

Free choice of sickness funds in social health insurance - theoretical foundation and empirical findings in Germany

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Consumer price sensitivity and social health insurer choice in Germany

Abstract

Problem/Question to be Addressed: During the 1990s, government has introduced free choice of sickness funds and a new risk-adjustment scheme in the social health insurance scheme of Germany. Price competition is supposed to increase incentives for sickness funds to act as prudent buyers of health services on behalf of their enrollees. A crucial precondition for effective price competition is that consumers are inclined to search for lower-priced substitutes. We examined whether this precondition is fulfilled in Germany. Therefore, we estimated to what extent consumers are sensitive to contribution rate differences among sickness funds.

Data and Methods Used: We estimated price elasticities of choice for individual funds as well as for types of funds (over the period 1996-2001). Five different types of sickness funds can be distinguished: regional funds (AOK), company-based funds (BKK), guild-based funds (IKK) and two types of substitute funds (EAN and EAR)). We constructed a set of panel data from the 5 types of German sickness funds (including aggregated data of all sickness funds per type) and from 46 individual German sickness funds. Basically we estimated price elasticities using the following parameters: Number of subscribers per individual or type of fund, contribution rate, dummy per individual or type of fund, dummy per year.

Results: Price elasticity of sickness fund choice in Germany is quite high and rapidly increasing over time. Several exit surveys of enrollees support this result. Enrolees state that difference in contribution rates are their primary reason to switch to another fund.

Conclusions: Contribution rate differences are very high in Germany and consumers are used to switching because some freedom of choice existed prior to the reforms. Furthermore, employers play an important role in facilitating and encouraging consumer choice since they pay half of contribution rates. Price competition among German sickness funds is strong but motivates German sickness funds to focus on selecting favorable risks rather than on improving efficiency, because of an inadequate risk-adjustment methods and very limited tools to manage care.

Key words: health plan choice, premium elasticity, switching costs, social health insurance

JEL classification: D12, G22, I11, I18

Introduction

During the 1990s, free choice of sickness funds has been introduced in several social health insurance countries in Europe. Germany was one of these countries. Since then sickness funds in Germany can compete for subscribers by offering a legally standardized benefits package at lower premiums than their competitors. Before the reforms, German funds traditionally charged widely varying contribution rates. The primary reason for the German reforms was to reduce the large premium variation among sickness funds by the introduction of a system of risk equalization and by giving all subscribers the option to switch to a cheaper sickness fund. Although freedom of choice was also supposed to enhance competition and efficiency, this was only a secondary motive.

A crucial precondition for the success of reforms providing a higher degree of choice is that consumers are inclined to search for lower-priced sickness funds. We examine whether this precondition is fulfilled in Germany. Therefore, we estimate how sensitive consumers are to premium differences between sickness funds.

The paper is organized as follows. We begin with a review of previous studies on health insurer choice. Then we analyze the main features of the system and reforms of social health insurance in Germany. In section 3 we analyze the structure of the German sickness fund market. Sections 4 and 5 describe the methods and data used to estimate price elasticities of sickness fund choice. In section 6, we report our regression results. In the concluding section we discuss the implications of our findings.

1. Studies on health plan choice

The majority of the empirical studies on health plan choice have been performed in US group health insurance. Most of these studies use cross section analyses of employees' health plan choice from a menu of health plan options selected by one or several large employers (Feldman et al. 1989, Barringer and Mitchell 1994, Buchmueller and Feldstein 1997, Chernew and Scanlon 1998, Cutler and Reber 1998, Royalty and Solomon 1999, Strombom et al. 2002). The price elasticity estimated in these studies is the percentage change in the probability of choosing a particular health plan that is associated with a percentage change in total or out-of-pocket premium (i.e. employee premium contribution). Depending on whether total premium (as charged by the health plan) or the out-of-pocket premium (total premium minus employer subsidy) has been taken as premium variable, the estimated premium elasticities reflect the "insurer perspective" or the "employee perspective". Since employer subsidies usually account for 80 to 90 percent of total premium in the United States, total premium elasticities typically are five to

ten to times higher than out-of-pocket premium elasticities. For our analysis only employee perspective elasticities are relevant, since we are interested in the consumer price sensitivity and switching behavior and not in insurer response. The estimated out-of-pocket elasticities range from -0.2 (Feldman et al. 1989) to -1.8 (Royalty and Solomon 1999).

Two other studies on health plan choice in US employment-based group insurance settings use aggregated plan-level data to estimate the effect of out-of-pocket premiums on market share (Welch 1986, Dowd and Feldman 1994). In these studies price elasticity has been measured as the percentage change in a health plan's market share that is associated with a percentage change in out-of-pocket price. Using panel data over the period 1988-1993 Dowd and Feldman (1994) replicate a previous study using individual cross section data (Feldman et al. 1989) and find that results are quite similar.

Since most studies on health plan choice use cross-section data, estimated price elasticities may suffer from omitted variable bias if unmeasured plan attributes are correlated with premiums. Only three studies use data on several years. Dowd and Feldman (1994) use plan-level data over a five years' period to estimate a fixed effects model of health plan choice. Royalty and Solomon (1999) use individual data on employees who switched plans between 1994 and 1995 (N=178) to estimate a fixed effects logit model on health plan choice. Strombom et al. (2002) also use data on several years but applied a sampling technique that limited the estimation sample to only one randomly selected observation per employee (discarding the remaining observations) to avoid potential correlation of error terms across observations. They argue that omitted variable bias should not be a problem, since the data set includes a substantial variation in premiums within as well as across plans while health plans were required to offer a standardized benefits package.

Several recent studies show that health plan price elasticities vary across individuals depending on the switching costs they face. Buchmueller (2000) found that out-of-pocket price-elasticities of FFS-plan choice by Medicare-eligible retirees from the University of California (UC) were ranging only from -0.1 to -0.2, which are much smaller than for active UC employees. He argues that this result is likely attributable to higher nonpecuniary switching costs facing older individuals. Royalty and Solomon found larger premium elasticities for younger employees, new hires and individuals without a chronic medical condition. Somewhat surprisingly they also found that price sensitivity decreased with increasing levels of education (corrected for income effects), which they attribute to higher time costs for the better educated. Using a much larger data set Strombom et al. (2002) also found evidence of statistically significant marginal effects for health status, age and job tenure on price sensitivity. Their results implicate a greater than fourfold

difference in total premium elasticities (-8.41 vs. -2.03) between young, healthy and newly hired employees and high risk incumbent employees in the oldest category.

Outside the US only few studies on health plan choice have been performed. Most other industrialized countries have a social health insurance or a tax-based system where citizens cannot choose between different payers (or only for supplementary coverage). Only recently health plan choice has been introduced in the social health insurance systems of Germany, the Netherlands and Switzerland. In contrast to the US, health plan choice in these European countries is not restricted to a limited number of plans selected by the employers but comprises all sickness funds with open enrollment in one or more regions. Hence, Dutch, German and Swiss consumers can choose among a much larger number of health plans than their American counterparts.

A small number of studies have been performed to examine the initial consumer response to the introduction of freedom of choice of sickness funds in Germany. Greß et al. (2002) find a strong correlation between changes in membership and contribution rates for the various types of German sickness funds over the period 1995-1999. Andersen and Schwarze (1998) use data from the German Socio-Economic Panel (GSOEP) survey in 1997 including about 10,000 German sickness fund enrollees to examine the proportion of subscribers that switched plans (4.4 percent) or considered to do so (8.5 percent). They also examine the reasons for switching and the personal characteristics of those who (considered to) switch sickness funds. A lower premium was by far the most mentioned reason for switching sickness funds. Consistent with the studies on health plan choice in the US, Andersen and Schwarze find that those who switched sickness funds were more likely to be male, younger and healthier than those who stayed. In a next paper Schwarze and Andersen (2001) use data from the same survey in 1999 and 2000, containing much more detailed information about switching behavior of sickness fund enrollees. Using a probit model they estimate to what extent employees' decisions whether or not to switch sickness funds can be explained by fund characteristics, such as price and type of fund, and employee characteristics, such as age, gender, family size, health status, education and type of employer (3266 observations). They find that the propensity to switch funds increases from on average five to nine percent if the contribution rate is lowered by one percent. Furthermore, the propensity to switch significantly decreases with age. Only one of the five self-reported health status categories ("good health") is significantly (positively) related to switching funds (but only at a ten-percent confidence level). Large families (with three or more children) are less inclined to switch sickness funds, which according to the authors may be due to higher transaction costs. Except for the

highest income category, the propensity to switch increases with income. Finally, public service employees do more often change funds than other employees do.

Using aggregate panel data from all Dutch sickness funds over the period 1996-1998 Schut and Hassink (1999) estimate premium elasticities of market share of -0.3 for compulsory coverage and -0.8 for supplementary coverage. When adjusted for differences in initial market share these elasticities are much smaller than comparable estimates for managed competition settings in US group insurance. According to the authors the much lower price sensitivity is likely attributable to less switching experience and higher search costs. Empirical studies with aggregate data over the period 1996-1997 find similar premium elasticities (Hassink 1998, Kalshoven 1999). A study with aggregate data over the period 1996-1999 did not find a significant effect of out-of-pocket premiums on sickness funds' market shares (Varkevisser and Van der Geest 2001). Finally, Kerssens et al. (2002) used data from a survey among 1100 consumers in 2000 (77% response rate) to investigate the reasons behind the choice of sickness fund and the decisions to switch funds. Although 24% of the respondents considered switching funds during the last five years, only seven percent actually did. The most frequently mentioned reasons for considering change were dissatisfaction with the extent of supplementary coverage (31%), the customer service (25%), the supplementary premium (20%), and the out-of-pocket premium for basic insurance (19%). Only one percent of the respondents actually switched because of a high out-of-pocket premium.

2. Social health insurance reforms in Germany

Comprehensive social health insurance is mandatory for people with an income below a legally specified level. Social health insurance is administered by sickness funds that are not-for-profit organizations responsible to provide service benefits to their members. All eligible people have to enroll in a sickness fund. Prior to the reforms people had no or limited choice of sickness funds.

[Table 1]

If the income of a subscriber in Germany exceeds the threshold below which social health insurance is mandatory, the person can choose whether to remain enrolled in a sickness fund or to opt out to buy private health insurance. The same holds if the insured becomes self-employed or civil servant. German sickness funds are not allowed to sell supplemental coverage. Contributions are paid directly to the sickness funds. Each sickness fund sets an income-related contribution and is fully at risk for administering social health insurance, although sickness funds belonging to the

same branch organization to some extent cross-subsidize each other. Therefore, people with the same income enrolled in different sickness funds often pay substantially different contributions for social health insurance coverage.

During the nineties freedom of choice and a system of financial risk equalization have been introduced in the German social health insurance scheme (Greß et al 2002). One of two main reasons behind these reforms was to equalize the widely varying contribution rates for people within the same income category, which was perceived to be unfair. A major cause of the high variation in contribution rates were differences in risk structure (age, sex, health risk) and income (as base for contribution payment) of the population enrolled by different sickness funds. Therefore, the Health Reform Act of 1992 introduced a risk equalization scheme (RSA) that forced sickness funds with a favorable risk structure to subsidize sickness funds with an unfavorable risk structure. The RSA was implemented in two steps in 1994 and 1995.

An important incentive for sickness funds to work efficiently is the extent to which they are actually responsible for their financial results. In Germany there used to be a special regulation for a large and expensive group of sickness fund insured, the old age pensioners. Sickness funds were required to charge pensioners a uniform contribution rate. Surpluses and deficits were retrospectively equalized among sickness funds, so sickness funds were not at risk for elderly enrollees. Despite the rather crude risk adjustment mechanism, by 1995 old age pensioners were also included in the RSA. Consequently, the financial risk for sickness funds raised to 100 percent.

Another main reason behind the 1992 Health Reform Act was to introduce equal rights to choose sickness funds for all subscribers. Before that, only white-collar workers had extensive rights to choose. In 1996 the government introduced freedom of sickness fund choice to allow all subscribers to switch to another fund. Sickness funds were required to have annual open enrollment periods during which they had to enroll any applicant in the region (state) they are active. However, several types of sickness funds were allowed to refrain from open enrollment. Since 2002 the fixed annual open enrollment period is replaced by allowing enrollees to switch any month of the year, provided that they have to stay with a new sickness fund for at least 18 months.¹

Besides offering equal choice, a secondary reason behind the introduction of freedom of choice was to create 'socially bounded competition' among sickness funds in order to improve

¹ In case the sickness fund raises its contribution rate, the minimum stay regulation does not apply.

efficiency.² However, German sickness funds usually jointly negotiate contracts with providers and selective contracting is prohibited (with some minor exceptions). Therefore, competition among sickness funds cannot effectuate a more efficient health care delivery but only in more administrative efficiency and better customer service.

Competition among sickness funds has been almost exclusively based on the level of income-related premiums, since law fixes more than 95 percent of the benefits package. Only for some services, such as alternative medicine, it is up to the sickness funds to decide whether or not and to what extent to include these services in the benefits package. Until July 1997 price competition was restricted to non-elderly, because till then sickness funds were required to charge all pensioners a uniform contribution rate that was equal to the weighted average of the contribution rates for non-pensioners of all sickness funds.

Sickness funds can reduce premiums by favorable risk selection and by increasing (administrative) efficiency. Favorable risk selection is still quite attractive since sickness funds are fully at risk and risk equalization is based on rather crude risk adjusters (age, gender, family size, invalidity status and income). These risk adjusters explain only a small part of the predictable variance in individual medical costs. By selective marketing, offering services mainly via phone and internet, and by taking-over small company funds with good risk profiles, sickness funds can attract enrollees with a favorable risk profile within each risk category distinguished by the RSA. Besides, since differences in income (as basis for contribution payments) are adjusted for only 92 percent, sickness funds also face incentives for selecting higher income groups.

Sickness funds do not contract with individual physicians but with regional provider organizations. The funds pay capitation fees to regional provider organizations. These organizations in turn distribute their revenues from sickness funds to their individual members, based on a capped fee-for-service system. Capitation fees can substantially vary among sickness funds since they depend on prior utilization and past negotiations. For instance, sickness funds with a relatively high proportion of higher income enrollees often were prepared to pay higher capitation payments. However, since differences in income-related contributions are largely compensated by the risk-equalization scheme, these sickness funds nowadays are forced to charge higher contribution rates to be able to pay higher physician fees. Differences in capitation payments can account for a maximum variation of one percentage point in contribution rates (Jacobs et al. 2001). Only few sickness funds attempted to use the limited room to differentiate contracts with providers to distinguish themselves. So far these attempts have not been very

² The terms managed or regulated competition are used very rarely in Germany.

successful because provider organizations were very reluctant to participate and because the benefits for consumers were very small.

3 The structure of the German sickness fund market

The peculiar structure of the German sickness fund market has its roots in the first Health Insurance Act that was implemented in 1883. From that time on, several types of sickness funds have been distinguished. More or less intentionally, in due course a hierarchical system of access to sickness funds has been legally constituted. In general, all insured had access to the regional or basic funds (*Allgemeine Ortskrankenkassen* or AOK). If there was a sickness fund founded by the company or the craftsmen association the people were working for, these people had to enter the company fund (*Betriebskrankenkasse* or BKK) or the craftsmen fund (*Innungskrankenkasse* or IKK). Finally, there were so-called substitute funds for white-collar workers (*Ersatzkassen für Angestellte* or EAN) as well as blue-collar workers (*Ersatzkassen für Arbeiter* or EAR); these substitute funds had limited access for status groups of employees. Traditionally, only certain groups of the insured had some limited choice between these types of funds. Because of unequal entitlements to choose funds, a risk-segmentation of the market developed. Especially the basic AOK-funds had a worse-than-average risk structure, because they had a higher share of social security recipients, unemployed and elderly persons, which resulted in higher contribution rates. In 1996 choice was extended in Germany to virtually all insured.

In the early 1990s the geographical market of sickness funds was very much fragmented. Only substitute funds (all EAN and most EAR funds) operated on a national level. Although they are represented by a common branch organization they compete with each other for members. During the 1990s the number of substitute funds remained fairly stable. Almost all other sickness funds operated at a local or company level. After the passing of the 1992 Health Reform Act AOK funds started to merge so by 1996 in almost all 16 German states (“Länder”) only one AOK-fund was left. There is almost no competition among AOK funds. Particularly after the introduction of freedom of choice, also many IKK and BKK funds decided to merge. As a result of the large number of mergers and takeovers the number of sickness funds sharply declined from more than 1200 in 1991 to about 400 in 2001 (see Table 2).

[Table 2]

IKK funds traditionally operated in a regional or even local area covered by the founding guild and BKKs were only accessible for employees of the founding company. However, by merging with other IKKs and BKKs and by opening up for all applicants the traditional links with craftsmen organizations and companies are considerably weakened. Since the introduction of freedom of choice several BKKs and a national IKK were founded without any ties to specific companies or guilds.

By law IKKs and BKKs can decide whether they have open enrollment or restrict enrollment to the employees of the companies or guild they represent. In 2001 52 percent (165) of the total number of BKKs (318) and 71 percent (20) of the total number of IKKs (28) have open enrollment.³ During the last few years the percentage of BKKs and IKKs with open enrollment rapidly increased. For instance, 12 of the 20 IKKs with open enrollment decided to open up for all applicants between 1999 and 2001.

On the one hand the large number of mergers lowers the number of competing sickness funds but on the hand the number is raised by the growing number of BKKs and IKKs opting for open enrollment. In 2001 there are 214 competing sickness funds in Germany, which is 54 percent of the total number of sickness funds (395). Since the vast majority of the remaining sickness funds without open enrollment are relatively small company-based funds, competing sickness funds enroll about 90 percent of the population with social health insurance.

The number of 214 competing sickness funds does not imply, however, that a typical German consumer can choose among that many sickness funds because many sickness funds have limited geographical markets. In 2001 the mean number of sickness funds with open enrollment per state is about 100, while the choice of funds varies between at least 70 and at most 130 sickness funds per state.

4. Methods

We examine consumer price sensitivity by estimating to what extent net changes in market shares (measured in terms of number of subscribers) of sickness funds can be explained by differences in prices over the period 1996 to 2000 or 2001. The relevant price is the income-related contribution rate for mandatory coverage.

Basically, we estimate the following equation (1) by fixed effects:

³ Data on BKKs were obtained from the website of the federal BKK association (BKK Bundesverband): www.bkk.de. Data on IKK were provided by the federal IKK organization (IKK Bundesverband).

$$\ln(Mshare)_{i,t} = \alpha_0 + \alpha_1 \ln Pbasic_{i,t} + S_i + \sum \beta_t T_t + u_{i,t} \quad (1)$$

where index i refer to the i -th (type of) fund and index t to year t , and $Mshare$ is the number of enrollees per individual or type of fund, $Pbasic$ is the contribution rate for mandatory basic insurance, S is a dummy variable per individual or type of fund reflecting unobserved fund characteristics, T is a dummy variable per year, and u an error term. Since the variables are in natural logarithms, the estimated coefficients on the premium variable (α_1) can be interpreted as the premium elasticities of market shares of individual or types of sickness funds. We also estimate separate premium elasticities for pensioners and non-pensioners. Since premium for German pensioners were uniform until July 1997 we expect the pensioners' price elasticity of fund choice to be zero during the first two years. To investigate whether and how price elasticities evolve over time we estimated equation 1 for different time intervals.

We estimated price elasticities of choice of types of sickness funds as well as for individual funds. However, data on the number of subscribers of individual BKKs and IKKs are highly incomplete, because they are not published officially. Moreover, many BKKs and IKKs merged during the considered period and many changed from closed to open enrollment. Hence, price elasticities of individual fund choice cannot be precisely estimated.

5. Data and descriptive statistics

A of panel data is constructed. These panel data include the total number of subscribers, pensioners and non-pensioners (excluding dependents) and income-related contribution rates by type of sickness fund over the period 1996-2001 (see Table 3). Data were provided by the Federal Ministry of Health.

[Table 3]

Price elasticities for type of fund choice are likely to be lower than price elasticities at the individual fund level. This is because switching between sickness funds of the same type is not recognized. Therefore, we also attempt to estimate price elasticity of individual fund choice. Over the period 1996-2000 we gathered data about the number of subscribers (excluding dependents)

and contribution rates of 44 individual sickness funds, including all 17 AOK funds, 20 Substitute funds (EAN/EAR)⁴, 6 BKK funds and one IKK fund (Table 4).

[Table 4]

The data on AOK and Substitute funds were provided by their branch organizations. The data on BKK and IKK funds were derived from the websites of the individual funds. Only those BKK and IKK funds were selected about which a complete data set could be obtained and which had open enrollment throughout the entire period. In addition, all selected BKK funds as well as the IKK fund operate nationwide. Data were not available for a large number of small BKKs and IKKs. As a result the average size of a sickness fund in the sample (about 910,000 subscribers) is much higher than the national average of about 120,000 subscribers per fund (in 2000). Although the average contribution rate in the sample (13.62 percent) is only slightly higher than the national average (13.57 percent) the cheapest, and perhaps fastest growing sickness funds are not included in the sample (in 2000 the cheapest sickness funds in the sample charge a contribution rate of 11.9 percent whereas the cheapest BKKs charge 11.2 percent). The missing data about a substantial number of cheap and presumably rapidly growing BKKs is likely to result in an underestimation of the price elasticity of individual fund choice.

Since data on other BKK and IKK funds were missing we constructed a "residual BKK" and a "residual IKK" fund. The number of subscribers of these residual funds is the total number of subscribers of BKK or IKK-type funds minus the number of subscribers of the selected BKK or IKK funds. The contribution rates of the residual BKK and IKK funds are calculated as the average contribution rates of non-selected BKK or IKK funds. We have estimated equation (1) including and excluding the residual funds.

6. Estimation results

The estimation results of equation (1) are presented in Table 5.

[Table 5]

⁴ Although there are only 12 substitute funds (see Table 2) until 2000 several of these funds were required by law to have separate organizations in West and East Germany charging different contribution rates. During the considered period, several mergers of substitute funds took place. For years preceding the merger the number of subscribers of the merged funds are added and a weighted average of the contribution rates is taken as price variable.

We find evidence of substantial and rapidly increasing price elasticities of type of sickness fund choice. Over the entire 6 years' period the price elasticity is -2.90. The elasticity is higher the shorter and more recent the period, raising to -4.9 over the last 3 years (1999-2001).⁵ The steadily increasing price elasticity over time may be partly caused by the rapidly growing number of BKKs and IKKs that decided to change from closed to open enrollment.

The price elasticity for non-pensioners is even substantially larger than the elasticity for all subscribers. This price elasticity increases from -3.9 over the entire period to -5.9 over the 3 most recent years. As expected the estimated price elasticities for pensioners over the initial years are negligible because contribution rates for pensioners were uniform until July 1997. The price elasticity of pensioners over the period 1999-2001 is much smaller than for non-pensioners, but also pensioners seem to become more price-conscious over time. The findings that elderly are substantially less price sensitive than non-elderly are consistent with findings by Schwarze and Andersen (2001) for Germany and also with findings by Buchmueller (2000), Royalty and Solomon (1999), and Strombom et al. (2002) in various US group insurance settings.

Evaluated at the mean, a price elasticity of -5.9 for non-pensioners implies that a reduction of the average contribution rate of a particular type of sickness fund from 13.5 to 12.5 percent of gross income is associated with an increase of about 3 million non-elderly enrollees (and dependents) choosing that type of sickness fund (or a 44% increase in market share for the average type of sickness fund). As a matter of fact, during the 1996-2001 period the relatively expensive AOK and EAN funds lost about 3.3 million enrollees (an 8 percent loss) whereas the relatively cheap BKK funds gained about 3.2 million enrollees (a 60 percent increase) (see Table 4).

Because the contribution rate is related to income, the same reduction in contribution rate represents a different price effect for different income groups. In addition, the price effect is also different for employees and self-employed persons, since 50 percent of the employees' premium has to be paid by the employer while the self-employed have pay the premium all by themselves.⁶ A one percentage point reduction in contribution rate implies an annual premium reduction of 202,5 Euro for an employee with an income at or above the threshold for mandatory insurance (40,500 Euro in 2002), whereas it implies a premium reduction of 110 Euro for an employee with an average annual income of about 22,000 Euro in 2002. Since the price effect of a rate reduction

⁵ The price elasticity over the last 3 years period may even be somewhat underestimated, since for 2001 we only had enrollment data at January 1, whereas for other years enrollment was calculated as the annual average number of enrollees per type of sickness fund.

⁶ Notice, however, that the relative price change is the same for employees and self-employed persons, since employees pay half of the price change as well as half of the base price.

increases with income, the price elasticity for the higher income enrollees may be higher than the estimated elasticity for the average enrollee. However, the larger price effect for higher income groups may be (partly) offset by a smaller income effect because of a diminishing marginal utility of income. Schwarze and Andersen (2001) find that the propensity to switch increases with income and raises from on average 5 to more than 8 percent if the person's annual income exceeds 25,000 Euro. Hence, the price effect appears to be stronger than the income effect. If the income level exceeds the threshold for mandatory insurance of 40,500 Euro, the contribution remains constant. For these income groups, Schwarze and Andersen find no significant effect of income on switching propensity. Thus for the highest income groups the income effect seems to offset the price effect.

As expected, the estimated price elasticities of individual fund choice are larger than those for type of fund choice, -3.7 versus -2.8 over the 1997-2000 period (see Table 8). Due to a large number of missing data about individual BKKs and IKKs the price elasticities of individual fund choice are likely to be underestimated because switching between BKKs and IKKs is not observed. Schwarze and Andersen (2001) find that, all other things equal, the propensity to switch funds is significantly higher for BKK enrollees than for other types of sickness funds. Since most of the cheapest funds are BKKs it is likely that BKK enrollees switch from one BKK to another.

A comparison of estimated price elasticities of health plan choice in Germany and in the US is not straightforward because of different base levels of out-of-pocket premiums and market shares. US studies of health plan choice typically involve employment-based group insurance settings in which employees have a choice of a limited number of health plans and pay only 10 to 20 percent of the total premium. In Germany employees have choice of about 100 sickness funds per state, and have to pay 50 percent of the total premium. Given the limited menu of health plans offered to US employees, US price elasticities may be best compared with the German price elasticities of type of fund choice, since there are only 5 types of sickness funds to choose from. Due to the higher level of out-of-pocket premiums in Germany the estimated price elasticities of plan choice in Germany are likely to be twice to five times as large as in the US. Because most US out-of-pocket premium elasticities of plan choice are about -1, the magnitude of the German and US price elasticities are quite similar.

7. Discussion

The estimation results show that the introduction of freedom of choice in the social health insurance systems of Germany has effectuated a strong response in consumer behavior.

Consumers are increasingly prepared to switch sickness funds in response to price differences. There are several explanations for this development.

First, premium differences are very high in Germany. German sickness funds bear a high financial risk while they are not adequately compensated for high-risk enrollees. In 2001 the out-of-pocket price difference for basic coverage between the most expensive and the cheapest sickness fund in Germany is around 400 Euro per year for an employee with an average income and around 750 Euro per year for an employee with an income at the threshold level for mandatory insurance.

Second, German employers have high incentives to influence choice of their employees (Rebscher 1995), since employers pay 50 percent of the income-related contribution charged by an individual sickness fund. When employees switch from the most to the least expensive sickness fund, the savings for the employer can rise to 750 Euro per year for a higher salaried worker. Hence, it is not surprising that employers seem to play an important role in motivating their employees to switch to a cheap (company-based) sickness fund, for instance by facilitating consumer choice and by setting up company-based funds. The official evaluation report to the government on experience with the RSA reports that employers massively try to influence the choice of sickness funds by their employees (Jacobs et al 2001). Schwarze and Andersen (2001) find that the propensity to switch funds is significantly higher for medium-sized firms (with 20-200 employees) than for small or large firms. Since most of the large firms already have their own BKK this finding is consistent with an active role of larger employers in influencing their employees' choice of sickness funds.

Third, the structure of the sickness funds market is very competitive in Germany. The market consists of a large number of sickness funds as well as a large number of entrants competing for a share of the market. The majority of these new entrants are company-based sickness funds changing from closed to open enrollment.

Finally, the propensity to switch may be high in Germany because some freedom of choice existed already before the introduction of general freedom of choice in 1996. Moreover, German sickness fund enrollees always paid their contribution directly to their own sickness fund and contribution rates varied per sickness fund.

Notwithstanding the substantial consumer mobility in Germany, the reform objectives of fair and effective competition have not been met. Competition among sickness funds is not fair because sickness funds with a disproportionate number of high-risk subscribers are forced to charge higher contribution rates due to a highly imperfect risk-adjustment mechanism (Jacobs et al. 2001). To a large extent, differences in contribution rates stem from a different risk profile of

enrollees. In addition, historical differences in capitation payments to physicians also account for part of the premium gap between the most and least expensive sickness funds. Only a fraction of price differences among sickness funds are attributable to differences in administrative efficiency. Moreover, administrative gains are at least partly offset by rent-seeking efforts to attract favorable risks (e.g. selective marketing). Thus, although German consumers are increasingly willing to shop around for a lower-priced sickness fund, the welfare effects of competition are unclear. What is clear, however, is the absence of any effect of competition on the efficiency of health care delivery because German sickness funds have hardly any tools to manage care. For a fair and effective competition among sickness funds the risk adjustment mechanism must be improved and sickness funds must be granted more room to manage care and to selectively contract or integrate with health care providers.

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Table 1. Main features of social health insurance in Germany

Features social health insurance	Germany
Membership	Mandatory for employees below / voluntary above legally specified income levels
Share of population	89% (about 70 million enrollees)
Coverage	Comprehensive, standardized benefits package Sickness funds are not allowed to offer supplementary insurance
Premium	Income-related, set by individual sickness fund (50% paid by the employer)
Freedom of choice	Annual open enrollment since 1996, in 2002 replaced by continuous open enrollment with a minimum stay of 18 months after change of funds; company and guild-based funds are allowed to remain "closed"
Number of sickness funds	395 (in 2001), 214 (54%) with open enrollment
Size of the market	Regional or national depending on the individual and/or type of fund
Risk adjustment	Mandatory risk equalization among sickness funds based on age, gender, invalidity status and income and family size (the last two variables as basis for contribution payments).
Financial responsibility for sickness funds	100% (but cross-subsidization among funds of the same type)
Selective contracting with providers	Not allowed (except for experimental projects)

Table 2. Number of German sickness funds by type: 1991-2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
AOK	276	269	235	96	20	20	18	18	17	17	17
BKK	721	741	744	719	690	532	457	386	361	337	318
EAN/EAR	15	15	15	15	15	15	14	13	13	12	12
IKK	174	173	169	160	140	53	43	43	42	32	28
Other*	21	21	21	21	21	20	20	20	20	20	20
Total	1209	1223	1221	1152	960	642	554	482	455	420	395

* The category other funds consists of one miners' fund (BKN), one sailors' fund (SEE) and a residual number of farmers' funds (LKK). None of these other funds have open enrollment and their members are not allowed to switch to other funds.

Source: Federal Ministry of Health

Table 3. Descriptive statistics of the variables in equation (1) per type of sickness fund in Germany over the period 1996-2001

Variable	Definition	Type of fund (<i>i</i>)	1996	1997	1998	1999	2000	2001
$Mshare_i$	Total number of subscribers and the number of pensioners (in parentheses) by type of fund (in millions)*	AOK	21.853 (8.089)	21.084 (8.069)	20.613 (8.012)	20.329 (7.945)	19.986 (7.880)	19.534 (7.908)
		BKK	5.218 (1.858)	5.373 (1.889)	5.708 (1.904)	6.224 (1.917)	7.461 (1.938)	8.429 (1.932)
		EAN	18.061 (3.214)	18.261 (3.313)	18.168 (3.388)	17.979 (3.457)	17.665 (3.546)	17.070 (3.517)
		EAR	0.963 (0.152)	1.045 (0.148)	1.118 (0.156)	1.172 (0.164)	1.008 (0.149)	0.965 (0.146)
		IKK	3.000 (0.456)	3.100 (0.476)	3.198 (0.497)	3.260 (0.520)	3.259 (0.543)	3.208 (0.533)
$Pbasic_i$	Average contribution rate charged by type of sickness fund (as percentage of income)	AOK	13.90	13.80	13.79	13.79	13.84	13.90
		BKK	12.57	12.73	12.82	12.77	12.57	12.48
		EAN	13.40	13.76	13.83	13.79	13.73	13.72
		EAR	12.84	12.99	13.03	13.01	13.63	13.65
		IKK	13.07	13.12	13.18	13.43	13.70	13.77

* The number of subscribers is calculated as the average number of enrollees (dependents excluded) per year, except for 2001 in which year the given number of subscribers are those enrolled at January 1, 2001.

Table 4. Descriptive statistics of the variables in equation (1) for 44 individual sickness funds in Germany over the period 1996-2000

Variable	Definition	Year	Mean	S.D.	Min.	Max.
$Mshare_i$	Total number of subscribers (dependents excluded) enrolled in sickness fund <i>i</i> (in thousands)	1996-2000	910.6	1246.4	0.46	5381.3
$Pbasic_i$	Average contribution rate charged by sickness fund <i>i</i> (as percentage of income)	1996	13.43	0.79	11.90	14.90
		1997	13.49	0.72	11.90	14.90
		1998	13.55	0.71	11.90	14.90
		1999	13.58	0.71	11.90	14.90
		2000	13.62	0.76	11.90	14.90

Table 5. Fixed effects estimates of price elasticities of sickness fund choice (α_1) in Germany^a

Choice of	Choice by	Estimated price elasticity (α_1) for various periods (t-values in brackets)					
		1996-2000	1997-2000	1996-2001	1997-2001	1998-2001	1999-2001
Type of sickness fund (5)	All subscribers	-1.62 (-1.18)	-2.82* (-2.12)	-2.90* (-2.28)	-3.76* (-3.05)	-4.19* (-3.51)	-4.85* (-3.94)
	Non-pensioners (age < 65)	-2.26 (-1.21)	-3.76* (-2.09)	-3.93* (-2.26)	-4.99* (-3.00)	-5.36* (-3.35)	-5.91 (-3.52)
	Pensioners (age \geq 65)	0.39 (0.58)	-0.08 (-0.11)	0.08 (0.15)	-0.27 (-0.51)	-0.76 (-1.37)	-1.57 (-2.60)
	Individual fund (44)	All subscribers	-3.38 (-1.92)	-3.72* (-2.09)	n.a.	n.a.	n.a.
Individual fund (46) ^b	All subscribers	-3.43* (-2.01)	-3.73* (-2.18)	n.a.	n.a.	n.a.	n.a.

* Statistically significant $p < 0.05$

^a Estimated coefficients of year dummies are not shown.

^b Including the aggregated "residual" IKK and BKK funds.

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