional contributions, as the new price signal, were included with the realistic levels of €0 (status quo), €5, €10, and €15 per head and month. Figure 3 shows the plot of part-worth utilities for the respective additional contribution levels. A higher amount of additional contributions

goes in hand with a lower PWU. Not charging additional contributions enhances the total SHI utility by +.785, whereas the highest level of €15 / month reduces respondents' perceived utility by -.709. PWUs decrease in a linear way in line with the increasing additional contribution amount. However, it has to be noted that the positive PWU of €5 in additional contributions, on first sight, seems counterintuitive. As each choice situation presented a SHI option with no additional contribution, I would have expected that additional contributions of €5 already create a negative PWU and, thus, diminish the value of a SHI offering. There might be technical or statistical reasons in the background for the positive PWU of the €5 level that could not be controlled beforehand. However, two functional reasons argue in favor of €5 adding positive value to a SHI plan. First, through extensive media coverage and a lively discussion about the SHI system, people are aware of additional contributions and the possible range they can take. Second, funds that already charged additional contributions between 2010 and 2012, on average, collected €8 per month and head (ZOK, 2011). This might lead to the consumer perception that €5 is still better than the average and, thus, creates a positive PWU. Looking at Figure 3 also reveals that the neutral-utility point on the x-axis almost reflects the average additional contribution amount of €8.

Summarizing, charging additional contributions decreases the overall value of SHI. H_{2a} is consequently supported.

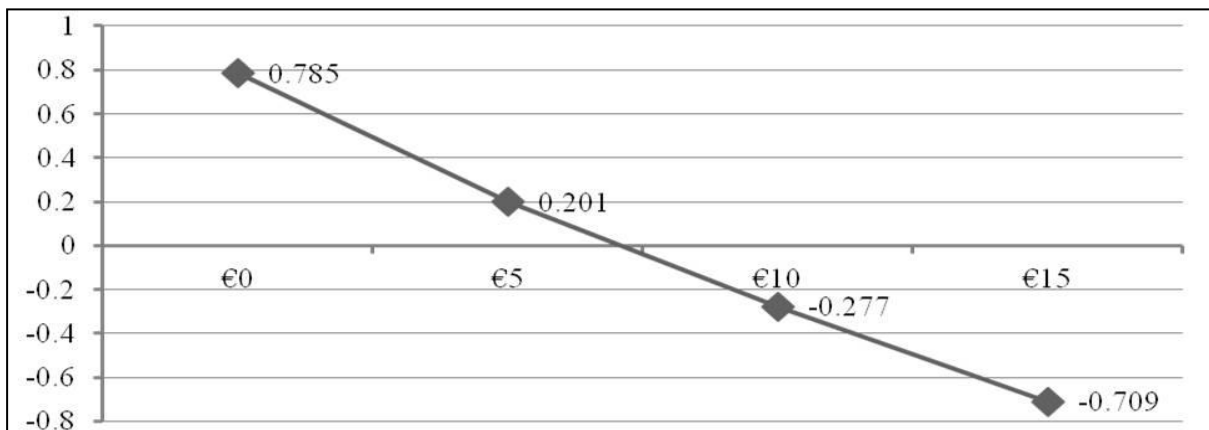


Figure 3: Part-Worth Utilities for Additional Contribution Levels

Hierarchical Bayes Estimation

To calculate importance scores, I applied a Hierarchical Bayes model, which is often used in marketing research to provide estimates of quasi individual-level parameters (ROSSI and ALLENBY, 2003). I used the concept of ‘spread’ to calculate the respective importance scores (cf. ORME, 2006). Table 4 shows the resulting means for each attribute’s importance in contrast to the results of KICK and LITTICH (2011).

<i>Attribute</i>	<i>KICK and LITTICH (2011)</i>		<i>Current Paper</i>		<i>Δ Importance</i>	
	<i>Mean importance (%)</i>	<i>SD</i>	<i>Mean importance (%)</i>	<i>SD</i>	<i>in percentage points</i>	<i>t - ratio</i>
<i>Voluntary Coverage</i>	35.89	9.21	28.26	7.80	-7.63***	-9.995
<i>Elective Tariff</i>	19.55	8.54	13.10	5.93	-6.45***	-9.809
<i>SHI Brand</i>	14.95	8.76	11.02	7.67	-3.93***	-5.337
<i>Bonus Program</i>	13.78	7.53	7.42	4.32	-6.36***	-11.584
<i>Complementary Insurance</i>	8.62	5.66	7.11	5.54	-1.51***	-3.015
<i>Service Package</i>	7.20	5.00	4.63	4.10	-2.57***	-6.284
<i>Additional Contributions</i>	-----	-----	28.46	14.83	-----	-----

Table 4: Importance Scores

As proposed within Hypothesis H_{2b} , additional contributions as the new pricing signal show the highest importance score of 28.46%. But voluntary coverage options follow closely and are almost on eye level (i.e., 28.26%). Testing both values for significant differences confirms that the evidence at hand is much too weak to speak of a dominating price criterion on the current market¹¹. Therefore, Hypothesis H_{2b} has to be rejected and it can be concluded that the new price signal is not the single most important attribute within consumers’ SHI choice.

However, additional contributions take over a meaningful role in SHI choice decisions. Looking at Table 4 reveals that the importance score for additional contribution with about 30% stems from all the other attributes of the CBCA. Following Hypotheses $H_{1f,j}$, it can be concluded that all benefit and service differentiation attributes (i.e., elective tariffs, voluntary coverage, bonus programs, service package, and complementary insurances) loose importance due to the introduction of additional contributions. Hypotheses $H_{1f,j}$ are supported.

In addition, the quality signal brand name also loses importance (-3.93 percentage points). This confirms the expectations made in Hypothesis H_{3b} . However, a funds brand name still ranks as

¹¹ T-ratio = -.189, p-value: 0.850, n. sig.

the forth most important attribute of SHI choice decision with explaining more than 11% of consumers' choices. The quality signal brand name is not eliminated by the new price signal. It rather stays fairly important and is still superior to service packages, complementary insurances, and bonus programs. Taken together, price and brand name are responsible for almost 40% of a SHI choice decision, which emphasizes the high importance of signaling mechanisms on the complex market for SHI. To fully investigate and confirm the hypotheses on SHI brand and corporate reputation (i.e., H_{3a} and H_{3b}), pseudo individual Hierarchical Bayes PWUs of the different brand names have to be in line with the respective reputational assessments to also prove the influence of corporate reputation within the choice decisions at hand. For this reason I correlated the reputational assessments (aggregated over all brands) with the brand name PWUs. The significant correlation of $r = .231$, $p < 0.001$ confirms that brand name and corporate reputation are closely related¹². Conclusively, Hypotheses H_{3a} and H_{3b} can be confirmed.

Similar to the findings of KICK and LITICH (2011), I found that a SHI brand name is more important for older participants. Age and the importance score of the brand name show a significant correlation ($r = .197$, $p < 0.01$). Further, brand is more important for the less educated share of respondents ($\text{mean}_{\text{high}} = 10.40\%$, $\text{mean}_{\text{low}} = 13.95\%$; $p < .01$). Analyzing the importance scores split by each respondent's actual SHI membership revealed no significant differences. Attribute importance, thus, is independent from SHI membership in the sample at hand (cf. Table 12 in the appendix).

3.3 Pricing and Product Design

By using the additive preference function underlying the choice-based conjoint approach, important deliberations for the design and adjustment of bundles and offers can be derived. The compensatory preference model for the total utility calculation states that a "low" score (i.e., PWU) on a certain attribute or level can be compensated by a "high" score on another (HAAIJER and WEDEL, 2007). Hence, there are promising trade-off situations that help product managers to adjust their product portfolio without harming the overall perceived utility for consumers.

Referencing the PWU values of Table 3, the ideal health insurance plan is offered by TK (+.145), with a contribution refund tariff (+.338), a bonus program with monetary rewards (+.146), complementary insurance offers (+.200), travel vaccinations and tooth cleaning as voluntary coverage options (+.701), an extended service package (+.115), and no additional

¹² The PWUs of brand names are also significantly correlated ($p < 0.001$) with the single dimensions of competence ($r = .156$) and likeability ($r = .224$).

contributions (+.785). The linear relationship of additional contribution's PWUs (cf. Figure 3) enables to transfer the underlying PWU onto other, non-monetary attributes and levels¹³. The spread of PWUs (i.e., +.785 to -.709 = 1.494) equals a total amount of €15 per month and head. Hence, each Euro of additional contribution equals a PWU value of 0.0996. Table 5 shows the respective monetary equivalents for all levels of the CBCA. Of course, calculated monetary equivalents are only valid for the sample at hand under the assumption that the actual choice decision is only influenced by the presented attributes and levels. Just by their brand name and the underlying corporate reputation, TK delivers additional value to insureds which is worth €1.46 of additional contribution. In other words, TK could charge €1.46 from each paying insured (again, excluding co-insured members like children or homemakers) without falling behind their competitors. As the general contribution rate of 15.5% of each insured's gross income has to be paid by each insured independently of their respective SHI fund, the €1.46 have to be interpreted only within the additional contribution attribute. As the range of already collected additional contributions between 2010 and 2012 was between €0 and €16 per month and head, TK is able to charge close to 10% of the additional contribution range simply due to their reputational advantage without competitive disadvantage. Taking into account that TK has about 6.2 million paying insureds, the additional contribution equivalent would imply roughly nine million Euros of potential revenues per month. However, the economic activities of SHI funds in Germany have to be nonprofit. Funds cannot realize those revenues immediately. It rather has to be kept in mind that in case an introduction of additional contributions becomes necessary, a high corporate reputation acts as a safety net. Hence, a comparably high corporate reputation proves to enhance a fund's bargaining position towards its potential customers, as it allows realizing and charging price premiums (FOMBRUN, 1996). Further, insureds' perceived utility of a SHI package would also stay constant, if a fund would voluntarily cover travel vaccination together with professional tooth cleaning but charges €7 additional contribution.

Table 5 also provides results from the market share calculator. Results, again, only hold within my sample and under the assumption that the SHI choice decision is only influenced by the presented attributes and levels. Moreover, the provided market shares only refer to within attribute variance, meaning all other attributes are kept constant. For example, if all funds would offer identical benefit and coverage levels, the brand name as the only difference would transfer in a market share for TK of 29.03% compared to 23.52% of the AOK sickness fund. It can, thus, outperform the hypothetical 25% if all brand names would be perceived equally. Further,

¹³ Please consider the limitations made in chapter 3.2 regarding the positive PWU of the €5 level.

if the only differentiation criterion on the market would be voluntary coverage and each option is equally offered, a fund that decides to offer not only travel vaccinations but also the additional tooth cleaning could enhance its market share by $26.11\% - 12.60\% = 13.51$ percentage points. It could exceed the hypothetical value of 14.28% if all voluntary coverage options would be perceived equally (i.e. 100% divided by seven levels of the attribute voluntary coverage options).

<i>Attribute</i>	<i>Level</i>	<i>Monetary equivalents</i>	<i>Market Share Calculation</i>
<i>SHI Brand</i>	AOK	- € 0.56	23.52%
	Barmer GEK	- € 0.32	23.87%
	DAK	- € 0.56	23.57%
	TK	+ € 1.46	29.03%
<i>Elective Tariff</i>	Not offered	- € 1.60	20.66%
	Deductible	- € 2.25	19.58%
	Contribution refund	+ € 3.39	33.99%
	Cost reimbursement	+ € 0.54	25.77%
<i>Bonus Program</i>	Not offered	- € 1.60	28.42%
	Non-monetary rewards	+ € 0.13	33.53%
	Monetary rewards	+ € 1.46	38.05%
<i>Complementary Insurance</i>	Yes	+ € 2.01	59.99%
	No	- € 2.01	40.01%
<i>Voluntary Coverage</i>	Not offered	- € 6.68	6.60%
	Travel vaccinations (1)	- € 0.32	12.60%
	Professional tooth cleaning (2)	- € 0.82	11.76%
	Constitutional course (3)	- € 5.71	7.27%
	(1) and (2)	+ € 7.03	26.11%
	(1) and (3)	+ € 3.33	17.88%
	(2) and (3)	+ € 3.15	17.78%
<i>Service Package</i>	Standard services	- € 1.15	44.19%
	Extended services	+ € 1.15	55.81%

Table 5: Monetary Equivalents and Market Shares

The hypothetical take rates have to be treated with caution as they are highly restricted to the sample characteristics and only valid within the set of attributes and levels included into the CBCA. However, as my sample consists of mainly younger people and students that still face their first independent SHI choice decision when graduating, it is able to give important advice for the future developments of the SHI landscape. TK has the possibility to exploit their strategic advantage. A market situation where TK also offers favorable voluntary coverage options (with all other attributes equal across funds) than the remaining three competitors could result in a market share for TK of about 50%. The remaining three funds AOK, Barmer GEK, and DAK would share the rest almost equally. The remaining funds have to develop and manage

their corporate reputation as well as they have to offer attractive bundles within important attributes to counteract the strategic advantage that TK has already gained on today's market.

4 Study II: Consumer Choice and Market Complexity

Taking one step back and looking at the overall results, one could argue that the generated outcomes of the conjoint analysis do not hold in reality. Health care, indeed, “[...] is a complex decision encompassing a plethora of attributes” (CHAKRABORTY et al., 1994, p. 23). The CBCA approach in the paper at hand had to make major decisions of how to reduce complexity of the SHI decision reality to be able to use conjoint analytical techniques to generate valid choice data. As the brand name and corporate reputation of funds were also included, it could be argued that, in reality, when choice decisions are much more complex, the importance of signaling mechanisms like brand name or corporate reputation even increases. The actual affect of quality signals on the market would, therefore, be underestimated. However, it might be the other way round. Having left out or simply missed important drivers of SHI choice from a consumer perspective might bias the results. If people are aware of certain advantages, benefit details or coverage options of a single SHI fund that were simply not presented within the choice tasks of the CBCA, participants would directly project this effect onto a fund's brand name. Due to omitted attributes or levels, the brand name and corporate reputation effect might be overestimated and biased. Even though research confirms that insurants are highly uniformed about SHI offers (cf. e.g., HAENECKE, 2001, TSCHULIN and DIETRICH, 2010) and have problems to deal with the high market complexity (cf. e.g., DEVLIN, 2007), study II wants to rule out the bias of omitted attributes and levels and validate the generated results. It wants to verify, if insurants are aware of service attributes and levels that have not been included into the CBCA and if insurants are aware of the actual performance spectrum across different SHI funds. In addition, the decision why insurants chose a certain fund is investigated in more detail.

4.1 Design

The questionnaire consists of two parts. After a screener question excluding those participants that were not insured in the statutory system, the first part deals with the choice decision for their current fund. I ask participants about their current SHI provider and to indicate the reasons why they chose their current SHI provider. Answers in the open text field were compressed by content analysis and will be presented in the upcoming results chapter. The unaided question is followed up by a closed question for the main reason why they picked the fund. Respondents could choose from seven preselected answering options. The second part of the survey contains

questions regarding the benefit and coverage portfolio of the four SHI funds from the CBCA (i.e., DAK, TK, AOK, and Barmer GEK). Especially participants' perceptions regarding the benefit and service landscape of different SHI funds were of main interest. To identify the status quo of benefit and service portfolios of the four SHI funds, I conducted extensive desk research on the website of the funds and screened reports of professional and independent quality tests about the coverage rates of different SHI providers (i.e., HINTERBERGER, 2012, SCHERFF, 2012, GESELLENSETTER, 2010). Test reports mostly examine the offers of different sickness funds and assign percentage rates to quantify the service offers in the respective category. For example, to assess the performance category "*Naturopathic Treatments*", HINTERBERGER (2012) evaluates 18 different subdimensions¹⁴ and assigns one credit if the special treatment is covered. He reports the overall percentage score for each fund in the respective category. In case of TK, 15 out of 18 subdimensions are reimbursed and, consequently, a score of 83.33% reported. For the performance category "*Overall Travelling Abroad Coverage*", the subdimensions travel vaccinations, travel insurance (two credits assigned if included, one credit if additional premium necessary), 24/7 emergency call abroad, and extended coverage abroad are used. A maximum of five credits can be achieved in this category. TK scored 4 out of 5 and, thus, 80% are reported. GESELLENSETTER (2010) uses the same system to assess SHI funds with minor differences in the evaluated subdimensions. SCHERFF (2012) does not report detailed information on the subdimensions but rates SHI funds in the same way. The assessment criteria for the performance category "*Skin-Cancer Prevention*" included subdimensions like the number of check-ups paid per year, the threshold of age after which skin-cancer screenings are reimbursed, or the range of different alternative treatments an insurant can choose from

I selected performance categories for the questionnaire regarding three deliberations: first, they had to be assessed by all three quality tests. Second, the websites of the SHI funds had to provide clear information about the details of the respective category. And third, I purposely included performance categories so that each depicts a different fund (or group of funds) as the best in class of the respective category. Table 6 presents the scores of each test report and the mean values across all three test reviews for the selected performance categories.

¹⁴ i.e. alternative cancer treatments, anthroposophical medicine, respiratory therapy, Ayurveda, chelation therapy, autohemotherapy, urinary therapy, electrotherapeutics, heliotherapy, homeopathic treatments, hydrotherapy, iridodiagnostics, cryotherapy, osteopathy, phototherapy, phytotherapy, reflexology, and shiatsu.

Test Report	Performance category	AOK	Barmer GEK	DAK	TK
<i>Hinterberger</i> (2012)	<i>Skin-Cancer Preventions</i>	68.58%	74.55%	74.17%	75.98%
	<i>Naturopathic Treatments</i>	61.11%	83.33%	83.33%	83.33%
	<i>Overall Vaccinations</i>	100.00%	100.00%	100.00%	100.00%
	<i>Overall Travelling Abroad Coverage</i>	80.00%	80.00%	80.00%	80.00%
<i>Gsellenstetter</i> (2010)	<i>Skin-Cancer Preventions</i>	75.00%	100.00%	75.00%	100.00%
	<i>Naturopathic Treatments</i>	46.15%	84.62%	84.62%	84.62%
	<i>Overall Vaccinations</i>	100.00%	100.00%	100.00%	100.00%
	<i>Overall Travelling Abroad Coverage</i>	100.00%	100.00%	100.00%	100.00%
<i>Scherff</i> (2012)	<i>Skin-Cancer Preventions</i>	30.00%	82.00%	78.00%	92.00%
	<i>Naturopathic Treatments</i>	70.00%	87.00%	87.00%	87.00%
	<i>Overall Vaccinations</i>	74.00%	82.00%	100.00%	90.00%
	<i>Overall Travelling Abroad Coverage</i>	34.00%	34.00%	34.00%	34.00%
Σ Mean Values	<i>Skin-Cancer Preventions</i>	57.86%	85.52%	75.72%	89.33% [†]
	<i>Naturopathic Treatments</i>	59.09%	84.98% [†]	84.98% [†]	84.98% [†]
	<i>Overall Vaccinations</i>	91.33%	94.00%	100.00% [†]	96.67%
	<i>Overall Travelling Abroad Coverage</i>	71.33% [†]	71.33% [†]	71.33% [†]	71.33% [†]
Additional Category	<i>Treatments by Natural Health Practitioners</i>	No fund is legally allowed to reimburse any costs			

Note: %-value assessments of test reports represent the coverage rates of different SHI funds for selected performance categories. Superscript (†) in the last rows indicate the fund(s) with the best coverage in the respective category calculated as mean value across all three test reports.

Table 6: Desk Research Assessment of Benefit and Service Offers

One question was included into the survey for every performance category. Respondents were asked: “How do you perceive the service offer of the following four SHI funds with regard to the [performance category]?” on a seven-point scale from 1 = “very bad service offer” to 7 = “very good service offer”. Further, to not only assess if respondents are aware of the benefit and service details of a specific fund but also the SHI system in general, I decided to also include the performance category “Treatments by natural health practitioners”. Within their social security statues (i.e., *Sozialgesetzbuch - SGB*), the German government strictly regulates that natural health practitioners do not belong to the group of healthcare professionals that are eligible to cooperate with the SHI system (cf. § 124(4), SGB). The survey concluded with questions regarding respondents’ health status, their satisfaction with their SHI fund, and one question regarding their age and their gender.

In sum, 266 participants answered the questionnaire that was fielded in October 2012. 32.7% were male and 67.3% female. The average age was at 28.86 years. 30.1% are members of TK, 19.2% of AOK, 16.9 of Barmer GEK, and 6% of DAK. People have mostly been insured at the

respective fund for more than three years (83.8% of the sample). On average, they are, again, rather satisfied with their SHI fund ($M = 5.42$, seven-point Likert scale). Consequently, only 6.8% plan to change SHI provider in the upcoming year.

4.2 Results

Reasons for choosing a sickness fund

In an open text field, respondents indicated their main reasons for picking a certain SHI fund. Content analysis resulted in 433 evaluable statements (multiple answers/statements possible). About 35% of the statements referred to the fact that insurants have “always been at a SHI fund”, meaning that they mostly have been insured within a family insurance plan and after opting out simply did not change the provider. Price/value perception and certain benefits and services are mentioned by only 13% of respondents. The remaining answers split up across the categories of good service (6%), local branch (3.5%), word-of-mouth (8%), and a historically low price premium before 2009 (12%). Ten respondents (2%) explicitly state that changing the SHI provider is too effortful to conduct. The remaining 20.5% of the statements could not be assessed to any category and were labeled with “others”. When presented with the aided question¹⁵ what they perceive as the main driver of their choice, over 60% of the 266 respondents indicated that the family insurance contract and recommendations of family members play the most important role. About 11% indicate a word-of-mouth effect from others and only 6% mention performance attributes like benefits or coverage rates. Of those 6% only half could name the specific service or benefit detail like vaccinations, naturopathic treatments, or health courses.

Evaluation of Funds' Performance Categories

The assessment of the performance categories across SHI funds revealed that the reputation leader TK is consistently perceived as having the best benefit and coverage portfolio among the presented brands. This effect could also be confirmed for performance categories in which TK is clearly not ahead (i.e., naturopathic treatments, overall vaccinations, and overall travelling abroad coverage – cf. also Table 6). Results further indicate that the remaining funds AOK, Barmer GEK, and DAK do not significantly differ from each other. In the category *treatments by natural health practitioners* I would have expected to not see any significant advantage for

¹⁵ Answering options were: Family insurance contract and family recommendation, word-of-mouth of others, special benefits/coverage, recommendation by employer, local subsidiary, personally addressed by fund sales/marketing unit, and others.

the Technical Health Insurance fund as the SHI laws clearly prohibit a cost transfer for alternative medicine practitioners for all funds. Even though scores for the perceived performance regarding natural health practitioners apparently drop compared to the other categories, TK is, again, clearly ahead. Mean scores between $M_{AOK} = 3.03$ and $M_{TK} = 3.73$ show that insurants are, nevertheless, not fully aware of the statutory regulations in the background. AOK is consistently perceived as the fund offering the fewest benefits and services of all funds regarding the presented categories. Table 7 provides an overview of the respective results.

<i>Performance category (n = 266)</i>	<i>AOK</i>	<i>Barmer GEK</i>	<i>DAK</i>	<i>TK</i>
<i>Skin-Cancer Preventions</i>	4.18 ^a	4.30 ^a	4.30 ^a	4.62 ^b
<i>Naturopathic Treatments</i>	3.11 ^a	3.26 ^a	3.29 ^a	3.79 ^b
<i>Overall Vaccinations</i>	4.84 ^a	4.89 ^a	4.84 ^a	5.30 ^b
<i>Overall Travelling Abroad Coverage</i>	4.15 ^a	4.23 ^a	4.26 ^a	4.67 ^b
<i>Treatments by Natural Health Practitioners</i>	3.03 ^a	3.18 ^a	3.25 ^a	3.73 ^b
<i>All Categories Together (n = 1,330)</i>	3.86 ^a	3.97 ^a	3.99 ^a	4.42 ^b

Note: Mean perceived performance. Superscripts in a given row indicate that there are significant differences at the level of $p < .01$.

Table 7: Assessment of Benefit and Service Offers

As mentioned above, the sample at hand consists of 30% TK, 19.2% of AOK, 16.9% of Barmer GEK, and 6% of DAK members. To check the robustness of the generated results, I recalculated the analyses of Table 7 by excluding each single membership group. I treated all performance categories equally and, again, conducted subsequent analyses of variance with additional post-hoc tests. The results are displayed in Table 8.

<i>All performance categories</i>	<i>AOK</i>	<i>Barmer GEK</i>	<i>DAK</i>	<i>TK</i>
<i>Without AOK Insurants (n = 1,075)</i>	3.85 ^a	4.00 ^b	4.01 ^b	4.49 ^c
<i>Without Barmer GEK Insurants (n = 1,105)</i>	3.85 ^a	3.96 ^a	3.99 ^a	4.43 ^b
<i>Without DAK Insurants (n = 1,250)</i>	3.87 ^a	3.98 ^a	4.00 ^a	4.45 ^b
<i>Without TK Insurants (n = 930)</i>	3.81 ^a	3.88 ^a	3.89 ^a	4.18 ^b
<i>Only Insurants from other SHI Funds (n = 370)</i>	3.72 ^a	3.84 ^a	3.86 ^a	4.14 ^b
<i>Only Insurants from Funds Included (n = 960)</i>	3.92 ^a	4.02 ^a	4.03 ^a	4.53 ^b

Note: Mean perceived performance across all performance categories. Superscripts in a given row indicate that there are significant differences at the level of $p < .01$.

Table 8: Assessment of Benefit and Service Offers Controlled for Membership

Excluding members of a specific SHI fund reveals no difference in the results compared to the overall sample. Leaving out insurants of TK, as the biggest subgroup in the sample at hand, shows that the non-TK respondents still perceive the Technical Health Insurance fund to be the performance-leader across all categories ($M_{TK} = 4.18$). Further, the external performance image of AOK is significantly worse compared to the other sickness funds. When AOK customers

were excluded, evaluations of the AOK revealed that it shows a significantly lower performance perception among respondents and, thus, significantly deviates from Barmer GEK and DAK. Looking at the evaluations of SHI members from none of the included funds confirms that TK is seen as the SHI fund with the highest performance overall.

The results of study II argue in line with the results of reputational assessments and PWU estimations. People indeed show a high lack of knowledge about SHI offerings and benefit and service details. The SHI system with its complex set of laws and regulations leads insurants to use quality signals like corporate reputation, brand names, and price differences to diminish offerings (cf. chapter 3.2). They rely more on perceptions than actual facts. Hence, quality signals play a major role on the current SHI market.

5 Discussion, Implications, and Limitations

By applying two empirical studies, the paper at hand delivers important insight on SHI choice decisions under the new situation of additional contributions. As KICK and LITTICH (2011) investigated SHI choice decisions under a situation of premium equality, this study uses the introduction of additional contributions and the resulting natural experimental constellation to examine how choices are influenced when a new pricing signal is introduced on the market. By means of a CBCA approach and additional investigations about insurants perceptions on the current market, I derive important insights for policy makers as well as for managers of SHI funds.

Additional contributions indeed alter the German SHI system. The new pricing signal takes over a significant role within people's choice decisions for or against a specific sickness fund. Benefit and service details lose importance within the SHI market. Even though the attribute SHI brand name also loses importance, it remains a noticeable driver of choice decisions with about 11%. As reputation took over one of the most important signaling functions on the premium equality market (KICK and LITTICH, 2011), I would have expected a higher drop in the importance score of the SHI brand attribute when price comes into play again (MARQUIS et al., 2007, NOORDEWIER et al., 1989). Even though price still is the most important quality proxy, it loses importance when another quality indicator like brand name and corporate reputation is present (RAO et al., 1999, ZEITHAML, 1988). Thus, the period of premium equality has slightly shifted consumers' perceptions over to other signals than pure pricing aspects. People might have started to put focus on brand names and voluntary coverage options when they were the most obvious differentiation attribute available in the absence of price. As experts predict the extensive introduction of additional contributions in the upcoming years (cf. PFISTER, 2009,

EIBICH et al., 2011), it can be expected that the German SHI market will not exhibit the same price sensitivity like before 2009's premium equality (cf. SCHUT et al., 2003).

As intended by the GERMAN BUNDESTAG (2006), the present market has more shifted toward benefit and service details after the recent reforms. However, it has to be kept in mind that nearly one third of people's SHI choice decisions can still be traced back to a pure pricing effect. The tight regulations on the German SHI market, with about 98% of benefits and coverage details being mandatory, act like a safety net and increase insurants sensitivity to any kind of pricing signal. To further follow a policy of SHI competition based on quality rather than price, the German government should introduce more opportunities for funds to differentiate from each other. Opening up the range of voluntary coverage options seems to be appreciated by SHI customers as additional health care benefits free of charge show a high importance in SHI choice decisions (i.e., 28.26%).

From a consumer perspective, the SHI system turns out to be highly complex and confusing. People are not aware of different performance levels across funds and the underlying governmental regulations in the background. Within their choice decisions, they rely on their perceptions, which automatically strengthen the importance of superior quality signals. TK, as the fund with the highest corporate reputation, is perceived to be performance leader in all questioned categories even if the obvious statues clearly show the opposite. Further, this study confirms that strong brand names as well as a favorable corporate reputation allow charging price premiums from insurants. The brand name of TK (*Technical Health Insurance Fund*) provides additional value for insurants and is able to compensate the drawbacks from charging additional contributions up to about €1.50 per month and head. Funds should emphasize corporate reputation in their corporate communication to be able to successfully exploit reputational advantages. However, without opportunities to significantly differentiate from each other through benefits and coverage details, it will be a difficult goal for funds to achieve. For SHI brand managers it is a key factor to focus on the most important differentiators. That means they should put weight on the communication of low/no additional contributions and key voluntary coverage options (i.e., travel vaccinations and professional tooth cleaning) before designing campaigns based on customer service aspects or bonus programs. A campaign of simplifying the complexity also seems promising. In other words, there is evidence in this study that a marketing campaign which communicates certain selected benefits and coverage options in an easy to understand and non-confusing way is worth considering. Reducing complexity in

consumers' heads to enable customers to differentiate has to be on the agenda of SHI fund's marketing managers.

To grasp all facets of the SHI market within a CBCA is truly challenging. To keep the choice set reliable, I had to carefully select a subset of attributes (i.e., the most important) for the creation of the stimuli. Study II confirms, the CBCA approach at hand does not suffer under an omitted attribute or level bias. People are not aware of benefit and service differences among funds. The choice screens in the CBCA provided detailed information about the attributes and levels included. Thus, the choice situation in the CBCA can be seen as an aided choice decision, where complexity was reduced because a) only a subset of relevant attributes and levels was presented and b) necessary information was given on the respective screen via hyperlinks. However, choice decisions in reality are not supported in the same way. People have to collect information themselves, face a confusingly large number of attributes and levels that result in a choice situation which is much more complex than in the study at hand. For this reason, I argue that signaling mechanisms like corporate reputation, a SHI fund's brand name, and additional contributions are underestimated in the study at hand. Reducing the inherent complexity through quality indicators will gain importance in a real-life setting.

Even though this study was conducted thoroughly, some limitations have to be mentioned and addressed. First, I only included the four major SHI brands into the approach at hand. Future research should take this study's approach as starting point and investigate the interplay of well known SHI funds and smaller SHI insurances to find out if the effects are generalizable across funds of different size. Second, the generated insights on pricing and product design for marketing managers have to be treated with caution as they suffer from a strong sample bias. The calculated monetary equivalents as well as the market shares can only be taken as an indication of an estimated movement. Market shares and price equivalents are calculated out of choice data from the sample at hand and cannot be transferred onto actual market scenarios. Third, Study II revealed that people do not choose their SHI provider like products on other, non-regulated markets. Over 60% of respondents indicated that they stick to the fund that their family has always been insured with or that the preferences of their families actually play a dominating role. In combination with the high lock-in power of a SHI insurance contract mentioned by ten respondents in Study II, choices pro or against a certain fund might be, at least partly, independent from SHI funds' offerings. Insurants do not have to worry about the basic coverage defined by law of about 98% of benefits. The remaining 2% might simply be too little to differentiate. Future studies could pick up this thought and investigate the question

how to properly create the need for a new SHI provider and trigger changing intentions. Forth, the paper at hand confirms that corporate reputation indeed matters. But how to positively influence a fund's corporate reputation can only vaguely be answered. Only the performance dimension of a fund's offerings was analyzed in detail. Further research should take my results as a starting point and develop a comprehensive driver model to identify resources of corporate reputation development on the regulated market of SHI.

Appendix

<i>Variable</i>	<i>Level</i>	<i>n</i>	<i>%</i>
<i>Sex</i>	Male	103	41.20
	Female	147	58.80
<i>Age</i> Mean: 31.86 Std. dev.: 12.33 Min: 20.00 Max: 67.00	<20	0	0.00
	20-24	94	37.60
	25-29	67	26.80
	30-34	21	8.40
	35-39	8	3.20
	40-44	11	4.40
	45-49	13	5.20
	50-54	13	5.20
	55-59	12	4.80
	60-64	9	3.60
	≥65	2	.80
<i>Family Status</i>	Single	81	32.40
	In a relationship/married	159	63.60
	Divorced/separated/widowed	10	4.00
<i>Education</i>	No formal education	1	.40
	Basic secondary school	9	3.60
	Middle school	34	13.60
	High school diploma	119	47.60
	College/university	79	31.60
	Post graduate degree	8	3.20
<i>Employment Status</i>	School student	1	.40
	Trainee	4	1.60
	Blue-collar worker	5	2.00
	Employee	83	33.20
	Public offer	7	2.80
	Entrepreneur	15	6.00
	Student (undergraduate)	116	46.40
	Retiree	4	1.60
	Job seeker	1	.40
	Homemaker	8	3.20
	Others	6	2.40
<i>Monthly net Household Income (after taxes and social insurance)</i>	< €1,000	67	26.80
	€1,001 - €1,500	27	10.80
	€1,501 - €2,000	35	14.00
	€2,001 - €2,500	25	10.00
	€2,501 - €3,000	18	7.20
	€3,001 - €3,500	8	3.20
	€3,501 - €4,000	6	2.40
	€4,001 - €4,500	7	2.80
	€4,501 - €5,000	10	4.00
	> €5,000	18	7.20
	Not Specified	29	11.60
<i>Current SHI Provider</i>	AOK	55	22.00
	BARMER GEK	29	11.60
	DAK	21	8.40
	TK	66	26.40
	Others	79	31.60

Table 9: Selected Demographic Data (n = 250)

<i>Attribute</i>		<i>Within attribute χ^2</i>	<i>df</i>	<i>Significance</i>
<i>SHI Brand (n = 250)</i>		7.53	3	p < .10
AOK	.24			
Barmer GEK	.24			
DAK	.24			
TK	.28			
<i>Elective Tariff (n = 250)</i>		58.21	3	p < .01
Deductible tariff	.20			
Contribution refund tariff	.32			
Cost reimbursement tariff	.26			
Not offered	.22			
<i>Bonus Program (n = 250)</i>		18.60	2	p < .01
Non-monetary rewards	.25			
Monetary rewards	.28			
Not offered	.22			
<i>Complementary Insurance (n = 250)</i>		46.09	1	p < .01
Yes	.29			
No	.21			
<i>Voluntary Coverage (n = 250)</i>		204.74	6	p < .01
Travel vaccinations (1)	.23			
Professional tooth cleaning (2)	.23			
Constitutional course (3)	.15			
(1) and (2)	.40			
(1) and (3)	.30			
(2) and (3)	.31			
Not offered	.14			
<i>Service Package (n = 250)</i>		15.75	1	p < .01
Standard services	.23			
Extended services	.27			
<i>Additional Contributions (n = 250)</i>		437.60	3	p < .01
€0 / month	.45			
€5 / month	.27			
€10 / month	.17			
€15 / month	.12			

Table 10: Count Analysis

<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	0.999
6 3	Constitutional course	1000	0.048	0.048	0.997
6 4	Travel vaccinations & prof. tooth cleaning	1000	0.048	0.048	1.001
6 5	Travel vaccinations & constitutional course	1000	0.048	0.048	0.998
6 6	Prof. tooth cleaning & constitutional course	1000	0.048	0.048	0.999
6 7	Not offered	1000	0.048	0.048	1.002
7 1	€0 / month	1750			
7 2	€5 / month	1750	0.034	0.034	0.999
7 3	€10 / month	1750	0.034	0.034	0.999
7 4	€15 / month	1750	0.034	0.034	0.999

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 11: Efficiency Scores

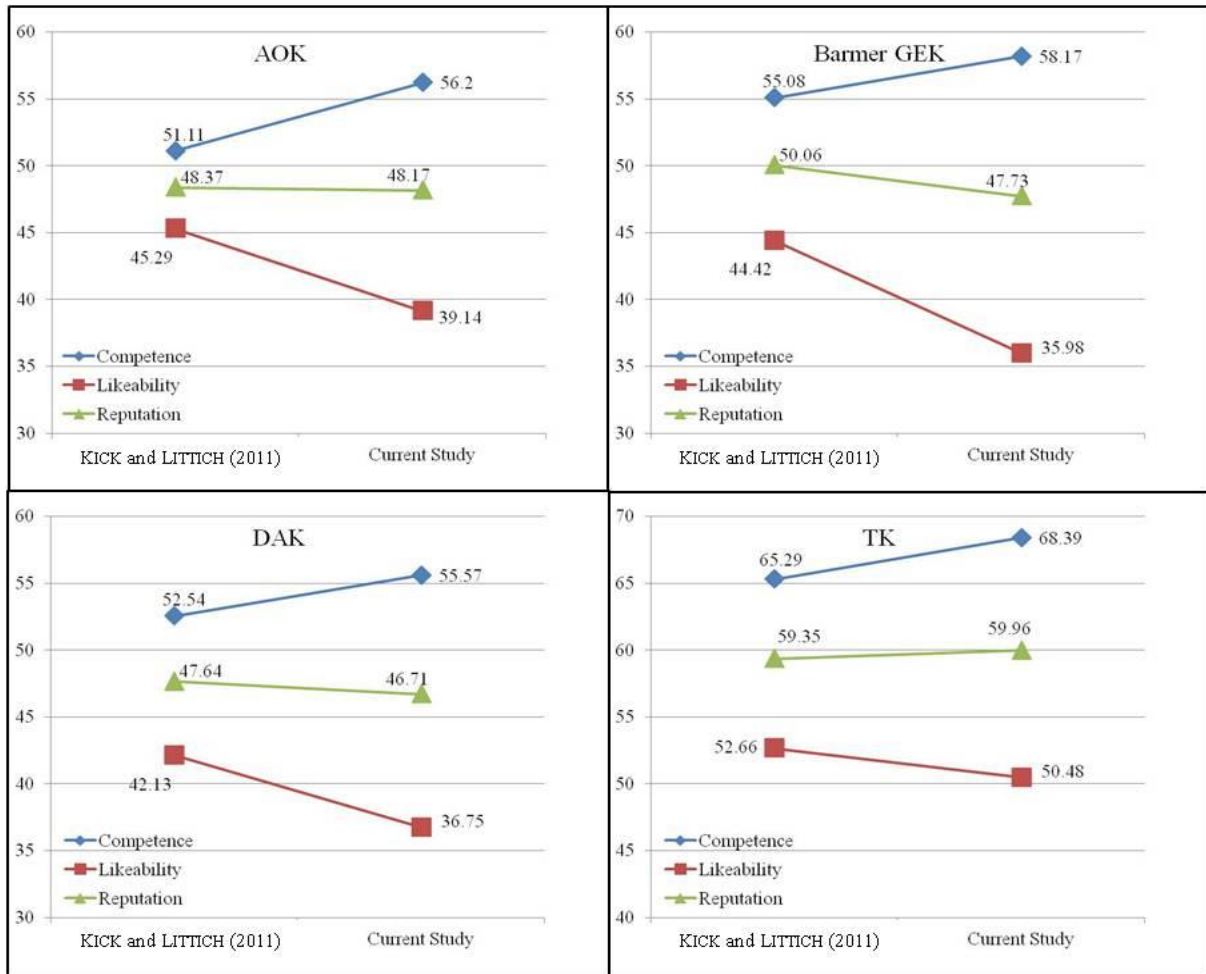


Figure 4: Development of Reputational Assessments over Time

<i>Means</i>	<i>AOK</i>	<i>Barmer GEK</i>	<i>DAK</i>	<i>TK</i>	<i>Others</i>
<i>SHI Brand</i>	10.28 ^a	10.52 ^a	10.40 ^a	12.89 ^a	10.33 ^a
<i>Elective Tariff</i>	13.64 ^a	11.34 ^a	13.54 ^a	13.23 ^a	13.15 ^a
<i>Bonus Program</i>	8.19 ^a	7.32 ^a	8.61 ^a	7.24 ^a	6.75 ^a
<i>Complementary Insurance</i>	7.00 ^a	6.38 ^a	7.83 ^a	6.94 ^a	7.40 ^a
<i>Service Package</i>	5.01 ^a	3.92 ^a	5.14 ^a	4.88 ^a	4.29 ^a
<i>Voluntary Coverage</i>	28.62 ^a	28.75 ^a	27.45 ^a	28.09 ^a	28.17 ^a
<i>Additional Contributions</i>	27.26 ^a	31.76 ^a	27.02 ^a	26.72 ^a	29.91 ^a

Note: Mean attribute importance. Superscripts in a given row indicate that there are no significant differences at the level of $p < .10$

Table 12: Attribute Importance per SHI Membership Group

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