A NEW ROLE FOR CONSUMERS' PREFERENCES IN THE PROVISION OF HEALTHCARE

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In the present allocation of resources in healthcare, preferences of consumers as the ultimate financiers of healthcare services are judged to be of little relevance. This state of affairs is being challenged because the past decade has seen great progress in the measurement of preferences, or more precisely, willingness-to-pay (WTP) as applied to healthcare services. This article reports evidence on WTP of the Swiss population with regard to three hypothetical modifications of the drug benefit to be covered by social health insurance: delaying access to the most recent therapeutic innovations (among them, drugs) by two years in exchange for a reduction of the monthly premium; substituting original preparations by generics, again in return for a lowered premium; and the exclusion of preparations for the treatment of minor complaints from the drug benefit. Using discrete-choice experiments, WTP and its determinants are estimated. Average WTP for avoiding such a delay (which acts across the board) is much higher than for eschewing the exclusive use of generics (which are claimed to be largely equivalent to the original) or the retention of 'unimportant' drugs in the list of benefits – a rating predicted by economic theory. In addition, a great deal of preference heterogeneity between the French-speaking minority and the German-speaking majority was found, pointing to considerable efficiency losses caused by uniformity of social health insurance.

Introduction

More stringent regulation of the use of healthcare services constitutes an attempt to contain public healthcare expenditure (HCE). However, such restrictions usually go along with a loss of expected utility for the individual, whose freedom of choice is restrained in the event of illness. For a regulation to be potentially welfare enhancing, cost savings accruing to individuals have to be higher than utility losses. These losses differ if preferences are heterogeneous, therefore uniform regulation of healthcare services may be inefficient, causing welfare losses to society as a whole. However, health policy-makers almost never perform such cost–benefit comparisons. Their public focus is on cost, implying that a reduction of HCE is beneficial *per se*. By way of contrast, individuals presumably weigh the concomitant tax reduction (in the case of a National Health Service) or premium reduction (in the case of an insurance-based system) against their loss of expected utility. This argument prompts a very simple research question, viz. what is the amount of compensation necessary to overcome consumer resistance against more stringent regulation of healthcare?

The objective of this paper is to present evidence on the likely magnitude of compensation required in an insurance-based country whose citizens are accustomed to a great deal of choice in healthcare, similar to the United States. It reports on experiments involving the Swiss resident population that are designed to measure (in money terms) the loss of expected utility caused by potential restrictions of the drug benefit. The tool used is discrete-choice experiments (DCE), a novel approach to preference and willingness-to-pay measurement that is rapidly gaining acceptance. There are three main findings of this study:

1. A delayed access to innovative treatments and drugs requires as much as one-fourth of the present average insurance premium to be voluntarily accepted.
2. Restricting the drug benefit to generics (if available) or excluding drugs for minor illnesses need not be compensated at all on average.
3. There is strong evidence of preference heterogeneity, suggesting that uniform regulation of the provision of healthcare may impose a substantial efficiency loss on the population of even a small country such as Switzerland with its 7.2 million inhabitants.

The plan of this paper is as follows. In the second section, DCE are introduced as a tool for preference measurement. The third section informs about the design of the present experiment. The attributes of healthcare provision that are relevant to consumers must be identified and levels found that, while not deemed unrealistic, induce respondents to switch between the status quo and the alternatives proposed. Otherwise, nothing can be learned about their preferences. A description of the sample is also given. The fourth section contains the results. The starting point is a basic model that links respondents' change in utility simply to the attributes of the proposed alternatives. In a second step, socio-economic influences enter the picture, providing evidence of marked heterogeneity of preferences not only between language regions but also age and income groups. The final section presents the conclusions.

DCE as a tool for preference measurement

The method of choice for evaluating goods that are either public or not yet on the market is cost–benefit analysis. Rather than relying on the human capital approach, which is not compatible with standard microeconomics (see e.g. Zweifel and Breyer, 1997, chapter 2), researchers increasingly determine the benefit part of the analysis using willingness-to-pay

(WTP) estimates. Sometimes it is possible to infer these preferences from individual behaviour on the market. However, often recourse must be had to actually asking individuals about their WTP.

In health economics, stated preference methods such as discrete-choice experiments (DCE) have been increasingly used to measure benefits and WTP. Applications of DCE to the valuation of healthcare programmes have become numerous recently (see Ryan and Gerard, 2003, for an overview; see also Hanley *et al.*, 2003). There is also growing evidence showing DCE to be a reliable and valid preference elicitation technique (see e.g. Telser and Zweifel, 2006). In a DCE, individuals are given a choice between hypothetical commodities. From the choices respondents make between the goods differing in product attributes, researchers can derive the implicit trade-offs between these product attributes. This allows the computation of respondents' marginal utility for each product attribute. With the inclusion of a cost or price attribute, a money value can be calculated for each characteristic as well as for the entire good or programme.

The advantage of this approach over other stated preference methods such as, for example, the contingent-valuation method lies in its closeness to everyday decision-making. Instead of asking people more or less directly for their maximum WTP, they only have to choose between products differing in various attributes. This increased realism of DCE helps to avoid biases that occur in other stated preference methods (Ryan, 2004). Applications in health economics have been revolving around studies of WTP for therapies (Gyrd-Hansen and Søgaard, 2001; Merino-Castellò, 2003; Ryan and Wordsworth, 2000; San Miguel *et al.*, 2000; Telser and Zweifel, 2002) or specific hospital or physician services (Ryan and Hughes, 1997; Scott and Vick, 1999). DCE of the type presented here, i.e. dealing with the healthcare system as a whole, are rare, one exception being Gyrd-Hansen and Slothuus (2002).[1]

Description of the experiment

To elicit preferences of the Swiss residential population with regard to proposed changes in the healthcare system, a DCE was designed featuring hypothetical insurance contracts. Their attributes reflect the reforms that are debated at present by policy-makers. These contract attributes were pre-selected in expert sessions with representatives of the Swiss healthcare system and their relevance checked in a pre-test. The seven characteristics retained are listed in Table 1.

The possibilities considered are the following. Free choice of physician is restricted to a list of contract providers dressed up by the insurer (*PHYSLIST*). The list can be made up applying

Table 1: Product attributes and levels in the status quo and the proposed alternatives

Attribute	Labels	Levels[1]
List of contract providers	PHYSLIST PHYSCOST PHYSQUAL PHYSEFF	– Status quo: free choice of physician in the home canton – Providers selected by health insurers on the basis of: cost, quality, cost–quality (efficiency)
Centralisation of hospitals	HOSPITAL	– Status quo: existing hospitals – Closing of local hospitals
Long-term care	LTCARE	– Status quo: long-term care only partially covered – Coverage of long-term care, financed by those aged over 50
Premium	PREMIUM	– Reduction of the monthly premium by CHF10, 25, 60[2]
Attributes dealing with pharmaceuticals		
Innovation	INNOVATION	– Status quo: all treatment methods covered immediately following approval – Innovative therapies covered two years after approval
Generics	GENERICS	– Status quo: all drugs on the official list reimbursed – Generic version (cheapest product on the market) reimbursed only
Medication for minor illnesses	MINOR	– Status quo: all drugs on the official list reimbursed – Medications for minor diseases such as the common cold to be paid out-of-pocket

[1] Coding for the dummy variables: status quo = 0, alternative = 1.
[2] CHF1 = £0.45 at 2004 exchange rates.

different selection criteria, viz. cost, quality or efficiency, defined as the quality–cost ratio (*PHYSCOST, PHYSQUAL, PHYSEFF*). The number of hospitals available is reduced by closing small local hospitals in favour of larger centralised ones (*HOSPITAL*). Long-term care at present is only partially covered by mandatory health insurance in Switzerland. The proposed change comprises full coverage of long-term care, to be financed by those over 50 years old (*LTCARE*), by a monthly premium charge amounting to CHF50.

With respect to pharmaceuticals, three types of restrictions in the benefit catalogue of mandatory health insurance were proposed. First, access to new therapies and drugs currently is granted immediately after their approval. The alternative is to impose a lag of two years (*INNOVATION*; as always in exchange for a lower premium). Insurers claim that such a lag of two years (say) would generate substantial savings because the cost of innovative products goes down with experience in use. A hotly debated reform proposal is to reimburse only the generic (or lowest-priced) variant of a medication if available on the Swiss market (*GENERICS*). In a similar vein, the insurer could offer a policy that does not provide reimbursement for 'comfort' drugs designed to alleviate minor health complaints (*MINOR*). Finally, each alternative is characterised by an absolute change in the monthly insurance premium (*PREMIUM*).

In principle, this design results in 384 possible contract variants. Since this is an excessive number, statistical design theory (Hardin and Sloane, 1993; Kuhfeld *et al.*, 1994) was applied to obtain a fractional design that permits estimation of the main effects and two-way interaction effects. This resulted in 40 alternatives, which were randomly assigned to four split samples. Therefore, each participant had to make ten choices.

The organisation of Swiss health insurance favours conducting a choice experiment of this complexity, several elements of choice having been introduced in 1996. In the status quo of 2003, the insured could already choose between different levels of annual deductibles (with CHF230 (£104) being the minimum), and between conventional fee-for-service and Managed Care alternatives. In addition, they can change their insurer every year, basically without bearing transaction costs. Insurance premiums differ between competing insurers and regions but are otherwise uniform across sex and age groups. About 80% of consumers have some kind of supplementary private insurance, which, however, must not waive legally prescribed cost sharing (i.e. the CHF230 deductible plus 10% co-payment on HCE with a cap at CHF700 annually). The Swiss are therefore familiar with choice options in their health insurance, which should make the experiment less hypothetical.

The survey proceeded in two steps. In a first telephone contact, people were asked whether they would be willing to take part in the study. Those agreeing to participate received a package containing documentation materials to make sure that all respondents had the same information about the Swiss healthcare system and knew their current insurance premium. Additionally, each respondent received 11 decision cards for the actual DCE. One card described the status quo; the remaining ten cards, the alternative contracts respondents had to opt for or against. The second step consisted in an appointed telephone interview during the autumn of 2003, involving 1,032 adult residents of Switzerland (except the Italian-speaking area of Ticino).

Results

The estimated utility function was assumed to be the same linear one for all individuals and to have only

the characteristics of the health insurance contract as described in Table 1 as its arguments. With the exception of the two attributes describing a restricted access to drugs (*GENERICS* and *MINOR*), all coefficients are statistically significant and have the expected signs.

Since the attributes amount to restrictions compared with the status quo, their monetary valuation is given by willingness-to-accept (WTA), or compensation demanded, rather than WTP. Therefore, the WTA values in Table 2 indicate the monetary amount of compensation that is necessary on average for respondents to accept an insurance contract with less comprehensive coverage. To put these estimates in perspective, note that the nationwide average premium as of 2003 is CHF270 (£121) per month.

Accepting a physician list based on a cost criterion (*PHYSCOST*) requires the highest compensation of CHF103, more than one-third of the average monthly premium. If insurers were to select participating physicians according to quality criteria only (*PHYSQUAL*), compensations required drop by some 50% on average to CHF53. However, the drop in compensation asked is even more marked if the envisaged criteria for selecting physicians are both quality and cost, which amounts to an efficiency criterion (*PHYSEFF*). Compensation necessary to make the insured accept having their choice of hospital restricted (by closing inefficient small local units) attains values that come close to those of a physician list on efficiency criteria.

Turning to the restrictions on pharmaceuticals, Table 2 shows that delaying access to new therapies and drugs by two years would also have to be compensated very highly (by CHF65). This makes sense because such a delay is a restriction that applies across the board, regardless of the type of therapy (pharmaceutical v. medical) and the setting (ambulatory care v. hospital care). By way of contrast, a drug benefit restricted to generics if available (*GENERICS*) is quite small on average (CHF3) and does not even call for compensation within most subgroups in view of the large standard error of the estimates. There are two likely reasons for this. First, generic drug substitution has been enjoying an increasing degree of acceptance, and secondly, relatively few original drugs have admitted generic substitutes in Switzerland (their market share being less than 5%), which means that the corresponding restriction would not be binding very often. When it comes to doing without reimbursement of drugs that help against minor complaints the (*MINOR*) Swiss population even seems to exhibit a small positive WTP for such a restriction. This can be interpreted as an instance of 'warm glow', i.e. the tendency of (at least some) respondents to choose alternatives they believe to be socially acclaimed (Andreoni, 1995). This 'warm

	WTA	S.E.	z-Value	95% confidence interval	
PHYSCOST	103	13.16	7.85	77.49	129.06
PHYSQUAL	53	8.85	6.03	35.98	70.67
PHYSEFF	42	7.78	5.39	26.71	57.21
HOSPITAL	37	5.67	6.58	26.18	48.42
LTCARE	25	4.76	5.24	15.57	34.22
INNOVATION	**65**	**7.88**	**8.20**	**49.19**	**80.09**
GENERICS	**3**	**5.49**	**0.49**	**–8.08**	**13.43**
MINOR	**–6**	**5.33**	**–1.21**	**–16.92**	**3.97**

Note: S.E. is standard error.

Table 2: WTA for restrictions in insurance coverage, in CHF per month

glow' effect disappears, however, with those more likely affected (currently undergoing treatment), who exhibit a positive average amount of compensation asked (see Table 3).

In Table 3 the three restrictions concerning the drug benefits are listed again, this time horizontally (for results with regard to the other attributes, see Zweifel *et al.*, 2006). Among all subgroups distinguished, a delay in access to therapeutic innovation would have to be compensated most, usually followed by mandatory generic substitution. Already here, however, there are subgroups who exhibit a positive WTP, such as those aged 65+ (–CHF24 compensation asked; value not significantly different from zero, however, with a standard error of 27.8). In that age group this restriction is even more accepted than paying comfort drugs out-of-pocket (–CHF19 compensation asked).

Reading Table 3 vertically, one finds clear evidence of preference heterogeneity. Delayed access to new therapies and drugs (column (1)) would be resisted most strongly by the 40–64-year-old who would have to be compensated by as much as CHF101. Interestingly, it is not the age group 65+ that requires the highest compensation, a pattern also observed for the other restrictions considered. However, the biggest surprise is the fact that delayed access to innovation would have to be compensated by CHF117 in the case of the French-speaking minority, double that of the CHF56 required by the German-speaking majority. In relative terms, this cultural divide is even more marked in the case of accepting generics rather than original drugs and of doing without reimbursement of drugs that help against minor complaints (columns (2) and (3)). It may be worth noting that the two parts of the country have a shared history of 500 years and have been under a common constitution since 1848. Yet, preference heterogeneity apparently continues to be so marked as to seed serious doubts on the appropriateness of uniform regulation of healthcare on the federal level.

Conclusions

Regulation tends to burden both producers and consumers with efficiency losses. Nevertheless, it

Table 3: Compensation asked for regulatory restrictions with regard to pharmaceuticals, Switzerland

| Socio-economic characteristics | Amounts in CHF per month | | |
	Access to new therapies and drugs delayed by two years (*INNOVATION*) (1)	Reimbursement of generics only (*GENERICS*) (2)	No reimbursement of drugs for minor complaints (*MINOR*) (3)
Total sample	65 (7.9)	3 (5.5)	−6 (5.3)
Gender			
Female	68 (13.3)	4 (9.2)	−12 (9.1)
Male	63 (9.9)	1 (6.8)	−3 (6.7)
Age			
25–39	45 (6.7)	9 (5.9)	−2 (5.6)
40–64	101 (24.5)	−4 (11.9)	−14 (11.9)
65+	83 (45.6)	−24 (27.8)	−19 (26.9)
Region			
German-speaking	56 (7.1)	5 (5.5)	−5 (5.3)
French-speaking	117 (45.4)	−14 (19.6)	−13 (19.2)
Average monthly income per household member			
<CHF1,500	52 (12.2)	−5 (10.0)	−2 (9.7)
CHF1,500 to 4,000	66 (10.3)	9 (7.2)	−5 (6.8)
CHF4,000+	81 (29.4)	−14 (17.5)	−18 (17.8)
Health status			
Healthy	60 (8.3)	0 (6.1)	−11 (6.0)
In treatment	82 (21.7)	10 (12.8)	+21 (12.4)
Hospital, last 12 months	118 (57.4)	28 (28.0)	−24 (25.5)

Note: CHF1 equals £0.45 at 2004 exchange rates. Standard errors in parentheses.

may be justified if it helps to avoid or reduce externalities. In the case of healthcare, observing market behaviour for inferring efficiency losses constitutes an imperfect guide for policy. The externality to be considered is moral hazard, which can be controlled by imposing restrictions on the choice of healthcare providers and therapies covered by insurance. When such restrictions are in the planning stage, behaviour under the proposed regulatory regime cannot be observed. In this situation, the use of experiments simulating market behaviour can provide valuable guidance.

The discrete-choice experiments (DCE) reported here have the advantage of realism. They are realistic because respondents had to decide between a fixed status quo and a series of alternatives that simultaneously change in all relevant product attributes. They are also realistic because, under the pressure of competition, insurers who successfully control moral hazard (thus achieving a cost advantage) will have to offer lower premiums. In the case of Switzerland, this scenario is credible, since contracts already exist that offer a premium reduction in return for certain restrictions of the managed-care type (Lehmann and Zweifel, 2004). It may be this realism that contributed to a very low rate of refusals in the experiment and clear evidence in favour of trade-offs between non-price and price attributes of the proposed alternatives.

The great majority of the regulatory restrictions considered do impart expected utility losses to respondents. Compensations required making respondents voluntarily accept them can be shown

to differ significantly between groups. Indeed, immediate access to new therapies and drugs seems to command a very high value amounting to 25% of average premium in the total population and as much as 43% among the French-speaking minority, pointing to a great deal of preference heterogeneity. However, the other two restrictions on insurance coverage of pharmaceuticals (reimbursement of generics only and no reimbursement of drugs for minor illnesses) are valued similarly in the two language areas. The German-speaking as well as the French-speaking Swiss accept these two restrictions without demanding any compensation on average.

The preferences are heterogeneous with regard to other socio-economic characteristics as well. There are systematic differences in the compensations asked between age and income groups, between men and women, as well as between healthy and sick people. However, they may vary in both direction and magnitude according to the particular restriction considered. This constitutes evidence of considerable idiosyncrasies with regard to the provision of healthcare.

This preference heterogeneity militates against the introduction of regulation imposing uniform pharmaceutical policies on health insurers and hence consumers. Rather, insurers need the freedom to develop policies that match the preferences of subsets of the population, to whom they are able to offer premium reductions corresponding to the amount of compensation asked for accepting the

pertinent restrictions with regard to the provision of healthcare.

Clearly, one size does not fit all for the Swiss population, and there is little reason to suppose this will be any different with the British. Thus, imposing the 'one size fits all' rule leads to an inefficient allocation of resources also in a tax-financed health system such as the National Health Service (NHS). By giving citizens a choice between different health plans that may involve, for example, different out-of-pocket payments, the government can make resource allocation in the NHS better match citizens' preferences, resulting in a welfare gain not only in the NHS but in the entire economy.

1. For a detailed explanation of discrete-choice models and their application, see Louviere *et al.* (2000) or Train (2003).

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