University of Zurich

Socioeconomic Institute
Sozialökonomisches Institut

Working Paper No. 0910

GPs' preferences: What price fee-for-service?

Peter Zweifel, Maurus Rischatsch, Angelika Brändle

July 2009

Socioeconomic Institute
University of Zurich

Working Paper No. 0910

GPs' preferences: What price fee-for-service?

July 2009

Author's address: Peter Zweifel
E-mail: pzweifel@soi.uzh.ch

Maurus Rischatsch
E-mail: maurus.rischatsch@soi.uzh.ch

Angelika Brändle
E-mail: angelika.braendle@wuestundpartner.com

Publisher

Sozialökonomisches Institut
Bibliothek (Working Paper)
Rämistrasse 71
CH-8006 Zürich
Phone: +41-44-634 21 37
Fax: +41-44-634 49 82
URL: www.soi.uzh.ch
E-mail: soilib@soi.uzh.ch

GPs' preferences: What price fee-for-service?

Peter Zweifel, Maurus Rischatsch*, Angelika Brändle†

This version: April 2, 2009

Abstract

In mixed health care systems a crucial condition for the success of Managed Care (MC) plans is to win over a sufficient number of general practitioners (GPs) acting as gatekeepers. This contribution reports on GPs' willingness-to-accept (WTA) or compensation asked, respectively, for changing from conventional fee-for-service to MC practice. Some 175 Swiss GPs participated in discrete choice experiments which permit to put a money value on their status quo bias. Regardless of whether effects coding or dummy coding is used to measure status quo bias, Swiss GPs require at least 16 percent of their current average income to give up fee-for-service in favor of MC practice.

JEL-Classification: C93, D61, I11, J22

Keywords: general practitioners, willingness-to-pay, preferences, market experiments, managed care, effects coding, status quo bias

*Corresponding author: Maurus Rischatsch, Socioeconomic Institute, University of Zurich, Hottingerstrasse 10, CH-8032 Zurich, phone: +41 44 634 37 17, fax: +41 44 634 49 87, email: maurus.rischatsch@soi.uzh.ch

†The authors gratefully acknowledge suggestions and criticism from the Belgian-Norwegian Workshop held in Bergen (Norway) in December 2006, the Health and Nutrition Workshop at the World Bank in July 2008, the Seminar at the Health Services Research Dept. of the University of Chicago in July 2008, from Roland Eisen (University of Frankfurt/Main), Timo Sepälä (Stakes, Helsinki), and from Harry Telser and Patrick Eugster (University of Zurich).

1 Motivation and Overview

Many governments try to limit the rise in health care expenditure by prescribing or encouraging managed care (MC) programs. In mixed systems permitting choice, consumer participation in MC can be encouraged by lowered contributions to health insurance [for evidence about the reduction required to induce voluntary participation by consumers, see e.g. Zweifel et al. [2006]]. However, health service providers must also be won over for MC lest these programs suffer from quality problems, in particular due to a lack of participating physicians. This risk is of considerable relevance in countries with a shortage notably of general practitioners (GPs), who play a crucial role in MC as gatekeepers. In the case of Switzerland, only about 10 percent of medical students intend to become GPs, while retiring GPs have difficulties finding a successor for their practice (Buddenberg-Fischer et al. [2006]). Hence, health care reforms designed to foster MC need to address the issue of sufficient attractiveness of MC practice particularly to GPs.

Incentives for providers to participate in MC programs are mixed. On the one hand, they have to accept limitations of their professional autonomy, and possibly increased financial risk (especially if they participate in the financial success of the scheme). On the other hand, they can benefit from regular work hours, shared investment cost, and easier exchange of information within a network. The present paper purports to provide information about GPs' status quo bias, expressed as their willingness to pay (WTP) for maintaining their conventional fee-for-service practice, or compensation asked (willingness-to-accept WTA) for departing from it, respectively. The evidence comes from market experiments of the discrete-choice type (DCEs), performed with 175 Swiss GPs in 2006. While evidence based on actual behavior would be preferable in principle, market experiments can inform policy makers and health insurers about the chances of success of planned changes, helping them avoid costly failures.

This paper is organized as follows. Section 2 contains an overview of the existing literature on GPs' preferences, with special reference to evidence from DCEs. Section 3 presents hypotheses concerning GPs' status quo bias that can be derived from different strands of microeconomic theory. Section 4 presents a short review of DCE as a tool for measuring WTP for an alternative that is not (or not yet) available. The survey design is presented in Section 5, while Section 6 contains descriptive statistics and the results of the econometric estimation. Estimates of status quo bias are derived and compared across age, income groups, and regions in an attempt to test the hypotheses stated in Section 3. Section 7 concludes.

2 Literature review

The existing literature on physician behavior mainly revolves around the impacts of different reimbursement systems (see Labelle et al. [1994], Pauly [1994], and McGuire [2000] for an overview). The precise nature of physician preferences usually is not addressed because they do not seem

to affect predictions in a substantial way. Some authors have nevertheless posited particular preferences by including professional ethics (Feldstein [1970], Zweifel [1981], Dionne and Contandriopoulos [1985]). Attributes of professional activity originally received little attention, except for the rate of return associated with specialization (Sloan [1971]). More recently, Gagné and Léger [2005] have examined the choice of specialty in Canada from 1976 to 1991 in response to changes in fee-for-service rates. They find income differences to be a significant factor. However, gender, mother tongue, medical school attended, state laws, and geographic conditions have a bearing on the choice of specialty as well. With the advent of MC, research into the determinants of choice of type of medical practice received new impetus. Hypothesized attributes are reputation and status (Enthoven [1978], Richardson [1981]), properties of the medical practice (Beardow et al. [1993]), and intellectual satisfaction (Feldstein [1970], Enthoven [1978]). More recently, Kristiansen [1994] has claimed professional autonomy to be an additional attribute that needs to be taken into consideration. However, the relevance of these attributes, especially the non-pecuniary ones, has been little investigated.

Against the background of undersupply in rural areas of Norway, Kristiansen [1992] analyzed the determinants of the decision where to locate. Place of birth, place of residency, and spouse's place of origin were found to be significant factors. However, they are not of overriding importance, permitting the author to conclude that the problem of underprovision could be solved through the use of financial incentives. Non-pecuniary motives might be enhanced in order to relieve the public budget, e.g. by favoring medical students with a rural background (who are particularly likely to settle there). The same conclusion is drawn by Benarroch and Hugh [2004], who investigate the migration of physicians in Canada. Urbanization has a significantly positive effect on migration, whereas distance between major cities of a province has a significantly negative effect. While this research is valuable for informing policy makers about what motivates physicians to opt for existing alternatives, it is silent about their choices with regard to alternatives that are being considered but not available yet. In this situation, surveys and market experiments can fill the gap.

The effects of non-pecuniary job characteristics on physicians' labor supply decision have mainly been studied in the psychological and medical literature (Scott [1998], using surveys). Of particular importance for the present study, Buddeberg-Fischer and Klaghöfer [2003] examine career paths of 497 last-year medical students over a period of eight years in Switzerland. Respondents stated versatility of the field (96 percent), intensive patient contact (87 percent), positive experiences during their studies (86 percent), compatibility of work with family (83 percent), and possibilities of self-employment (61 percent) as determinants of their choice of specialty. In addition, male students exhibit a preference for specialties with a scientific orientation, whereas females, for settings with intensive patient contacts. With regard specifically to MC alternatives, Nordt [2003] finds that conflicts due to a changed perception of the physician's professional role put a larger strain on practitioners in solo than in group practice. Similarly, incompatibility of work and family may be

more of a problem in solo practice (2.8 out of a maximum of 5 points) than in group practice (2.3 points, difference statistically not significant).

Market experiments of the discrete choice type (DCEs, see Section 4 below) have been performed by Scott [2001] to investigate the preferences of practitioners in Great Britain with regard to working hours, work load, time spent on administration per week, out-of-hours appointments, and use of guidelines.

Performing a DCE as well, Ubach et al. [2003] report WTA values for an extra hour of and on being on call as extra day per month. Wordsworth et al. [2004] find differences between principal and so-called sessional GPs[1]. On the whole, the evidence is in accordance with the theoretical predictions by Marinoso and Jelovac [2003], who compare the performance of gate-keeping and traditional systems, emphasizing the importance of non-financial motives for the payment of GPs to create favorable incentives.

While this research is valuable for pointing to job attributes that may be particularly valued (or resisted) by GPs, it fails to inform about their attitudes with regard to non-marginal changes. However, the transition from conventional fee-for-service to MC practice constitutes such a non-marginal change. Health insurers and policy makers considering the introduction of MC need to know what it takes to overcome the status quo bias likely characterizing GPs. With regard to consumers, there is DCE evidence suggesting that status quo bias with regard to MC may be substantial (Becker and Zweifel [2008]). It may well play an important role in physician choices as well.

3 Hypotheses

This section is devoted to the development of hypotheses regarding status quo bias when the alternative facing GPs is MC, with several job attributes changed (see Table 2 below).

Most GPs in Switzerland continue to work in traditional solo practice. This indicates a preference for this setting because the MC alternative has been available for 15 years now. With average GP age in the sample equal to 53 years (see Table 3 below), at least a minority of the GPs surveyed could have opted for MC at the end of their medical training. They opted for solo practice although this demanded a considerable investment of about one million CHF (at 2007 prices; 1 CHF = 0.8 US$ at 2007 exchange rates). If they were to opt for MC now, at least part of that investment would be lost. These considerations lead to the first general hypothesis regarding general status quo bias,

H_{ALL}: Swiss GPs exhibit a strong status quo bias.

An important determinant of status quo bias should be age, and for two reasons. The transition to MC is an investment at least of time and effort involving uncertainty. Therefore, status quo bias

[1] Principal GPs have ownerships in their practice, whereas sessional GPs are freelancers (mainly young females with childcare responsibilities) and employees of NHS boards (Scotland).

reflects a demand for security, which is determined by risk aversion and the amount of such volatility (Pratt [1964]). Now both of these determinants may vary with age. With regard to risk aversion, the empirical evidence is inconclusive (Bellante and Green [2004]; Halek and Eisenauer [2001]; Riley and Chow [1992]). However, with regard to asset volatility, the effect of age is unambiguous, because the closer retirement age, the less time available for making up for an unexpected shortfall of income that may be the consequence of a change to MC. Therefore,

H_{AGE}: Preference for the status quo increases with the GP's age.

A hypothesis regarding current labor income can again be derived from Pratt's result that maximum WTP for certainty is proportional to the product of the coefficient of absolute risk aversion and the volatility of the asset to be protected. In the present context, it may be argued that with increasing experience and hence labor income under the status quo, maximum probable loss in terms of devaluation of acquired skills (occasioned by a change to MC) increases as well, thus

H_{INCOME}: Status quo bias is the more marked the higher current labor income.

While not fully exogenous, the type of catchment area should have a good deal of explanatory power. Swiss GPs in rural areas still enjoy a good deal of status. Adhering to a MC organization means a loss of autonomy and hence status. This effect is likely less marked in cities with their anonymity, therefore

H_{URBAN}: Status quo bias is lower in urban than in suburban and rural areas.

Switzerland is a culturally diverse country characterized by strong federalism. Health policy in principle falls in the domain of cantons; however, health insurance is regulated at the federal level. Accordingly, it was federal legislation that introduced MC in 1996 as a part of the new law on health insurance (MC had been an option since 1992, based on a provisional exemption from the any-willing-provider clause of the old law). Resistance against regulation at the federal level has traditionally been particularly strong in the French-speaking west and the Italian speaking south, which account for some 25 percent and 5 percent of the population, respectively. This resistance was reflected in a DCE concerning MC-type restrictions in health insurance conducted among consumers (Zweifel et al. [2006]). To the extent that physicians exhibit similar cultural differences as their patients, one has

$H_{\text{WEST\&SOUTH}}$: Status quo bias is higher among GPs from the Western and Southern than from the Eastern and Northern parts of Switzerland.

4 Discrete Choice Experiments

4.1 Theoretical Background

Based on random utility theory (Luce [1959], Manski and Lerman [1977], McFadden [1981] and McFadden [2001]), discrete choice experiments (DCEs) are designed to allow individuals to express their preferences for non-marketed goods or goods which do not yet exist. The number of applications of DCEs to the valuation of healthcare programs has been increasing during the past few years (see Ryan and Gerard [2003] and Scanlon et al. [1997]). In a DCE, individuals are given a hypothetical choice between many or just two (binary choice) commodities. From these choices, the importance (more precisely, the expected utility) of product characteristics can be inferred. Inclusion of a cost or price attribute allows determining the money valuation of the remaining product attributes. In the present context, the price attribute is labor income; therefore the DCE amounts to estimating the compensating wage differentials as in labor economics. The fact that respondents have to weigh several attributes simultaneously makes biases that plague Contingent Valuation (where individuals are asked about their WTP directly, holding all other attributes constant) less likely than in a DCE (Ryan [2004]).

The first step of a DCE involves the definition of the attributes of the commodity and the levels assigned to them (Louvriere et al. [2000], Ryan and Gerard [2003]). Here, attributes of MC are chosen to describe the GPs' work situation (for more details, see Table 2). The price attribute is the variation in monthly income. The total of five attributes and their levels combine to form 1,152 possible combinations of choice sets. Using the experimental design optimizing program GOSSET (Kuhfeld and Tobias [1994], Hardin and Sloane [1993], Hardin and Sloane [1994]), the number was reduced to 22 D-optimal choice sets and randomly split into two groups, resulting in 11 choices per respondent. Each of the 11 alternatives had to be evaluated against the status quo. As a rational subject, a respondent will choose the alternative with the higher level of utility. The decision making process within a DCE can thus be seen as a comparison of utilities U_{ni} and U_{nj},

$$U_{ni} = V_{ni} + \varepsilon_{ni}, \tag{1}$$

where V_{ni} represents the deterministic indirect utility of individual n in alternative i and ε_{ni}, an error term. The individual chooses alternative i (MC) rather than the status quo j if

$$U_{ni} > U_{nj} \Longleftrightarrow V_{ni} + \varepsilon_{ni} > V_{nj} + \varepsilon_{nj}. \tag{2}$$

The component $V_{ni}(\cdot)$ can be inferred from observed choices by assuming that the probability P_{ni} of choosing alternative i rather than j, given the vector of attributes, equals the probability of the difference in utilities given in Equation (2) occurring. Therefore,

$$\begin{aligned} P_{ni} &= Prob(U_{ni} > U_{nj},\ \forall j \neq i) \\ &= Prob(V_{ni} + \varepsilon_{ni} > V_{nj} + \varepsilon_{nj},\ \forall j \neq i) \end{aligned} \tag{3}$$

Rearranging this inequality leads to the following expression,

$$P_{ni} = Prob(\varepsilon_{nj} - \varepsilon_{ni} < V_{ni} - V_{nj},\ \forall j \neq i). \tag{4}$$

Therefore, the probability of choosing i rather than j implies that the error term $(\varepsilon_{nj} - \varepsilon_{ni})$ is dominated by the systematic difference in utility $(V_{ni} - V_{nj})$. The deterministic part of the utility function is usually assumed to be linear in parameters[2],

$$V_{ni} = x'_{ni}\beta, \tag{5}$$

where $\beta = (\beta_0, ..., \beta_K)$ is a vector of parameters to be estimated and x_{ni} is the vector containing the levels of the K explanatory variables belonging to the each alternative. The parameters $\beta_1, ..., \beta_K$ can be interpreted as the marginal utilities of the attributes; they are constant in the case of a linear utility function. This rather strong assumption might not be satisfied for attributes covering a wide range such as hours of work or monthly income. To test for nonlinearity, quadratic terms of these two regressors will be included in the empirical specification. The marginal rate of substitution (MRS) between two attributes k and m is given by

$$MRS_{k,m} = -\frac{\partial V_{ni}/\partial x_k}{\partial V_{ni}/\partial x_m}, \tag{6}$$

with the marginal utilities retrieved from the values of the estimated utility function (5). The WTP for a specific attribute can thus be calculated by dividing the respective slope parameter of the indirect utility function by the parameter pertaining to the income variable. This ratio then indicates how much income respondents are willing to forego in order to get an increased amount of attribute k.

The model defined by Equations (4) and (5) is usually estimated using Logit or Probit techniques, depending on the assumption made concerning the distribution of the error term ε_{ni}. Here, the log-likelihood at convergence as well as the Akaike's and Schwarz's Bayesian information criteria recommend the logit rather than the probit specification. Therefore, the ε_{ni} are i.i.d. extreme value distributed and the difference between two error terms $(\varepsilon_{nj} - \varepsilon_{ni})$ is logistic distributed.

[2] There is empirical evidence that a linear specification predicts well in the middle range of the utility function (Hensher et al. [1999]).

Since respondents have to make several choices, observations have a panel structure, making the random-effects specification appropriate (for more details, see Louvriere et al. [2000] and Ben-Akiva and Lerman [1985]).[3]

As Bech and Gyrd-Hansen [2005] state, the constant in a DCE may not represent pure status quo bias if the utility function includes dummy-coded variables. The reason is that the intercept usually is correlated with the dummies as it represents the reference category for the dummies. Therefore, it is unclear whatever the estimated constant represents a reference point for the dummies or the mean effect of unobserved determinants of utility. Louvriere et al. [2000], Ch.4, Bech and Gyrd-Hansen [2005] propose the following solution to this problem, which they call effects coding. Instead of creating $L-1$ dummy-coded variables for an attribute with L levels, one assigns the value of -1 to the status quo level of each attribute and the value 1 to the presence of another level (0 otherwise). The effects-coded variables are no longer correlated with the intercept because the reference category is now coded -1 instead of 0. Table 1 illustrates using the attribute *treatment* (explained in the next section) as an example. It has four levels ($L=4$). Conventional dummy coding is shown in panel A. Effects coding calls for putting the values for the status quo level at -1 (panel B). This permits to distinguish between the real status quo (-1) and the absence of some other level of the attribute in the alternative (0).

Attribute		Levels	A: Dummy coding			B: Effects coding		
treatment			SDM	CIR	GL	SDM	CIR	GL
j=	1	No obligations (status quo)	0	0	0	-1	-1	-1
	2	Shared Decision Making (SDM)	1	0	0	1	0	0
	3	Critical Incident Reporting (CIR)	0	1	0	0	1	0
	4	Guidelines (GL)	0	0	1	0	0	1

Table 1: Dummy and effects coded variables

By construction, estimated coefficients of effects-coded variables differ from the dummy-coded ones. Nevertheless, dummy-coded (dc) estimates can be derived from the effects-coded (ec) ones as follows. First, the (ec) coefficient of the status quo level needs to be determined. In the example above, this is the coefficient pertaining to *No obligations* ($j=1$), given by $\beta_1^{ec} = \sum_{j=2}^{4}[-1 \cdot \beta_j^{ec}]$. Second, to obtain the (dc) coefficients, one has to take into account that a change from the status quo to another level now amounts to a change from -1 to 1 rather than 0 to 1. Hence, in the case of the coefficient for *SDM* ($j=2$), one has

$$\beta_2^{dc} = -1 \cdot \beta_1^{ec} + 1 \cdot \beta_2^{ec} = -1 \cdot \sum_{j=2}^{4}[-1 \cdot \beta_j^{ec}] + 1 \cdot \beta_2^{ec}. \tag{7}$$

[3] Estimating a fixed-effects model would necessitate the estimation of individual-specific constants, causing the number of dummy variables to increase tremendously and hence problems of multi-collinearity. This would also mean that individuals always consistently choose between the alternative and the status quo, ruling out errors that are individual specific.

As mentioned above, this coding scheme breaks the correlation between the intercept and the attributes of the alternatives. The remaining value of the constant is due to the mean effect of unobserved determinants of utility or the pure status quo bias, respectively.

5 Design of the study

The authors of this study were entrusted by Glaxo-Smith-Kline with organizing the continued education of Swiss GPs in 2006. German-speaking physicians were invited to Hamburg (Germany) and Madrid (Spain), while their French- and Italian-speaking colleagues met in Brussels (Belgium). The main part of the program consisted in an analysis of the Swiss health care system by the authors and a contrast provided by local health economists. At the end of the session, attendees (about 20 per meeting) were asked to take part in the DCE reported here, totaling 181 from June to November 2006. Since being informed about the status quo is essential for respondents to be able to make choices[4], they were given a sheet describing each scenario and attribute. The DCE itself was preceded by questions about general attitudes concerning current health care issues, satisfaction with participants' professional situation, and their current work situation. After the DCE, education, medical school attended, and other sociodemographic variables were surveyed.

In the DCE, participants were asked to compare the status quo with 11 hypothetical alternatives defined by the five attributes listed in Table 2. Hence, the deterministic part of the utility function V_{ni} discussed in the previous section is given by

$$\begin{aligned} V_{ni} &= \beta_0 + \beta_1 \cdot SDM + \beta_2 \cdot CIR + \beta_3 \cdot GL + \beta_4 \cdot QC + \beta_5 \cdot RP + \beta_6 \cdot HOURS \\ &\quad + \beta_7 \cdot CALLS + \beta_8 \cdot FXS + \beta_9 \cdot PBR + \beta_{10} \cdot CAP + \beta_{11} \cdot INC. \end{aligned} \tag{8}$$

Beside *treatment* (with the four levels status quo, *SDM*, *CIR*, and *GL*), the attributes *cooperation* (*QC*, *RP*) and *remuneration* (*FXS*, *PBR*, *CAP*) enter in both dummy and effects coded form. Working hours per week (*HOURS*) are defined as the percentage change from the stated current value. Similarly, the days on call (*CALLS*) are the absolute change from the status quo to each alternative in days. Finally, *INC* is the change from the status quo in terms of labor income, ranging from -4,000 to +4,000 CHF per month, or up to some 25 percent of average current income (see Tables 2 and 3).

Initially, e-Health-card and remuneration with floating fee-for-service credit points had been considered but were discarded. In view of the small sample size, randomly changing the order of the choice alternatives to mitigate learning or fatigue effects was not considered. Since the number of alternatives was rather high compared to recommendations in the literature, no alternative could be included twice to check consistency.

[4] See e.g. San Miguel and Amaya-Amaya [2005] for the importance of a priori information for choice consistency in a DCE.

Attribute	Label	Characteristic
Treatment concepts	status quo	No contractual obligation to adhere to a treatment concept
	SDM	Shared Decision Making
	CIR	Critical Incident Reporting
	GL	Need to follow guidelines
Cooperation	status quo	Limited to referrals to specialists and dispensing prescription, only of a small amount of GPs work in group practices
	QC	Mandatory attendance of quality circles once a month
	RP	Resource pooling with other GPs (accounting, equipment, practice)
Weekly hours of work	HOURS	Percentage change from the stated current value. GPs in Switzerland can choose their hours virtually free of regulations.
Days on call per month	CALLS	Absolute change of days on call per month compared to current situation.
Remuneration	status quo	Fee-for-service according to a nationwide schedule (TARMED)
	FXS	Fixed salary equivalent to current monthly average income
	PBR	Partial budget responsibility equivalent to current monthly average income
	CAP	Capitation, equivalent to current monthly average income
Income	INC	Monthly income change of -4000,-3000,-2000,-1000,+1000, +2000,+3000, +4000

Table 2: Attributes of professional activity retained for the DCE

6 Results

6.1 Descriptive statistics

In Table 3, average age is a high 53 years (the same as the national figure, see Obsan [2007]), pointing to a future shortage of GPs under unchanged conditions. With 21 years of experience, participants are somewhat past their halftime in independent practice on average. Accounting for 15 percent of the sample, women are underrepresented in the sample compared to their overall share of 33 percent in the medical profession and of 18 percent among GPs in independent practice (FMH [2006]). About one-half of participants have children still living at home. About 40 percent of the GPs surveyed have their practice in a rural environment and 51% are from the French-speaking western and Italian-speaking southern parts of Switzerland and 49%, from the northern and eastern parts. This amounts to an undersampling because the majority of the population is German-speaking. The sample comprises 175 respondents because six GPs did not indicate their region.

The monthly average income of CHF 16,173 (some $13,000 at 2007 exchange rates) corresponds to the national average as reported by Hasler [2006]. Average working hours per week are lower than official figures; this is due to the presence of part-time GPs in the sample. Days on call are

less than four per month on average, with a maximum of 30 (see Table 3). Registering 148 patient contacts per week on average, Swiss GPs are able to spend more time on a patient than e.g. their German colleagues, who decry their need to practice "3-minute-medicine". Indeed, consultation length averages 15 minutes in Switzerland but only 7 minutes in Germany (Deveugele et al. [2002]). Finally, professional satisfaction was measured on a 1 (minimum) to 5 (maximum) scale, with an average value of 3.6 points.

			Quantiles				
Variable	**Mean**	**SD**	**Min**	**0.25**	**Median**	**0.75**	**Max**
Age in years	52.9	7.0	36	48	54	58	69
Experience in years	20.8	8.4	2	16	21	27	41
Sex (female=1)	0.8	0.4	0	1	1	1	1
Children present	0.5	0.5	0	0	1	1	1
Urban	0.4	0.5	0	0	0	1	1
West&South	0.5	0.5	0	0	1	1	1
Monthly income (in CHF)	16173.1	7089.9	2000	12500	15000	20000	53000
Working hours per week	54.3	12.9	20	46	55	60	100
Days on call per month	3.5	4.8	0	1	2	4	30
GP-patient contacts per week	147.9	66.7	40	100	135	180	450
Professional satisfaction	3.6	0.9	1	3	4	4	5

Table 3: Descriptive statistics

In the attitudinal part of the survey, most participants stated a very keen interest in health economics as a reason to attend the workshop. This might give rise to selection effects because GPs who are open to health economic issues might differ in terms of their preferences from the average as well. Since invitation to the workshop was by sales representatives of Glaxo Smith Kline, other selection effects may be present as well [notably a high volume of drugs sold on physicians' own account (which is legal in some cantons)].

6.2 Estimation results and testing of hypotheses

6.2.1 General results: the core model

Equations (4) and (5) constitute the simple core model traditionally used in DCEs, with marginal utilities and hence WTP values independent of socioeconomic characteristics. Column 1 of Table 4 displays the results of the random-effects logit estimation for dummy-coded variables (Model A). Column 2 shows the results of the same estimation using effects-coding (Model B). Status quo bias values are calculated in analogy to Equation (6) and given in Table 5 below.

Model A is used as the benchmark for assessing signs and significance levels. While most coefficients have the expected sign, some lack statistical significance. This is true in particular of *Critical Incident Reporting*, *Quality Circles*, *Resource Pooling*, *Hours*, and *Days on Call*. The last two observations are astonishing. Given that the work week is 54 hours on average under the status quo (see Table 3), economic theory suggests that a (positive) percentage change in working

Attributes	**Exp.sign**	**Dummy-Coded**	**Effects-Coded**	
		Model A R.E.Logit	**Model B R.E.Logit**	**Model C Mixed Logit**
Shared Decision Making	–	-0.539**	-0.086	-0.086
		(0.26)	(0.16)	(0.16)
Critical Incident Reporting	–	-0.202	0.251**	0.251**
		(0.22)	(0.13)	(0.13)
Guidelines	–	-1.070***	-0.617***	-0.617***
		(0.22)	(0.14)	(0.14)
Quality Circles	+/–	0.061	-0.013	-0.013
		(0.27)	(0.17)	(0.17)
Resource Pooling	–	0.160	0.086	0.087
		(0.16)	(0.11)	(0.11)
Working Hours	–	0.110	0.110	0.107
		(0.40)	(0.40)	(0.40)
Days on Call	–	0.00263	0.00263	0.00280
		(0.024)	(0.024)	(0.024)
Fixed Salary	+	-0.814***	-0.195	-0.195
		(0.22)	(0.14)	(0.14)
Partial Budgetary Resp.	–	-1.014***	-0.396**	-0.396**
		(0.27)	(0.17)	(0.17)
Capitation	–	-0.646***	-0.028	-0.028
		(0.22)	(0.14)	(0.14)
Workshop No. 7	+/–	1.035***	0.517***	0.515***
		(0.36)	(0.18)	(0.18)
Income	+	0.000393***	0.000393***	0.000393***
		(0.000027)	(0.000027)	(0.000027)
Constant		-0.992***	-1.473***	-
		(0.30)	(0.20)	
Constant [Mean of $N(\mu, \sigma^2)$]		-	-	-1.474***
				(0.19)
Constant [SD of $N(\mu, \sigma^2)$]		-	-	1.369***
				(0.13)
Log-likelihood at convergence		-791.37	-791.37	-791.42
Akaike IC		1610.75	1610.75	1610.83
Bayesian IC		1688.18	1688.18	1697.97
Observations: 1865				
Number of GPs: 175				

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Results of random-effects and mixed logit estimation

hours and additional days on call would be valued negatively. However, monthly income change does prove relevant for choice, confirming its use as a price attribute. Finally, all the financial attributes representing the way of remuneration are highly significant.

Table 4 also contains a dummy variable for workshop No. 7. In preliminary estimations, workshop dummies were included in the regression to test for effects related to location, local

presenter, and composition of the physician group. However, only workshop number 7 in Hamburg showed a significant effect. While improving statistical fit, inclusion of this dummy hardly affects the coefficients relating to the attributes.

Turning to the effects-coded estimates, one notices that the constant of model B points to a more rather than less marked 'net' status quo bias, contrary to the findings of Bech and Gyrd-Hansen [2005].

Model C in Table 4 shows the results of a mixed logit (MXL) model[5] where the constant is allowed to be normally distributed, while all other coefficients are kept fixed (see Train [2003], Ch.6, and Hole [2007b]). This allows for taste heterogeneity among GPs; therefore, the status quo bias could be positive for some GPs and negative for others. Further, the random-coefficient model allows to calculate individual-specific values of the status quo bias (see Section 6.2.2 below). The coefficients of model C do not deviate from those of model B since only the specification of the constant is modified. In particular, the estimate of the constant is unaffected as the mean of its normal distribution almost coincides with the values from model B. However, the significance of the estimated standard deviation of the normal indicates that heterogeneity in status quo bias is present.

Table 5 shows the willingness-to-accept (WTA) values for a change in the GPs' overall job specification. The values are calculated using Equation (6) and the estimates from Table 4.[6] As discussed above, the status quo bias gets even larger when effects-coding is applied, increasing from 2,524 to 3,808 CHF (model B) and 3,750 CHF per month (model C). These values correspond to 16, 24, and 23 percent of current average income. They support hypothesis H_{ALL}, which states that Swiss GPs exhibit a strong status quo bias.

Model A Dummy-coded		**Model B** Effects-coded		**Model C** Effects-coded	
WTA	Confidence Limits	WTA	Confidence Limits	WTA	Confidence Limits
2,523.8	991.9 / 4,055.8	3,808.4	3,124.0 / 4,492.8	3,750.0	2,738.0 / 4,762.0

The confidence limits are calculated using the delta method (see Hole [2007a])

Table 5: Compensation asked to overcome the status quo bias (CHF/month)

6.2.2 Distribution of status quo bias

The MXL estimates of Table 4 can be used for further investigations. First, the share of GPs with positive status quo bias (S^+) is given by $S^+ = \Phi[-Mean/SD]$, with $\Phi(\cdot)$ denoting the normal

[5] The mixed logit model is also known as random-coefficient logit model.

[6] The WTP confidence interval is given by $WTP \pm z_{\alpha/2}\sqrt{var(WTP)}$ with

$$\begin{aligned} var(WTP) &= (-1/\hat{\beta}_{INC})^2 var(\hat{\beta}_{CONS}) + (\hat{\beta}_{CONS}/\hat{\beta}^2_{INC})^2 var(\hat{\beta}_{INC}) \\ &\quad +2(-1/\hat{\beta}_{INC})(\hat{\beta}_{CONS}/\hat{\beta}^2_{INC}) covar(\hat{\beta}_{CONS}, \hat{\beta}_{INC}), \end{aligned}$$

where $\hat{\beta}_{CONS}$ and $\hat{\beta}_{INC}$ are the estimates of the constant and the income attribute, respectively, and z is the critical value of the inverse normal c.d.f. For more details see Hole [2007a]. The WTA confidence interval is attained through changing the signs of the limits.

cumulative density function. One obtains a share of 86 percent indicating that a transition from fee-for-service to MC practice would have indeed to be compensated in the great majority of cases.

Second, the MXL estimates can be used to calculate individual-specific WTA (ISWTA) values of status quo bias (see Train [2003], Ch.11, and Hole [2007b]). The kernel density distribution of ISWTA values is depicted in Figure 1. Evidently, it can be approximated adequately by a normal distribution, the distribution used in model C. This conclusion is supported by the fact that the sample mean of the ISWTA values equals the unconditioned mean resulting from the MXL estimation. The two vertical reference lines in Figure 1 represent the status quo bias estimates

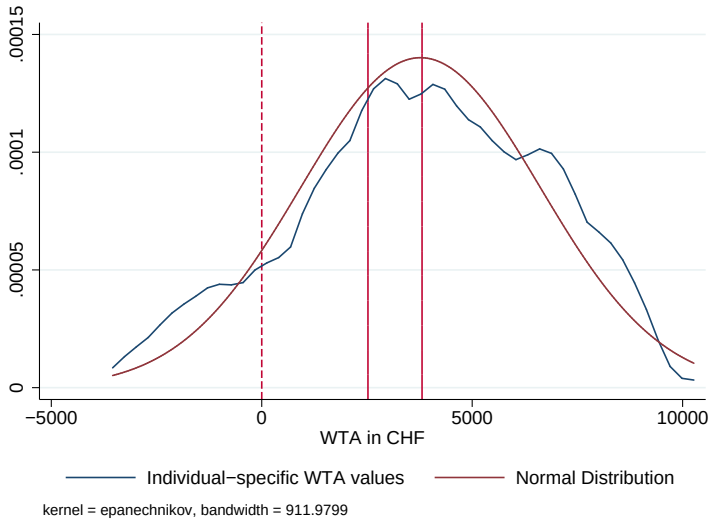

Figure 1: Distribution of individual-specific WTA values

derived from models A (bellow the mode) and B (at the fitted mode), amounting to CHF 2,524 and 3,124, respectively (see Table 5).

6.2.3 Testing hypotheses with respect to status quo bias

To test the hypotheses concerning differences between GPs in term of their preferences for the status quo, the core model of Section 6.2.1 needs to be extended by socioeconomic characteristics, viz. *Age*, *Curr-income*, *Urban*, and *West&South*. Here, *Curr-inc* represents the respondents' stated monthly income (in CHF). These characteristics are interacted with the constant to allow for differences in status quo bias.

Table 6 is an extract of Table 7 (see Appendix). Being the price variable used for the calculation of WTP, *Income* is included in models A and B, model C is not re-estimated because it already allows for taste heterogeneity between the GPs.

The first hypothesis, H_{AGE} (see Section 3) could not be tested directly. This would have called for the inclusion of *Age* as an explanatory variable, which is highly correlated with *Curr-inc*, causing severe multicollinearity. Estimating the extended model including *Age* instead of *Curr-inc*

(not shown) reveals that preference for the status quo does increase with the GP's age, indirectly supporting H_{AGE}.

Next, the sign of the coefficient for *Curr-Inc* indicates that the GPs who currently earn more are particularly unwilling to accept any deviation from the status quo. This finding is consistent with hypothesis H_{INCOME} (see Section 3). A GP with a current monthly income 1,000 CHF in excess of his or her peers has to be compensated with 146 CHF more to consider a transition to MC practice.

As to hypotheses H_{URBAN} and $H_{\text{WEST\&SOUTH}}$, Table 6 shows the two pertinent coefficients to lack statistical significance. Therefore, these two hypotheses fail to receive empirical support. Indeed, since the constant has no statistical significance anymore in both models A and B, GPs' status quo bias can be fully explained either by their current income level or age.

Attributes	**Dummy-coded**	**Effects-coded**	**WTA**	
	Model A	**Model B**	**Estimate**	**Conf. Interval**
Income	0.000392***	0.000392***	–	–
	(2.89e-05)	(2.89e-05)	–	–
Curr-Inc	-5.71e-05***	-5.71e-05***	0.1456	(0.0384/0.2529)
	(2.14e-05)	(2.14e-05)		
Urban	-0.0499	-0.0250	127.2	(-1293.2/1547.7)
	(0.284)	(0.142)		
West&South	-0.211	-0.106	538.0	(-1005.9/2082.0)
	(0.309)	(0.154)		
Constant (model A)	0.204	–	-521.3	(-3146.4/2103.7)
	(0.525)	–		
Constant (model B)	–	-0.528	1347.3	(-676.9/3371.5)
	–	(0.405)		

Table 6: Extension of models A and B by including socioeconomic attributes

7 Conclusions

In mixed health care systems permitting choice, general practitioners (GPs) must be won over for Managed Care (MC) practice. The objective of this contribution is to measure GPs' status quo bias in favor of conventional fee-for-service medicine. Based on a sample of 175 Swiss GPs participating in discrete-choice experiments (DCEs), status quo bias would have to be overcome by an average compensation amounting to at least CHF 2,524 (US$ 2,020 at 2008 exchange rates) or 16 percent of average reported monthly income.

DCE results also point to considerable preference heterogeneity, which is remarkable in view of the fact that all participants are GPs. As theoretically expected, status quo bias is particularly marked for older and high-income GPs. No statistical differences are found between urban

and suburban/rural GPs and between French- and Italian-speaking and German-speaking GPs, contrary to maintained hypotheses.

The high values of status quo bias found [measured by willingness-to-accept (WTA) values] may constitute overestimates for several reasons. First, participants were selected by the sales representatives of the sponsoring pharmaceutical company. Therefore, they must be important prescribers of the company's products and likely of pharmaceuticals in general. This points to considerable professional success under the status quo, inducing above-average WTA values for accepting changes. Second, the DCEs were preceded by a description of the respective host country's (Belgium, Germany, and Spain) health care system by a local expert. In all three countries, average physician incomes are lower than in Switzerland (OECD [2008]. This may well have strengthened participants' status quo bias. Third, there is of course always the possibility of the DCE neglecting attributes of physician practice that are positively correlated with status quo bias, resulting in an overestimate of the latter. This risk is non-negligible in the present study since the sponsor would not have consented to a pretest. As an imperfect substitute, the data from the first workshop were immediately checked for signs of mis-specification of the DCE, without any indication to this effect however.

For an assessment of the results of this paper, it should be borne in mind that they relate to GPs with a well-established practice. The status quo bias values found therefore apply to an experienced practitioner who typically would become the medical director of a MC organization rather than a young GP who has to be won over for a MC plan. Still, savings achieved through modified incentives have to be substantial to make MC viable in Switzerland, where health insurance is individually contracted. MC plans since their inception in the early 1990s have never attained a market share in excess of 10 percent because the premium reductions offered fall short of the amounts estimated by Zweifel et al. [2006]. The amounts of compensation asked by GPs for braking away from fee-for-service medicine in the reported magnitude will make the achievement of attractive premium reductions for MC plans even more difficult in the future, preventing the market share of MC from growing.

References

R. Beardow, K. Cheung, and W. Styles. Factors influencing the career choices of general practitioner trainees in nowrth west thames regional health authority. *British Journal of General Practice*, 143:449–452, 1993.

M. Bech and D. Gyrd-Hansen. Effects coding in discrete choice experiments. *Healt Economics*, 14(10):1079–1083, 2005.

K. Becker and P. Zweifel. Age and choice in health insurance: Evidence from a discrete choice experiment. *Patient*, 1 (1):27–40, 2008.

D. Bellante and C. Green. Relative risk aversion among the elderly. *Review of Financial Economics*, 13:269–281, 2004.

M. Ben-Akiva and S. Lerman. *Discrete Choice Analysis*. Cambridge, Mass.: The MIT Press, 1985.

M. Benarroch and G. Hugh. The interprovincial migration of canadian physicians: Does income matter? *Applied Economics*, 36(20):2335–2345, 2004.

B. Buddeberg-Fischer and R. Klaghöfer. Geschlecht oder Persönlichkeit? Determinanten der Karrierepläne angehender Ärztinnen und Ärzte.(Gender or personality? Determination of career plans of future physicians.). In A. Abele, E.-H. Hoff, and H.-U. Hohner, editors, *Frauen und Männer in akademischen Professionen. Berufsverläufe und Berufserfolg*, pages 17–28. München, 2003.

B. Buddenberg-Fischer, R. Klaghofer, M. Stamm, F. Marty, P. Dreiding, M. Zoller, and C. Buddeberg. Primary care in Switzerland - no longer attractive for young physicians? *Swiss Medical Weekly*, 136:416–424, 2006.

M. Deveugele, A. Derese, van den Brink-Muinen, J. Bensing, and J. De Maeseneer. Consultation length in general practice: cross sectional study in six european countries. *British Medical Journal*, 325:472–478, 2002.

G. Dionne and A. Contandriopoulos. Doctors and their workshops: a review article. *Journal of Health Economics*, 4:21–33, 1985.

A. Enthoven. Consumer-choice health plan. *New England Journal of Medicine*, 298(22):1223–1238, 1978.

M. Feldstein. The rising price of physicians' services. *Review of Economics and Statistics*, 52: 121–133, 1970.

FMH. Ärztestatistik (Medical Statistics). *www.fmh.ch*, 2006.

R. Gagné and P. Léger. Determinants of physicians' decision to specialize. *Health Economics*, 14(7):721–735, 2005.

M. Halek and J. Eisenauer. Demography of risk aversion. *The Journal of Risk and Insurance*, 68(1):1–24, 2001.

N. Hardin and A. Sloane. A new approach to the construction of optimal designs. *Journal of Statistical Planning and Inference*, 37:339–369, 1993.

N. Hardin and A. Sloane. Operating manual for gosset: A general purpose program for constructing experimental designs. 2nd edition, 1994.

N. Hasler. Einkommensverhältnisse der freien Ärzteschaft in der Schweiz in den Jahren 2003 (neu) und 2002 (Re-Evaluation). [Incomes of physicians in independent practice in Switzerland as of 2003 (new) and 2002 (re-estimation)]. *Schweizerische Ärztezeitung*, 87(39):1677–1686, 2006.

D. Hensher, J. Louvrier, and J. Swait. Combining sources of preference data. *Journal of Econometrics*, 89:197–221, 1999.

A. Hole. A comparison of approaches to estimating confidence intervals for willingness to pay measures. *Health Economics*, 16:827–840, 2007a.

A. Hole. Fitting mixed logit models by using maximum simulated likelihood. *The Stata Journal*, 7, Number 3:388–401, 2007b.

I. Kristiansen. Medical specialists' choice of location: the role of geographical attachment in norway. *Social Science and Medicine*, 34(1):57–62, 1992.

I. Kristiansen. What is in the doctor's utility function? a theoretical and empirical investigation into what influences doctors' decision making. *Ph.D. Thesis, University of Tromso*, 1994.

W. Kuhfeld and R. Tobias. Efficient experimental designs with marketing research applications. *Journal of Marketing Research*, 31:545–557, 1994.

R. Labelle, G. Stoddart, and T. Rice. A re-examination of the meaning and importance of supplier-induced demand. *Journal of Health Economics*, 13(3):347–368, 1994.

J. Louvriere, D. Hensher, and J. Swait. *Stated Choice Methods. Analysis and Applications.* Cambridge: University Press, 2000.

D. Luce. *Individual Choice Behavior.* New York: Wiley and Sons, 1959.

C. Manski and S. Lerman. The estimation of choice probabilities from choice base samples. *Econometrica*, 45(8):1977–1988, 1977.

B. Marinoso and I. Jelovac. GPs' payment contracts and their referral practice. *Journal of Health Economics*, 22(4):617–635, 2003.

D. McFadden. Economic choices. *The American Economic Review*, 91(3):351–378, 2001.

D. McFadden. Econometric models of probabilistic choice. In C. Manski and D. McFadden, editors, *Structural Analysis of Discrete Data with Applications*, pages 198–272. Cambridge, Mass.: The MIT Press, 1981.

T. McGuire. Physician agency. In A. Culyer and J. Newhouse, editors, *Handbook of Health Economics*, page Ch.9. N, North Holland, 2000.

C. Nordt. Strukturwandel der medizinischen Grundversorgung. Ursachen und Wirkungen der ärztlichen Arbeitszufriedenheit in unterschiedlichen Praxismodellen. (structural changes in primary medical practice. determinants and consequences of physicians' job satisfaction in different settings.). Phd dissertation, submitted for the Factulty of Philosophy, University of Zurich, 2003.

Obsan. Angebot und Inanspruchnahme an ambulaten medizinischen Leistungen in der Schweiz. [Supply and utilization of ambulatory medical care in Switzerand]. Arbeitsdokument 22, Obsan, Bern, 2007.

OECD. *Health Data File*. Paris, 2008.

M. Pauly. Editorial: A re-examination of the meaning and importance of supplier-induced demand. *Journal of Health Economics*, 13:369–372, 1994.

J. Pratt. Risk aversion in the small and in the large. *Econometrica*, 32:122–136, 1964.

J. Richardson. The inducement hypothesis: That doctors generate demand for their own service. In J. Van der Gaag and M. Perlman, editors, *Health, Economics and Health Economics*, pages 189–214. North-Holland Publishing Co., Amsterdam, 1981.

W. Riley and K. Chow. Asset allocation and individual risk aversion. *Financial Analysts' Journal*, 48(6):32–37, 1992.

M. Ryan. A comparison of stated preference methods for estimating monetary values. *Health Economics*, 13(3):291–296, 2004.

M. Ryan and K. Gerard. Using discrete choice experiments to value health care programmes: current practice and future reflections. *Applied Health Economics and Health Policy*, 2(1):55–64, 2003.

M. San Miguel, F.and Ryan and M. Amaya-Amaya. Irrational stated preferences: a quantitative and qualitative investigation. *Health Economics*, 14(3):307–322, 2005.

D. Scanlon, M. Chernew, and J. Lave. Consumer health plan choice. *Annual Review of Public Health*, 18:507–528, 1997.

A. Scott. Eliciting gps' preferences fpr pecuniary and non-pecuniary job characteristics. *Journal of Health Economics*, 20:329–347, 2001.

A. Scott. Giving things up to have more of others. the implications of limited substitutability in eliciting preferences for health and health care. Discussion paper 01/98, Health Economics Research Unit, University of Aberdeen, 1998.

F. Sloan. The demand for higher education: the case of medical school applicants. *Journal of Human Resources*, 6(4):466–489, 1971.

K. Train. *Discrete Choice Models with Simulation*. Cambridge: University Press, 2003.

C. Ubach, A. Scott, F. French, M. Awramenko, and G. Needham. What do hospital consultants value about their job? a discrete choice experiment. *British Medical Journal*, 326:1432–1438, 2003.

S. Wordsworth, A. Skatun, A. Scott, and F. French. Preferences for general practice jobs: a survey of principals and sessional gps. *British Journal of General Practice*, 54(507):740–746, 2004.

P. Zweifel. Supplier-induced demand in a model of physician behavior. In J. Van der Gaag and M. Perlman, editors, *Health, Economics and Health Economics*. North-Holland Publishing Co., Amsterdam, 1981.

P. Zweifel, H. Telser, and S. Vaterlaus. Consumer resistance against regulation: the case of health care. *Journal of Regulatory Economics*, 29(3):319–332, 2006.

Appendix

Attributes	**Dummy-Coded**	**Effects-Coded**
	Model A R.E.Logit	**Model B R.E.Logit**
Shared Decision Making	-0.590**	-0.0839
	(0.277)	(0.164)
Critical Incident Reporting	-0.282	0.224*
	(0.233)	(0.136)
Guidelines	-1.153***	-0.647***
	(0.236)	(0.146)
Quality Circles	0.156	0.0563
	(0.293)	(0.181)
Resource Pooling	0.142	0.0430
	(0.173)	(0.119)
Working Hours	-0.215	-0.215
	(0.436)	(0.436)
Days on Call	-0.00286	-0.00286
	(0.0253)	(0.0253)
Fixed Salary	-0.870***	-0.279*
	(0.235)	(0.154)
Partial Budgetary Responsibility	-0.881***	-0.290*
	(0.283)	(0.175)
Capitation	-0.612***	-0.0216
	(0.233)	(0.148)
Workshop No.7	0.790*	0.395*
	(0.446)	(0.223)
Income	0.000392***	0.000392***
	(2.89e-05)	(2.89e-05)
Curr-Inc	-5.71e-05***	-5.71e-05***
	(2.14e-05)	(2.14e-05)
Urban	-0.0499	-0.0250
	(0.284)	(0.142)
West&South	-0.211	-0.106
	(0.309)	(0.154)
Constant	0.204	-0.528
	(0.525)	(0.405)
$ln(\sigma_u^2)$	0.583***	0.583***
	(0.207)	(0.207)
Log-likelihood at convergence	-688.748	-688.748
Observations: 1586		
Number of GPs: 148		

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Models A and B with socioeconomic attributes included

Working Papers of the Socioeconomic Institute at the University of Zurich

The Working Papers of the Socioeconomic Institute can be downloaded from http://www.soi.uzh.ch/research/wp_en.html

0912 Simulating WTP Values from Random-Coefficient Models, Maurus Rischatsch, July 2009, 6 p.

0911 Physician dispensing and the choice between generic and brand-name drugs – Do margins affect choice?, Maurus Rischatsch, Maria Trottmann, July 2009, 15 p.

0910 GPs' preferences: What price fee-for-service?, Peter Zweifel, Maurus Rischatsch, Angelika Brändle, July 2009, 21 p.

0909 Social Mobility and Preferences for Income Redistribution: Evidence from a Discrete Choice Experiment, Ilja Neustadt, Peter Zweifel, July 2009, 31 p.

0908 Robust estimation of zero-inflated count models, Kevin E. Staub, Rainer Winkelmann June 2009, 22 p.

0907 Competitive Screening in Insurance Markets with Endogenous Wealth Heterogeneity, Nick Netzer, Florian Scheuer, April 2009, 28 p.

0906 New Flight Regimes and Exposure to Aircraft Noise: Identifying Housing Price Effects Using a Ratio-of-Ratios Approach, Stefan Boes, Stephan Nüesch, April 2009, 40 p.

0905 Patents versus Subsidies – A Laboratory Experiment, Donja Darai, Jens Großer, Nadja Trhal, March 2009, 59 p.

0904 Simple tests for exogeneity of a binary explanatory variable in count data regression models, Kevin E. Staub, February 2009, 30 p.

0903 Spurious correlation in estimation of the health production function: A note, Sule Akkoyunlu, Frank R. Lichtenberg, Boriss Siliverstovs, Peter Zweifel, February 2009, 13 p.

0902 Making Sense of Non-Binding Retail-Price Recommendations, Stefan Bühler, Dennis L. Gärtner, February 2009, 30 p.

0901 Flat-of-the-Curve Medicine – A New Perspective on the Production of Health, Johnnes Schoder, Peter Zweifel, January 2009, 35 p.

0816 Relative status and satisfaction, Stefan Boes, Kevin E. Staub, Rainer Winkelmann, December 2008, 11 p.

0815 Delay and Deservingness after Winning the Lottery, Andrew J. Oswald, Rainer Winkelmann, December 2008, 29 p.

0814 Competitive Markets without Commitment, Nick Netzer, Florian Scheuer, November 2008, 65 p.

0813 Scope of Electricity Efficiency Improvement in Switzerland until 2035, Boris Krey, October 2008, 25 p.

0812 Efficient Electricity Portfolios for the United States and Switzerland: An Investor View, Boris Krey, Peter Zweifel, October 2008, 26 p.

0811 A welfare analysis of "junk" information and spam filters; Josef Falkinger, October 2008, 33 p.

0810 Why does the amount of income redistribution differ between United States and Europe? The Janus face of Switzerland; Sule Akkoyunlu, Ilja Neustadt, Peter Zweifel, September 2008, 32 p.

0809 Promoting Renewable Electricity Generation in Imperfect Markets: Price vs. Quantity Policies; Reinhard Madlener, Weiyu Gao, Ilja Neustadt, Peter Zweifel, July 2008, 34p.

0808 Is there a U-shaped Relation between Competition and Investment? Dario Sacco, July 2008, 26p.

0807 Competition and Innovation: An Experimental Investigation, May 2008, 20 p.

0806 All-Pay Auctions with Negative Prize Externalities: Theory and Experimental Evidence, May 2008, 31 p.

0805 Between Agora and Shopping Mall, Josef Falkinger, May 2008, 31 p.

0804 Provision of Public Goods in a Federalist Country: Tiebout Competition, Fiscal Equalization, and Incentives for Efficiency in Switzerland, Philippe Widmer, Peter Zweifel, April 2008, 22 p.

0803 Stochastic Expected Utility and Prospect Theory in a Horse Race: A Finite Mixture Approach, Adrian Bruhin, March 2008, 25 p.

0802 The effect of trade openness on optimal government size under endogenous firm entry, Sandra Hanslin, March 2008, 31 p.

0801 Managed Care Konzepte und Lösungsansätze – Ein internationaler Vergleich aus schweizerischer Sicht, Johannes Schoder, Peter Zweifel, February 2008, 23 p.

0719 Why Bayes Rules: A Note on Bayesian vs. Classical Inference in Regime Switching Models, Dennis Gärtner, December 2007, 8 p.

0718 Monoplistic Screening under Learning by Doing, Dennis Gärtner, December 2007, 29 p.

0717 An analysis of the Swiss vote on the use of genetically modified crops, Felix Schläpfer, November 2007, 23 p.

0716 The relation between competition and innovation – Why is it such a mess? Armin Schmutzler, November 2007, 26 p.

0715 Contingent Valuation: A New Perspective, Felix Schläpfer, November 2007, 32 p.

0714 Competition and Innovation: An Experimental Investigation, Dario Sacco, October 2007, 36p.

0713 Hedonic Adaptation to Living Standards and the Hidden Cost of Parental Income, Stefan Boes, Kevin Staub, Rainer Winkelmann, October 2007, 18p.

0712 Competitive Politics, Simplified Heuristics, and Preferences for Public Goods, Felix Schläpfer, Marcel Schmitt, Anna Roschewitz, September 2007, 40p.

0711 Self-Reinforcing Market Dominance,
Daniel Halbheer, Ernst Fehr, Lorenz Goette, Armin Schmutzler, August 2007, 34p.

0710 The Role of Landscape Amenities in Regional Development: A Survey of Migration, Regional Economic and Hedonic Pricing Studies,
Fabian Waltert, Felix Schläpfer, August 2007, 34p.

0709 Nonparametric Analysis of Treatment Effects in Ordered Response Models,
Stefan Boes, July 2007, 42p.

0708 Rationality on the Rise: Why Relative Risk Aversion Increases with Stake Size, Helga Fehr-Duda, Adrian Bruhin, Thomas F. Epper, Renate Schubert, July 2007, 30p.

0707 I'm not fat, just too short for my weight – Family Child Care and Obesity in Germany, Philippe Mahler, May 2007, 27p.

0706 Does Globalization Create Superstars?,
Hans Gersbach, Armin Schmutzler, April 2007, 23p.

0705 Risk and Rationality: Uncovering Heterogeneity in Probability Distortion,
Adrian Bruhin, Helga Fehr-Duda, and Thomas F. Epper, July 2007, 29p.

0704 Count Data Models with Unobserved Heterogeneity: An Empirical Likelihood Approach, Stefan Boes, March 2007, 26p.

0703 Risk and Rationality: The Effect of Incidental Mood on Probability Weighting, Helga Fehr, Thomas Epper, Adrian Bruhin, Renate Schubert, February 2007, 27p.

0702 Happiness Functions with Preference Interdependence and Heterogeneity: The Case of Altruism within the Family, Adrian Bruhin, Rainer Winkelmann, February 2007, 20p.