University of Zurich

Socioeconomic Institute
Sozialökonomisches Institut

Working Paper No. 1002

Preferences for Health Insurance in Germany and the Netherlands – A Tale of Two Countries

Peter Zweifel, Karolin Leukert, Stephanie Berner

March 2010

Socioeconomic Institute
University of Zurich

Working Paper No. 1002

Preferences for Health Insurance in Germany and the Netherlands – A Tale of Two Countries

March 2010

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

Karolin Leukert
E-mail: karolin.leukert@polynomics.ch

Stephanie Berner
E-mail: stephanie.berner@polynomics.ch

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

Preferences for Health Insurance in Germany and the Netherlands – A Tale of Two Countries*

by

Peter Zweifel, pzweifel@soi.uzh.ch
Karolin Leukert, karolin.leukert@polynomics.ch
Stephanie Berner, stephanie.berner@polynomics.ch

This version, Dez. 2009

Abstract

This contribution contains an international comparison of preferences. Using two Discrete Choice Experiments (DCE), it measures willingness to pay for health insurance attributes in Germany and the Netherlands. Since the Dutch DCE was carried out right after the 2006 health reform, which made citizens explicitly choose a health insurance contract, two research questions naturally arise. First, are the preferences with regard to contract attributes (such as Managed-Care-type restrictions of physician choice) similar between the two countries? Second, was the information campaign launched by the Dutch government in the context of the reform effective in the sense of reducing status quo bias? Based on random-effects Probit estimates, these two questions can be answered as follows. First, while much the same attributes have positive and negative willingness to pay values in the two countries, their magnitudes differ, pointing to differences in preference structure. Second, status quo bias in the Netherlands is one-half of the German value, suggesting that Dutch consumers were indeed made to bear the cost of decision making associated with choice of a health insurance contract.

Keywords: Preference measurement, Willingness to pay, Health insurance, Discrete Choice Experiments, Health reform, Germany, Netherlands

JEL codes: C25, D12, I18

* The authors would like to acknowledge financial support by the Bertelsmann Foundation. Helpful suggestions and criticisms came from Stefan Felder (D-Essen) and participants of the 38th Ottobeuren Seminar.

1 Introduction and motivation

Governments in industrial countries have been trying to respond to the raising cost of health care by modifying health insurance (copayments, bonus options for new claims) or changing the provision of health care (Managed Care). However, it is far from clear whether citizens are ready to accept these changes. If they conceive e.g. Managed Care as constraining their choice of physician, compensation must be offered to gain their acceptance. In insurance-based systems, observed past choices provide little guidance because they are distorted by regulated contributions to health insurance, while in National Health Service-type systems, medical care has a tax price that is the same at a given income level.

In this situation, experimental evidence concerning citizens' preferences may be of value to avoid costly mistakes by health insurers and policy makers. The present contribution purports to report on so-called market experiments of the Discrete Choice (DCE) type in two insurance-based countries, Germany and the Netherlands. It should be of interest for at least three reasons. First, international comparisons of preferences are rare. Second, while the two populations are not too dissimilar culturally, German health policy has been characterized by new laws and regulations that have increased uncertainty on the part of patients (Böcken et al., 2005). By way of contrast, in the Netherlands a major pro-competitive reform was enacted in 2006, accompanied by a major information campaign designed to help citizens choose a health insurance contract. Third, the Dutch changes amount to an actual crossover between the two countries. The status quo in the Netherlands is gatekeeping by physicians (a variant of Managed Care), whereas consumers possibly prefer free choice of physician, which constitutes the status quo in Germany (where policy makers consider introducing Managed Care). Also, the Dutch population is familiar with a bonus for no claims reminiscent of auto liability insurance but might want to return to conventional health insurance with almost no copayment (Ministerie van Volksgezondheid, Welzijn en Sport, 2006), whereas such bonus options have been debated in Germany as a reform variant. Against this backdrop, this paper seeks to answer two questions.

Q1: Are preferences of German and Dutch consumers similar or dissimilar with regard to attributes of health insurance?

Q2: Did the information campaign launched by the Dutch government in the context of the 2006 reform have an effect?

This paper is organized as follows. Section 2 is devoted to the theory underlying DCEs. Section 3 describes the DCE and its results for Germany, while Section 4 does the same for the Netherlands. Section 5 concludes with a comparison of the two countries.

2 Theory underlying Discrete Choice Experiments

Respondents participating in a DCE are supposed to maximize (expected) utility. However, experimenters will never know all the determinants of individual utility, which therefore give rise to a certain randomness in observed choices (Thurstone, 1927). Therefore, the relevant theoretical basis is the random utility model developed by McFadden (1974, 2001) and Manski (1977). Let V_{ij} denote the level of utility optimally reached by individual i in situation j. In keeping with Lancaster (1966), alternative j is associated with price p_j, a vector of attributes b_j per unit of good associated with the alternative, income y_i of the individual and his or her socioeconomic characteristics s_i. Finally, choices are also influenced by stochastic term ε_{ij} that varies between individuals and alternatives. Indirect utility is thus given by

$$V_{ij} = v\left(p_j, b_j, y_i, s_i, \varepsilon_{ij}\right). \tag{1}$$

The standard assumption is that this utility can be split into a deterministic and a stochastic part, with $w(\cdot)$ containing the deterministic component,

$$v\left(p_j, b_j, y_i, c_i, \varepsilon_{ij}\right) = w\left(p_j, b_j, y_i, s_i\right) + \varepsilon_{ij}. \tag{2}$$

Since for the experimenter decisions contain a stochastic element, all that can be stated is a probability P_{ij} of individual i choosing alternative j rather than alternative l. Since alternative j must by assumption yield a utility at least as great as any other alternative l, one has

$$P_{ij} = Pr\left[w\left(p_j, b_j, y_i, s_i\right) + \varepsilon_{ij} \geq w\left(p_l, b_l, y_i, s_i\right) + \varepsilon_{il}, \forall l \neq j \right]. \tag{3}$$

Rearranging yields

$$P_{ij} = Pr\left[\varepsilon_{il} - \varepsilon_{ij} \leq w\left(p_j, b_j, y_i, s_i\right) - w\left(p_l, b_l, y_i, s_i\right), \forall l \neq j \right]. \tag{4}$$

The probability of choosing alternative j rather than l therefore amounts to the probability that the stochastic difference ($\varepsilon_{il} - \varepsilon_{ij}$) is dominated by the systematic difference in utilities ($w_{ij} - w_j$). This condition however can only be related to observable choices if ($\varepsilon_{il} - \varepsilon_{ij}$) follows a distribution law. The major alternatives are the logistic and the normal. Since the normal distribution is subject to less restrictive assumptions (Train 2003, ch. 7; Greene 2000, ch. 19; Ben-Akiva and Lerman 1985, ch. 3), this is the preferred variant (Probit model).

In the course of the experiment, every participant makes several choices. Therefore, observations are of the panel type, a fact that is reflected in the specification of the error term. Writing the difference between the two error terms as $\vartheta_{ij} = \varepsilon_{il} - \varepsilon_{ij}$, the so-called random effects specification reads (Johnson and Desvousges, 1997),

$$\vartheta_{ij} = \upsilon_i + \eta_{ij}. \tag{5}$$

In this equation, υ_i denotes the individual-specific component, which remains the same for an individual in the course of the experiment. By way of contrast, η_{ij} can vary between individuals *i* and choice scenarios *j*.

The deterministic part *w*(·) of the utility function usually is assumed to be linear and hence additively separable (Johnson and Desvousges, 1997; Ryan and Gerard, 2003),

$$w\left(p_j, b_j y_i, s_i\right) = \gamma_0 + \sum_{k=1}^{K} \gamma_k b_{jk} + \gamma_p p_j + \gamma_y y_i + \gamma_s s_i, \tag{6}$$

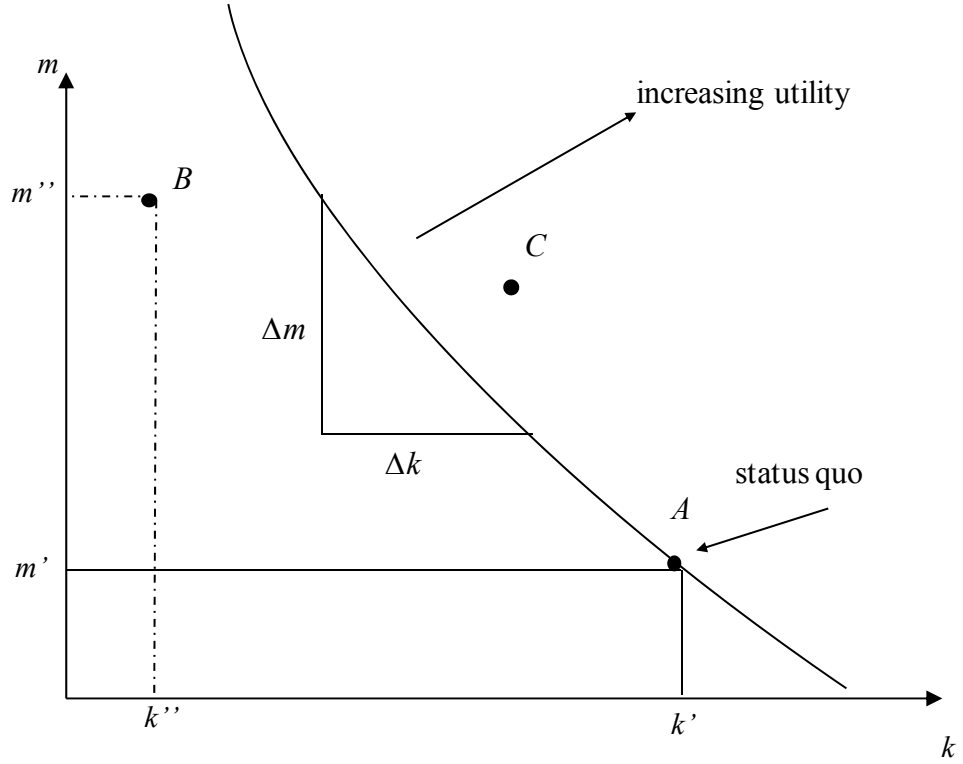
with $(\gamma_k, \gamma_p, \gamma_y, \gamma_s)$ denoting the parameters belonging to the arguments of the utility function. In particular, γ_k denotes the marginal utility of product attribute *k*.

Note the restrictiveness of this formulation, stating that all respondents have the same additively separable function *w*(·). Since the contribution paid for health insurance constitutes an attribute as well, is also true that the marginal loss of utility due to an increased contribution must be the same for all individuals, independently of their income. Such an assumption is deemed unrealistic because usually marginal utility of income is assumed to decrease in income. However, socioeconomic differences in marginal utility of attributes can be made part of the specification by complementing the function above with interaction terms of the type $\delta_k \cdot \left(b_{j_k} y_i\right)$. Partial differentiation of *w*(·) w.r.t. b_{jk} then results in $\gamma_k + \delta_k y_i$. For example, if $\gamma_k > 0$ and $\delta_k < 0 << \gamma_k$, marginal utility of attribute *k* is positive but decreases as a function of income.

In the course of the experiment, participants need to trade off between the different attributes of a scenario. As always, their preference structure is reflected by the marginal rate of substitution (*MRS*) between two attributes *k* and *m*, given by the ratio of the two respective marginal utilities (dropping subscript *i* for simplicity),

$$MRS_{k,m} = -\frac{\partial v / \partial b_k}{\partial v / \partial b_m}. \tag{7}$$

Figure 1: Marginal rate of substitution between two attributes



This trade-off and its experimental measurement are illustrated by Figure 1. The point of departure is the status quo, symbolized by point *A*, with much (*k'*) of attribute *k* and little (*m'*) of attribute *m*. Now the respondent is faced with alternative *B*, with only $k'' < k'$ of attribute *k*, but $m'' > m'$ of attribute *m* in return. If the respondent prefers the status quo, it must have higher utility than the alternative. This means that *B* lies below the indifference curve through *A*, causing the respondent to stay with the status quo. However, another alternative given by point *C* would be preferred to the status quo. Clearly, through repeated choices, the indifference curve can be interpolated, with $\Delta m/\Delta k$ denoting the marginal rate of substitution *MRS* between the two attributes.

Now redefine attribute *m* as the net income after having paid the price for the good (here, the premium for the health insurance contract). By partially differentiating the indirect utility function with regard to the price attribute, one therefore obtains the (negative of) the marginal utility of income. The *MRS* then indicates how much income an individual is prepared to sacrifice in order to obtain more of attribute *k*. This amounts to the marginal willingness to pay for attribute *k,* measured in money (Louviere et al. 2000, ch. 3).

2 The Discrete Choice Experiment in Germany

The choice of relevant attributes describing a health insurance contract is far from clear. However, in Germany the policy debate had been revolving about the following attributes, which also turned out to be 'important' in a qualitative pretest (see Table 1).

(1) **Amount of physician choice**. Here, the status quo is free physician choice. One alternative is a physician list established by the health insurer, based on cost and quality criteria. A second alternative is gatekeeping, meaning that a primary care physician must be contacted first in the event of illness. It is only then that the patient can choose a specialist. The third, most restrictive alternative is gatekeeping combined with a list of specialists participating in a network. Again, the gatekeeping physician must be contacted first; in addition however, referrals can only be made to other network physicians (who must take part in quality assurance meetings and continued education). In total, this attribute thus has four levels.

(2) **Second opinion**. Here, the status quo requires patients to come up with 10 Euro per quarter for every additional physician they contact unless referred by the treating physician. In the alternative, one second opinion per quarter is free of charge. This attribute has two levels.

(3) **Additional services or information provided by health insurers**. The status quo is no particular services or information provided. However, when insurers are to offer contracts with new ways of providing care, consumers' demand for information quite likely increases. Therefore, the alternative scenario provides for a qualified person available on the telephone 24 hours per day for helping to organize medial care and to inform about the seriousness of symptoms. Again, this attribute has two levels.

(4) **Incentives**. Since the insured do not have to fully bear the financial consequences of an illness, they might be tempted to skim on preventive effort or opt for the more costly therapy [Zweifel et al. (2009) ch. 6]. The status quo is characterized by the absence of any measures designed to counteract these moral hazard effects. A first alternative is a bonus option for no claims. If no health care services (except recommended preventive and screening services) are utilized during a year, there is a premium rebate of 500 Euro. The second alternative is a yearly deductible of 500 Euro, again with the exceptions just mentioned. Third, an insured who proves to have

performed preventive activities recommended by the insurer would obtain a bonus such as reimbursement of fees or a free week-end at a spa.

(5) **Increase or decrease of the annual health insurance contribution**. Participants were asked to check their pay schedule in order to calculate their personal share of the total contribution in Euro. The alternatives were increases and decreases of 200, 300, 400, and 500 Euro annually. The higher amounts seem unrealistic; however, they need to be set in a way that respondents sometimes move away from the status quo, generating information about their preferences. In total, this attribute has eight levels.

Table 1: Status quo quo card

Your current policy	
1. Amount of physician choice	Unrestricted
2. Second opinion	10 Euro fee without a referral
3. Additional services provided by insurer	No special services or information provided
4. Incentives	No special incentives
5. Health insurance contribution	Your current annual contribution in Euro ___

These five attributes and their levels combine to form scenarios that can be compared to the status quo. There is a total of 512 (= $4^2 * 2^2 * 8$) scenarios, too many for an experiment. Their number was reduced using a so-called optimal design (Carlsson and Martinsson, 2003). The resulting 24 scenarios were split up in random order into three sets with eight decisions each. Table 2 contains an example of a decision card. The DCE was fielded in September 2005, involving around 1,000 individuals of age 25 and older, all members of statutory health insurance. Subscribers to private health insurance were excluded because different product attributes would have been relevant to them.

The typical MC attributes (physician list, gatekeeping, network) are hypothesized to be associated with losses of utility on the part of consumers (see the negative entries in the column, 'Expected sign'). And indeed, the three coefficients are all negative. Conversely, a second opinion provided free of charge and additional services provided by the health insurer are valued positively, as predicted

Table 2: Example of a decision card

Alternative 1	
Amount of physician choice	Physician list
Second opinion	10 Euro fee without referral
Additional services provided by insurer	Patient counseling provided by insurer
Incentives	Bonus for preventive behavior
Increase/decrease of health insurance contribution	Reduction by 500 Euro annually
I opt for this alternative	□
I opt for my current policy	□

The following two attributes, bonus for no claim and deductible, are of particular interest. One could argue that a bonus for no claims amounting to 500 Euro exposes the insured to the same risk as a fixed deductible of 500 Euro because they will end up paying the first 500 Euro out of pocket in both cases. However, this argument overlooks the fact that a bonus option permits consumers to separate two losses in time that occur simultaneously under the deductible, viz. the health loss and the financial loss caused by the cost of medical care. With a deductible, these two losses are perfectly correlated during a quarter (say). With a bonus option, they are separated in time because consumers can sacrifice their bonus to obtain full coverage, shifting the financial loss to later in the guise of a higher premium [Zweifel (1992), ch. 3]. Indeed, Table 3 shows that respondents valued the bonus option favorably, while resisting a deductible of the same amount. However, they are also interested in a bonus for preventive behavior. The price attribute has a negative coefficient as predicted and is of very high statistical significance.

The constant is worth commenting. If the core model were completely specified, it should be zero because the attributes included account fully for the difference in utility between the status quo and the respective alternative – a rather unlikely event. The negative value of the constant points to status quo bias, i.e. left-out determinants of utility (in the present context, notably the cost of decision making) that cause the alternative to be valued less highly ceteris paribus. Note that Table 3 contains two estimates. As shown by Bech and Gyrd-Hansen (2005), the constant cannot directly be interpreted as status quo bias when dummy-coded attributes are present. Preferences with regard to the status quo values of these attributes are absorbed in the constant in this case. To solve this problem, Louviere et al. (2000) suggest assigning values {-1, 1} rather than {0,1} to these attributes. While this purges the estimated

constant from influences due to preferences for the status-quo level of binary-coded attributes, estimated Probit coefficients are halved. To reflect the impact of choice, they thus need to be doubled. More generally, effects-coded slope coefficients can be transformed into binary-coded ones [Bech and Gyrd-Hansen (2005); Zweifel et al. (2009)].

As a final comment on Table 3, note that the estimated marginal effects are reasonable. For example, a physician list lowers the probability of changing in favor of the alternative by an estimated 14 percentage points. Having to first visit a gatekeeping physician of one's choice is a far less stringent restriction. It is associated with a probability reduction of 5.3 percentage points only. Having to sign up with a physician network comprising also specialists has a lock-in effect, causing the probability to choose the alternative to drop by an estimated 8.9 percentage points. Compared to these attributes, a second opinion free of charge and extra services provided by the insurer have less impact (3.9 and 6.0 percentage points, respectively), as one would expect. The one astonishing result is that the bonus for preventive behavior apparently is as important (in absolute value) as a deductible of 500 Euro.

Using eq. (7), marginal willingness-to-pay (WTP) values can be calculated from the coefficients displayed in Table 3. The three attributes typical of MC options have all to be compensated (see Table 4). The maximum is attained for the physician list, amounting to 346 Euro per year, followed by participation in a physician network (203 Euro) and acceptance of gatekeeping (115 Euro). Obtaining a second opinion free of charge is valued at 80 Euro and extra services provided by the health insurer, at 123 Euro per year. A bonus for no claims triggers a positive WTP value, whereas a deductible amounting to the same value of 500 Euro would have to be compensated. The difference between the two is striking, amounting to no less than 605 Euro (= 359 – (–246)). Finally, the bonus for preventive effort is valued at 203 Euro annually.

Conclusion 1: In the German DCE, there is clear evidence that respondents value health insurance attributes in a way one would expect from economic considerations.

Choices were analyzed using the Probit model, with the random effects specification described in eq. (5). The only explanatory variables are the (changes in) attributes, making up the so-called core model (see Table 3).

Table 3: Estimation results for the core model (attributes only), Germany

Attribute	Exp. sign	Coefficient		Std. err.	z value	Marg. eff.
Physician list	-	-0.6957	***	0.0623	-11.17	-0.1402
Gatekeeping	-	-0.2320	***	0.0585	-3.97	-0.0528
Network	-	0.4092	***	0.0594	-6.88	-0.0890
Second opinion	+	0.1607	***	0.0455	3.53	0.0387
Services insurer	+	0.2468	***	0.0438	5.64	0.0597
Bonus no claims	+	0.7230	***	0.0603	12.00	0.1991
Deductible	-	-0.4947	***	0.0661	-7.50	-0.1075
Bonus prev. beh.	+	0.4106	***	0.0796	5.15	0.1120
Contribution	-	-0.0020	***	0.0001	-30.59	-0.0005
Constant[a)]	0	-1.0073	***	0.0745	-13.53	
Constant[b)]	0	-0.9785	***	0.0438	-24.24	

$\sigma_\upsilon = 0.9462$ $\rho = 0.4724$

Log likelihood: -3,074

χ^2 (0) = 742.57, Prob > χ^2 = 0.0000

n = 7,155

*** Coefficient different from zero with error probability < 1 percent
[a)] Binary coding
[b)] Effects coding (see text)

Table 4: Marginal willingness-to-pay values for attributes (Germany), Euro/year

Attribute	WTP	Significance	Std. Error
Physician list	-346	***	31.04
Gatekeeping	-115	***	29.28
Network	-203	***	29.80
Second opinion	80	***	22.33
Service insurer	123	***	22.32
Bonus no claims	359	***	30.04
Deductible	-246	***	33.51
Bonus preventive behavior	203	***	37.87
Constant[a)]	-500	***	36.49
Constant[b)]	-486	***	21.49

*** WTP different from zero with an error probability of < 1 percent. Standard errors calculated using the delta method
[a)] Binary coding
[b)] Effects coding

In the following, status quo bias will be analyzed in greater detail because of its importance for policy. From Table 4, one can conclude that Germans are unwilling to move away from the status quo unless compensated by at least 486 Euro on average (effects coding). However, this amount varies with socioeconomic characteristics. The figures of Table 5 are derived from a comprehensive model that includes interaction terms in the Probit equation as described below equation (6). Using equation (7) again, one can calculate WTP estimates, with all other characteristics set at their median sample values. The values shown are effects-coded; the binary-coded ones are documented in Table A1 of the Appendix.

While there is no recognizable gender difference, status quo bias does significantly increase with age, reaching an overall maximum of 776 Euro among those above 59 years. Somewhat surprisingly, education does not seem to have a significant influence. As could be expected however, respondents who subjectively feel in bad health require particularly high compensation for moving away from the status quo, as is true of chronic patients. This is remarkable because so-called demand management programs focus on chronically ill persons, who are alleged to value them because of better coordination of therapy. This expectation is not borne out; to the contrary, chronically ill respondents exhibit an especially marked preference for the status quo. These findings also hold for binary-coded estimates (see Table A1).

Conclusion 2: The German DCE points to a marked status quo bias, which is especially marked among the chronically ill and respondents with a bad health status.

Table 5: Group-specific status quo bias (effects coding), Germany

	WTP values for changing contract (effects coding)	
	Value (in Euro)	**Std. error**
Women	-492***	30.05
Men	-477***	31.79
Prob > chi2/(chi2)[a)]	*0.7227/(0.13)*	
Age < 43 [b)]	-360***	27.38
Age 43 – 59 [b)]	-463***	35.23
Age > 59 [b)]	-776***	71.73
Prob > chi2/(chi2) [a)]	*0.0000/(30.64)*	
Education low [c)]	-514***	32.02
Education medium [c)]	-489***	44.62
Education high [c)]	-514***	41.38
Prob > chi2/(chi2) [a)]	*0.2256/(2.98)*	
Healthy (subjective)	-366***	30.28
Ill (subjective)	-556***	30.32
Prob > chi2/(chi2) [a)]	*0.0000/(19.53)*	
Non-chronic	-428***	22.88
Chronic	-618***	52.08
Prob > chi2/(chi2) [a)]	*0.0001/(14.54)*	

[a)] Group-specific values differ with an error probability = Prob > chi2 (chi2 value after the slash)

[b)] Each of the three age groups contains about 33 percent of observations

[c)] Individuals with 9, 12, and 18 years of education, respectively

*** (**, *) WTP values (compensations asked, respectively) different from zero with error probability of > 1 (> 5, > 10) percent

3 The Discrete Choice Experiment in the Netherlands

A second DCE was performed in the Netherlands in May 2006, after a major reform. By March 2006, every citizen had to have explicitly chosen a health insurance contract, with a great deal of information provided by the government through flyers and the media. Therefore, respondents had borne the (lowered) cost of decision making associated with the choice of a health insurance policy. While most of the attributes were the same as in Germany, two adjustments had to be made. First, in the pretest a second opinion free of charge turned out to be far less important than expeditious (defined to be within four weeks in the DCE) access to hospital care, waiting for hospital treatment being a hotly debated topic in the Netherlands. Second, the status quo for physician choice and incentives had to be defined differently. Already before the reform of 2006, physician choice had been constrained in that

patients were obliged to contact a gatekeeping physician first. Therefore, one of the alternatives in the experiment became free physician choice. Moreover, there was already a bonus for no claims under the status quo, attaining a maximum of 255 Euro annually. Some 760 respondents took part in the main survey, of which only five never made a decision (in comparison, in Germany 40 out of 1,000). The Probit estimates are displayed in Table 6.

The three variables relating to physician choice are highly significant and have the predicted sign. Guaranteed access to hospital care within four weeks is positively valued as predicted, as are additional services provided by the health insurer. However, the transition from the existing bonus option for no claims worth 255 Euro to one worth 500 Euro does not trigger a positive WTP. What is strongly resisted is a deductible amounting to 500 Euro annually. A bonus for preventive behavior is valued positively and an increase in the annual contribution, negatively (as expected).

Table 6: Estimation results for the core model (contract attributes only), Netherlands

	Exp. sign	Coefficient		Std. err.	z value	Marg. eff.
Free choice of physician [a)]	+	0.2278	***	0.0616	3.70	0.0586
Physician list [a)]	-	-0.3970	***	0.0670	-5.92	-0.0875
Network [a)]	-	-0.2207	***	0.0645	-3.42	-0.0509
Hospital access	+	0.2030	***	0.0501	4.04	0.0494
Service insurer	+	0.1626	***	0.04780	3.39	0.0397
No bonus option	-	0.0212		0.0586	0.36	0.0052
Deductible	-	-1.1824	***	0.0718	-16.47	-0.2256
Bonus preventive beh.	+	0.0006		0.0808	0.01	0.0001
Contribution	-	-0.0029	***	0.0001	-27.53	-0.0007
Constant[b)]	0	-0.7435	***	0.0753	-9.87	
Constant[c)]	0	-0.9483	***	0.0414	-22.92	

$\sigma_{\upsilon} = 0{,}8258 \quad \rho = 0.4055$

Log likelihood: -2.541,09

$\chi^2(0) = 11{,}179{,}10$. Prob > $\chi^2 = 0.0000$

$n = 5{,}976$

[a)] Status quo is gatekeeping, [b)] Binary coding [c)] Effects coding

*** Coefficient different from zero with error probability < 1 percent

The estimated marginal effects are reasonable. Free choice of physician (recall that the status quo in the Netherlands is gatekeeping) is associated with a 5.9 percentage point increase in

the probability of choosing the alternative. The transition from gatekeeping to a physician list established by the health insurer serves to decrease this probability by 8.8 percentage points. Assuming local constancy of MRS, a change from free physician choice to such a physician list can be estimated to lower choice probability by 14.7 (= 5.9 + 8.8) percentage points. A change to a physician network would have a somewhat smaller lowering effect, of 11.0 (= 5.9 + 5.1) percentage points. Access to the hospital within four weeks is associated with an increase of 4.9 percentage points in choice probability, followed by additional services provided by insurers (4.0 percentage points). While increasing the bonus for no claims from 255 to 500 Euro does not affect choice probability, the most striking result is that an annual deductible amounting to 500 Euro would cause the likelihood of accepting the alternative to drop by no less than 23 percentage points.

Again, WTP values can be derived from the estimated coefficients. Concentrating on the Dutch values (see Table 7; a comparison with the German counterparts will follow in Section 4), one notes first that changing from gatekeeping to free choice of physician would trigger a WTP value of 79 Euro, while the change to a physician list would require compensation to the tune of 137 Euro per year. Again assuming local constancy of MRS, one would therefore estimate the transition from free physician choice to a physician list to require a compensation of 216 Euro (= 79 + 137) annually, compared to 155 Euro (= 79 + 76) for a transition to a physician network. These estimates make intuitive sense since a physician list constitutes the harshest restriction, followed by a physician network (with its potential lock-in effect) and followed by gatekeeping (the status quo in the Netherlands). Guaranteed hospital access is valued somewhat less, presumably because respondents take the comparatively low likelihood of hospitalization into account. Additional services provided by the health insurer is at the low end with 56 Euro per year, while increasing the bonus option to 500 Euro and the bonus for preventive behavior have no significant WTP values. By way of contrast, a 500 Euro deductible would have to be compensated by no less than 409 Euro to be accepted. Status quo bias amounts to an estimated 328 Euro (effects-coded).

Table 7: Marginal willingness-to-pay for attributes (derived from the core model), Netherlands

	Δ[a)]	WTP Netherlands	Std. error	WTP Germany[b)]	Std. error [b)]
Free Choice of physician		79***	21.52	-115***[c)]	29.28
Physician list	Δ	-137***	25.02	-346***	33.04
Network		-76***	22.09	-203***	29.80
Hospital access		70***	17.12	n.a.	n.a.
Second opinion		n.a.	n.a.	80***	22.33
Service insurer	Δ	56***	16.76	123***	22.32
Bonus option	Δ	7	20.25	359***[c)]	30.04
Deductible	Δ	-409***	27.37	-246***	33.51
Bonus for preventive behavior	Δ	0	27.95	203***	37.87
Constant[d)]	Δ	-256***	25.87	-500***	36.49
Constant[e)]	Δ	-328***	37.00	-486***	21.49

Figures in Euro per year
[a)] Difference between Germany and the Netherlands significant at the 5 percent level or better (see text for details)
[b)] Transferred from Table 4.
[c)] Attributes with different status quo in Germany. Instead of free choice of physician the WTP value for gatekeeping and is indicated in the table and instead of an increase the bonus for no claims from 255 to 500 Euro in the Netherlands the bonus in Germany amounts to 500 Euro.
[d)] Binary coding
[e)] Effects coding
*** WTP different from zero with an error probability of < 1 percent

In Table 8 group-specific estimates of status quo bias (effects-coded) are shown (see Table A2 for binary-coded ones). For the Netherlands, there is no evidence of a gender-specific difference but of an increase with age. Higher education does not go along with a change in status quo bias. However, those who feel subjectively ill require higher compensation for departing from the status quo.

Conclusion 3: The Dutch DCE involved attributes that are relevant to consumers, with the exception of an increased bonus option for no claims and a bonus for preventive behavior. The other estimated WTP values are in accordance with economic considerations.

Table 8: Group-specific status quo estimates, Netherlands compared to Germany (effects coding)

	WTP values for changing contract (effects coding)			
	Netherlands	**Std. error**	**Germany**[e)]	**Std. error**
Women	-306***	21.35	492***	30.05
Men	-353***	43.66	477***	31.79
Prob > chi2/(chi2)[a)]	*0.1507/(2.06)*		*0.7227/(0.13)*	
Age < 41 [b) e)]	-214***	19.80	-360***	27.38
Age 41 – 55	-324***	26.57	-463***	35.23
Age > 55	-536***	51.11	-776***	71.73
Prob > chi2/(chi2) [a)]	*0.0000/(38.83)*		*0.0000/(30.64)*	
Education low [c)]	-345***	32.14	-514***	32.02
Education medium [c)]	-365***	33.17	-489***	44.62
Education high [c)]	-290***	22.81	-514***	41.38
Prob > chi2/(chi2) [a)]	*0.1266/(4.13)*		*0.2256/(2.98)*	
Healthy (subjective)	-585***	129.43	-366***	30.28
Ill (subjective)	-378***	25.73	-556***	30.32
Prob > chi2/(chi2) [a)]	*0.0000/(23.00)*		*0.0000/(19.53)*	
Non-chronic	-290***	17.26	-428***	22.88
Chronic	-315***	36.79	-618***	52.08
Prob > chi2/(chi2) [a)]	*0.0009/(11.03)*		*0.0001/(14.51)*	

[a)] Group-specific values differ with an error probability = Prob > chi2 (chi2 value after slash)

[b)] Age groups are < 43, 43-59, and > 59 in the German sample to contain about 55 percent of observations

[c)] Individuals with 9, 12, and 18 years of education, respectively

*** (**, *) WTP values (compensations asked) with error probability of > 1 (>5, > 10) percent different from zero

4 Germany and the Netherlands compared

The comparison between the two countries is based on a joint dataset containing only overlapping attributes. Merging the two datasets can be justified in view of the very similar estimates obtained for the standard error of the estimate σ_υ and the coefficient of autocorrelation ρ, respectively (see Tables 3 and 6). A dummy variable taking on the value 1 if the observation relates to the Netherlands is interacted with the explanatory variables of the core model. The resulting estimates differ so slightly from those displayed in Tables 7 and 8 that they are not worth reporting separately. Table 7 shows the relative importance of product attributes in the Netherlands compared to Germany. A 'Δ' indicates that a difference is

statistically significant. Recall that WTP values for the Netherlands are measured as deviations from a counterfactual status quo 'free choice of physician'.

Thus, Dutch respondents would have to be compensated less for accepting a physician list created by health insurers than their German counterparts. It seems that they are already used to insurers having influence on physician choice. However, the transition to a physician network would have to be compensated to the same degree in the two countries. On the other hand, in the Dutch sample extra services provided by the health insurer are valued less than in the German counterpart. One of the most interesting differences is the assessment of a bonus for no claims. The Dutch sample exhibits no willingness to pay to increase this bonus from 255 to 500 Euro annually, whereas in the German sample there is a substantial WTP for adopting it. It may be that Dutch respondents made the experience in the past that saving the bonus is not so easy. With regard to the 500 Euro deductible, the Dutch appear to be more risk averse than the Germans in that they would have to be compensated by no less than 409 Euro, compared to 246 Euro in the German sample. And finally, a bonus for preventive behavior does not trigger any willingness to pay at all in the Dutch sample but is valued with a remarkable 203 Euro per year in Germany. Since the WTP values differ between the two samples, with those for the physician network as the only exception, one may draw

Conclusion 4: Question Q1 can be answered as follows. Whereas most of comparable attributes of a health insurance contract are valued the same qualitatively, almost all WTP values differ quantitatively, pointing to preference differences between the two countries.

It should be borne in mind, however, that the differences found can also be caused by differences in the status quo or in excluded non-overlapping attributes [the utility function may not be additively separable as assumed in equation (6)].

The last row of Table 7 provides a preliminary answer to the second question. In the Dutch sample, status quo bias amounts to between one-half (binary coding) and two-thirds (effects coding) of the German value. However, Table 8 indicates that the determinants of status quo have very much the same effects in the two countries. It increases with higher age and is higher among the subjectively ill and the chronically ill than among the others (no significance tests available for checking differences in gradients). On the other hand, neither gender nor education seem to matter in the two countries. In all, the evidence supports

Conclusion 5: The answer to question Q2 is that the information campaign launched by the Dutch government in 2006 may well have served to reduce status quo bias compared to Germany across all socioeconomic groups distinguished.

As a final piece of evidence, the standard errors shown in Table 8 can be compared. The majority of them are lower in the Dutch than in the German sample, although the Dutch DCE involved only 760 rather than 1,000 respondents. Given the same sample size, they should even be 13 percent higher, ceteris paribus [$(760/1{,}000)^{½} = 0.87$]. Apparently, the 2006 reform caused citizens to have borne the decision-making cost associated with opting for a particular health insurance contract by March 2006, just before the DCE was fielded. Of course, there is still the alternate explanation that the Dutch have more homogenous preferences with regard to health insurance than the Germans.

5 Conclusions

This contribution is one of the few that seek to compare preferences across national borders. The objective was to find out whether in spite of cultural similarities, the Dutch might value attributes of health insurance and provision of health care differently than the Germans. The instrument used for this comparison was two Discrete Choice Experiments (DCEs) performed in Germany (with no effective reform) and in the Netherlands right after the 2006 reform which made citizens explicitly choose their health insurance. Important contract attributes are valued in the same qualitative way by the two populations. Managed-Care-type features such as a physician list established by the health insurer, gatekeeping, and adherence to a physician network must be compensated in both populations. They would also have to be highly compensated to accept a yearly deductible of 500 Euro. However, bonuses for proved preventive effort and no claims are received favorably only in Germany, not in the Netherlands. Differences also arise with regard to the quantitative values. Notably, a 500 Euro deductible has to be compensated almost twice as much in the Netherlands than in Germany. Therefore, one first has to conclude that there is evidence of differences in the preference structure of the two populations. Second, however, there is a striking difference in terms of status quo bias, which clearly requires less compensation to be overcome in the Netherlands than in Germany. Therefore, the information campaign launched by the Dutch government in the context of the 2006 reform may well have been effective.

References

Bech, M. and D. Gyrd-Hansen (2005). Effects Coding in Discrete Choice Experiments, *Health Economics* 14, 1079-1083.

Ben-Akiva, M. und S. R. Lerman (1985). *Discrete Choice Analysis*. Cambridge, London: MIT Press.

Böcken, J. et al. (ED.) (2005). *Gesundheitsmonitor 2005. Die ambulante Versorgung aus Sicht von Bevölkerung und Ärzteschaft* (Health Monitor 2005. Ambulatory Care from the point of view of Consumers and Physicians). Gütersloh.

Carlsson, F. und P. Martinsson (2003). Design Techniques for Stated Preference Methods in Health Economics. *Health Economics* 12(7), 281-294.

Greene, W. H. (2000), Econometric Analysis. Upper Saddle River, New Jersey: Prentice Hall.

Johnson, R. F. und W. H. Desvouges (1997). Estimating Stated Preferences with Rated Pair Data: Environmental, Health, and Employment Effects of Energy Programs. *Journal of Environmental Economics and Management* 34, 79-99.

Lancaster, K. J. (1966). A New Approach to Consumer Theory. *Journal of Political Economy* 74(2), 132-157.

Louviere, J. J., D. A. Hensher und J. D. Swait (2000). *Stated Choice Methods*. Cambridge: University Press.

Manski, Charles F. (1977). The Structure of Random Utility Models. *Theory and Decision* 8, 229-254.

McFadden, D. (1974). Conditional Logit Analysis of Qualitative Choice Behavior. In: Zarembka, P. (Hrsg.). *Frontiers in Econometrics*. New York: Academic Press, 105-142.

McFadden, D. (2001). Economic Choices. *American Economic Review* 91(3), 351-378.

Ministerie van Volksgezondheid, Welzijn en Sport (2005). Health Insurance in the Netherlands. The New Health Insurance System from 2006 (www.minvws.nl), The Hague.

Ryan, M. and K. Gerard (2003). Using Discrete Choice Experiments to Value Health Care Programmes: Current Practice and Future Reflections. *Applied Health Economics and Health Policy* 2(1), 55-64.

Thurstone (1927). A Law of Comparative Judgement. Psychological Review 34, 273-289.

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

Wooldrige, J. M. (2003). Introductory Econometrics. Cincinnati, OH: South-Western.

Zweifel, P. (with O. Waser) (1992). *Bonus Options in Health Care*. Boston: Kluwer.

Zweifel, P., F. Breyer, and M. Kifmann (2009). Health Economics, 2nd ed. Boston: Springer.

Zweifel. P., M. Rischatsch, and A. Brändle (2009). GPs' Preferences: What Price Fee-For-Service? Submitted to: Health Economics.

Appendix

Table A1: Group-specific status quo bias (binary coding), Germany

	WTP values for changing contract (binary coding)	
	Value (in Euro)	**Std. error**
Women	-508***	50.05
Men	-483***	53.33
Prob > chi2/(chi2)[a)]	*0.7392/(0.11)*	
Age < 43 [b)]	-329***	50.13
Age 43 – 59 [b)]	-407***	58.98
Age > 59 [b)]	-940***	106.87
Prob > chi2/(chi2) [a)]	*0.0000/(27.70)*	
Education low [c)]	-590***	92.07
Education medium [c)]	-520***	43.86
Education high [c)]	-411***	74.72
Prob > chi2/(chi2) [a)]	*0.4642/(1.54)*	
Healthy (subjective)	-297***	54.05
Ill (subjective)	-609***	48.98
Prob > chi2/(chi2) [a)]	*0.0000/(18.95)*	
Non-chronic	-446***	39.72
Chronic	-641***	87.07
Prob > chi2/(chi2) [a)]	*0.0416/(4.15)*	

[a)] Group-specific values differ with an error probability = Prob > chi2 (chi2 value after the slash)

[b)] Each of the three age groups contains about 33 percent of observations

[c)] Individuals with 9, 12, and 18 years of education, respectively

*** (**, *) WTP values (compensations asked, respectively) different from zero with error probability of > 1 (> 5, > 10) percent

Table A2: Group-specific status quo estimates, Netherlands compared to Germany (binary coding)

	WTP values for changing contract (binary coding)			
	Netherlands	**Std. error**	**Germany** [e)]	**Std. error** [e)]
Women	-226***	34.65	-508***	50.05
Men	-292***	38.90	-483***	53.33
Prob > chi2/(chi2) [a)]	*0.2020/(1.63)*		*0.7392/(0.11)*	
Age < 41 [b) e)]	-162***	35.56	-329***	50.13
Age 41 – 55	-234***	42.63	-407***	58.98
Age > 55	-479***	70.97	-940***	106.87
Prob > chi2/(chi2) [a)]	*0.0559/(5.81)*		*0.0090/(27.70)*	
Education low [c)]	-212***	37.60	-590***	92.07
Education medium [c)]	-261***	50.87	-520***	43.86
Education high [c)]	-336***	51.46	-411***	74.72
Prob > chi2/(chi2) [a)]	*0.1521/(3.77)*		*0.4642/(1.54)*	
Healthy (subjective)	-164***	33.99	-297***	54.05
Ill (subjective)	-325***	38.33	-609***	48.98
Prob > chi2/(chi2) [a)]	*0.0017/(9.88)*		*0.0000/(18.95)*	
Non-chronic	-225***	28.67	-446***	39.72
Chronic	-351***	58.44	-641***	87.07
Prob > chi2/(chi2) [a)]	*0.0542/(3.71)*		*0.0416/(4.15)*	

[a)] Group-specific values differ with an error probability = Prob > chi2 (chi2 value after slash)

[b)] Age groups are < 43, 43-59, and > 59 in the German sample to contain about 33 percent of observations

[c)] Individuals with 9, 12, and 18 years of education, respectively

*** (**, *) WTP values (compensations asked) with error probability of > 1 (> 5, > 10) percent different from zero

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

1002 Preferences for Health Insurance in Germany and the Netherlands – A Tale of Two Countries, Peter Zweifel, Karolin Leukert, Stephanie Berner, March 2010, 22 p.

1001 Convex Treatment Response and Treatment Selection, Stefan Boes, January 2010, 28 p.

0920 Bounds on Counterfactual Distributions Under Semi-Monotonicity Constraints, Stefan Boes, December 2009, 38 p.

0919 Rotten Kids with Bad Intentions, Nick Netzer, Armin Schmutzler, December 2009, 38 p.

0918 Partial Identification of Discrete Counterfactual Distributions with Sequential Update of Information, Stefan Boes, December 2009, 37 p.

0917 How much do journal titles tell us about the academic interest and relevance of economic reserach? An empirical analysis, Felix Schläpfer, December 2009, 14 p.

0916 Fine Tuning of Health Insurance Regulation: Unhealthy Consequences for an Individual Insurer, Johannes Schoder, Michèle Sennhauser, Peter Zweifel, August 2009, 18 p.

0915 Capping Risk Adjustment?, Patrick Eugster, Michèle Sennhauser, Peter Zweifel, September 2009, 27 p.

0914 A Pharmaceutical Innovation: Is it Worth the Money? Whose Money?, Michèle Sennhauser, Peter Zweifel, September 2009, 22 p.

0913 Copula-based bivariate binary response models, Rainer Winkelmann, August 2009, 26 p.

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 Economic Well-Being, Social Mobility, and Preferences for Income Redistribution: Evidence from a Discrete Choice Experiment, Ilja Neustadt, Peter Zweifel, July 2009, revised January 2010, 33 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, revised January 2010, 37 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.