Redistribution in Whose Favor? Preferences with Regard to Nationality and Type of Beneficiaries

Neustadt, Ilja and Zweifel, Peter

Russian Presidential Academy of National Economy and Public Administration (RANEPA), University of Zurich

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Ilja Neustadt† and Peter Zweifel‡

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Abstract

In this paper, we elicit preferences for the allocation of income redistribution to different uses through a Discrete Choice Experiment performed with a representative sample of Swiss citizens. The total desired amount of income redistribution is estimated as a share of disposable income. Further, we estimate marginal willingness-to-pay values for recipients' nationalities (Swiss, citizens of western European countries, citizens of other countries) as well as their types (old-age pensioners, people with ill health, the unemployed, working poor, and families with children). Swiss citizens are found to have a positive willingness to pay for a reallocation of social expenditure in favor of themselves or Western European citizens to the detriment of citizens of other countries, who are perceived to be culturally distant.

Keywords: Income redistribution, preferences, willingness to pay, discrete choice experiments, conjoint analysis, social status, immigration debate, insurance motive.

JEL classification: C35, C93, D63, H29

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†Corresponding author: School of Public Policy, RANEPA, Moscow, *E-mail:* ilja.neustadt@gmail.com

‡Emeritus, University of Zurich, Department of Economics, *E-mail:* peter.zweifel@uzh.ch

1 Introduction

Recently, there has been a great deal of research into the demand for redistribution and its determinants. However, this research focuses on preferences for the total amount of redistribution and its economic, institutional, and behavioral determinants while neglecting preferences for the composition of the redistributive budget. Some recent examples are Alesina and La Ferrara (2005), Alesina and Giuliano (2010), Neustadt and Zweifel (2009), and Neustadt (2011). One notable exception is a study by Boeri et al. (2002) based on Contingent Valuation (CV) experiments. However, a weakness of the CV approach is that it holds all the attributes of the good in question constant, varying its price only. This is not descriptive of actual decision making, where other attributes almost always vary along with price; moreover, it invites strategic responses because respondents can focus on a single attribute. In this paper, other attributes of importance will be shown to be the nationality of beneficiary (Swiss, citizens of Western European countries, citizens of other countries) and the uses of the money available for redistribution (old-age pensioners, people with ill health, the unemployed, working poor, families with children).

In contrast to CV, the methodology of Discrete Choice Experiments (DCE) used in this study allows the creation of realistic decision-making scenarios by making respondents choose between alternatives where all attributes vary, among them, price. The two main findings are that willingness to pay (WTP) for redistribution favors families with children (rather than people with ill health, for instance) to the detriment of all other uses and favors Swiss nationals to the detriment of foreigners.

The remainder of this paper is structured as follows. Section 2 contains a literature review from which hypotheses to be tested are derived. The first set of hypotheses concerns the different uses of the redistribution budget and the second set, the nationality of the potential beneficiaries. Section 3 presents a general description of the method of DCEs as well as the design of the present experiment. Descriptive statistics of the experiment follow in Section 4, and hypothesis tests, in Section 5. Section 6 summarizes the results and concludes with implications for public policy.

2 Literature Review and Statement of Hypotheses

This section first presents research that defines the general background of this paper and then moves on to contributions that lead to a set of specific hypotheses to be tested.

2.1 General Determinants of the Demand for Income Redistribution

In their reviews, Alesina and Giuliano (2010) and Akkoyunlu et al. (2009) identify a wide set of factors influencing preferences for public income redistribution that can be categorized as economic, political, and behavioral. As to the economic determinants, Alesina and La Ferrara (2005) empirically analyzed the effects of current and future income on the demand for redistribution in the United States. While low current income bolsters demand, chances for a higher future income reduce it provided the tax system is progressive. As suggested by the social contract literature, citizens' preferences for redistribution can also be interpreted as preferences for insurance by risk-averse individuals [cf. Rawls (1999)]. In a hypothetical situation, where individuals do not yet know their endowment nor their future position in society ('veil of ignorance'), demand for redistribution is predicted because it provides an income transfer from more favorable future states to less favorable ones. Beck (1994) investigates individual behavior under the 'veil of ignorance' in an experiment. Using lotteries to represent a hypothetical society with random differences in individual incomes, he analyzes the amount of desired income redistribution. Individuals indeed display risk aversion, albeit not of the extreme kind as implied by the Rawlsian maximin rule. Furthermore, their preference for income redistribution does not exceed the level that can be explained by individual risk aversion. This result provides the foundation for Hypotheses 2 to 5 stated in Section 2.3.

As to the political determinants, the literature [Persson and Tabellini (2000, 2003); Lizzeri and Persico (2001); Milesi-Ferretti et al. Milesi-Ferretti et al. (2002)] predicts that proportional representation causes a tendency towards universal programs benefitting var-

ious groups (old-age pensioners, working poor, minorities, etc.), while majority rule results in targeted 'pork barrel' programs. Persson and Tabellini (2003) find supporting empirical evidence in that countries with proportional representation have a share of government expenditure in GDP that *ceteris paribus* is 5 percentage points higher than those with majority rule. Moreover, according to Akkoyunlu et al. (2009) there are signs of a positive correlation between the degree of proportional representation and the share of transfers in GDP among OECD countries. Additional political determinants of redistribution include two-party vs. multiparty system, presidential vs. parliamentary democracy, and direct vs. representative democracy, with two-party systems, presidential, and direct democracies all predicted to induce less public redistribution.

Among the behavioral determinants of income redistribution, beliefs have been at the center of attention. Alesina and Angeletos (2005) develop a model where society's belief whether effort or luck determines economic success is responsible for multiple self-fulfilling equilibria, while Benabou and Tirole (2006) propose a model for the emergence and persistence of such collective beliefs. On the empirical side, Fong (2001) presents evidence in line with Alesina and La Ferrara (2005) suggesting that beliefs about the role of luck in determining economic success are an important explanatory variable in the demand for redistribution. Their importance could be conditioned by a concern for incentives, however. If effort determines income, then an increased income tax rate for financing redistribution causes a loss of output due to weakened work incentives. Yet, Fong (2001) finds that such concerns do not modify the link between beliefs and the demand for redistribution. Using fiscal data, Corneo and Fong (2008) estimate willingness to pay (WTP) for distributive justice in the United States, finding that it amounts to about one-fifth of disposable household income. However, there are indications of marked preference heterogeneity between racial and income groups.

Boeri et al. (2001) study attitudes towards redistribution with a focus on pension and unemployment schemes in France, Germany, Italy, and Spain, using CV experiments that impose an explicit trade-off between income and social insurance coverage on respondents. They find opposition against an extension of the welfare state, with conflicts between young

and old, rich and poor, and insiders and outsiders creating significant hurdles to welfare reform.

Neustadt and Zweifel (2009, 2015) and Neustadt (2011) elicit preferences concerning the total volume of income redistribution. According to a specification relating choices to the attributes of redistribution without socioeconomic covariates, the average Swiss citizen would have to be paid a compensation of CHF 11.78 (some US$ 12) per month (0.72 percent of monthly income) for an additional percentage point of GDP devoted to public redistribution. In addition, a very marked status quo bias would have to be overcome by payment of another 5.27 percent of monthly income. WTP for redistribution is estimated to be maximum at 21 rather than the current 25 percent of GDP. Furthermore, Neustadt and Zweifel (2009) test several hypotheses concerning the effects of economic well-being on the demand for redistribution without any confounding supply-side influences. WTP for redistribution is shown to increase with income and education, contradicting the standard economic model [Romer (1975), Roberts (1977), Meltzer and Richard (1981)]. The Prospect of Upward Mobility hypothesis [Hirschman and Rothschild (1973), Benabou and Ok (2001)] receives very partial empirical support. Finally, Neustadt (2011) studies preference heterogeneity with respect to cultural and religious beliefs, confirming the negative relationship between the degree of religiosity and WTP for redistribution.

2.2 Recipients' Nationality and Preferences for Redistribution

In this paper, we elicit preferences for different compositions of the redistribution portfolio, i.e. the slicing of the total redistribution pie. Firstly, we consider the following three groups of transfer recipients in terms of their nationalities: Swiss citizens, Western European citizens, and citizens of other countries. The behavioral explanations of redistribution emphasize imperfect altruism [Fong et al. (2006)]. While perfect altruism is exclusively governed by recipients' preferences, imperfect altruism also reflects donor preferences. In particular, potential donors are predicted to oppose public welfare if they believe that recipients take advantage of the system, a behavior that often is attributed to members of

ethnic minorities, who are the result of recent immigration to Switzerland.

A distinction between Swiss citizens, Western European immigrants, and immigrants from other countries is also suggested by the insurance motive (see Section 2.1). In view of its low rate of unemployment, members of the first group are most likely to contribute to public redistribution through taxes and contributions to social security, followed by the second group with their somewhat higher rate of unemployment, and the third, whose rate of unemployment is above average[1]. The same ranking is suggested by cultural distance. The predicted preference structure is as follows. The demand for redistribution in favor of one's own group is expected to be highest. Western Europeans are next because they are not over-represented among the poor, contrary to citizens from the Balkan states, Africa, and South America who together account for the bulk of immigrants from the rest of the world.

HYPOTHESIS 1: *Demand for redistribution in favor of Swiss citizens is expected to be highest, followed by Western Europeans and by the rest of the world.*

In principle, it would be appropriate to distinguish between Swiss and foreign-born respondents in the DCE because foreign-born respondents might have a different ranking from that indicated in Hypothesis 1. However, since 94 percent of the respondents are born in the country (see Section 4.1), the pertinent subsample is too small to permit valid statistical inference.

2.3 Types of Beneficiaries and Preferences for Redistribution

Next, we consider the following five types of transfer recipients: old-age pensioners, people in ill health, the unemployed, working poor, and families with children. In view of the insurance motivation for redistribution proposed by Beck (1994), the ordering of the risks confronting an individual is of crucial importance. In Switzerland, the 'risk' of living up to retirement age (65 for men, 63 for women) is 85 percent for a 20 year old male and 97 percent for a 20 year old female, respectively [BFS (2005)]. However, this risk is highly

[1] see blog.tagesanzeiger.ch/datenblog/index.php/818

insured because mandatory public and employment-related provision together guarantee about 60 percent of pre-retirement income. The highest uninsured 'risk' is to be in a household with children; it amounts to 33 percent as of 2000 [BFS (2008)]. Information on the working poor (another uninsured risk) is not available; however, for persons with no education beyond minimum schooling, the share of households with incomes below the poverty level (defined as 60 percent of the median adjusted for household size) is 29 percent [BFS (2010)]. As to the risk of ill health, a recent survey found that 28 percent of the respondents in the Swiss canton of Fribourg felt chronically ill [OBSAN (2010)]. However, at least the financial consequences of chronic illness are largely covered by mandatory health insurance. Finally, unemployment has always been below 4 percent since 2010 and not much higher before [SECO (2010)], and it is largely insured as well. Therefore, one can state the following hypotheses with regard to the types of beneficiaries,

Hypothesis 2: *Demand for redistribution is expected to be highest in favor of families with children, followed by the working poor. As groups to be favored, pensioners, people with ill health, and the unemployed are predicted to follow at some distance due to generous insurance coverage.*

In addition, the insurance view of redistribution suggests a set of hypotheses concerning the demand for redistribution by specific subsets of the population.

Hypothesis 3: *Demand for redistribution in favor of old-age pensioners is expected to be highest among respondents near and beyond the retirement age.*

Hypothesis 4: *Demand for redistribution in favor of the unemployed is expected to be higher among respondents who expect to become or stay unemployed, compared to others.*

Hypothesis 5: *Demand for redistribution in favor of people in ill health is expected to be higher among respondents who experience health problems themselves or have relatives with health problems, compared to others.*

3 Discrete Choice Experiments

3.1 Theoretical Foundations

Discrete Choice Experiments (DCEs) are designed to measure individuals' preferences for characteristics of commodities, the so-called attributes. In contradistinction with classical Revealed Preference Theory, originating with Samuelson (1938), DCEs allow individuals to express their preferences for non-marketed as well as hypothetical products. During a DCE, respondents are repeatedly asked to compare the status quo with several hypothetical alternatives defined by their attributes including price. By varying the levels of attributes, a set of product alternatives is generated. Since a rational individual always chooses the alternative with the highest utility, the researcher can infer the utility associated with the attributes from observed choices. The proposed method, derived from the New Demand Theory of Lancaster (1971), is also known as Conjoint Analysis [Louviere et al. (2000)]. It constitutes a multi-attribute valuation method [Merino-Castello (2003)].

The most prominent alternative to a DCE is Contingent Valuation (CV). A certain situation or product is described in detail, and respondents are asked to indicate their maximum WTP for this fixed product. Only its price is varied, contrary to Conjoint Analysis where all relevant attributes are varied simultaneously. While in a DCE the product is described in less detail than in a typical CV experiment, many product varieties can be created by varying the levels of relevant attributes [Louviere et al. (2000), p. 344]. This permits to take into account trade-offs among attributes and to estimate WTP values of individual attributes (see below). Furthermore, strategic behavior of respondents is less likely than in CV with its exclusive emphasis on price, which facilitates strategic behavior. Finally, biases that easily occur when individuals are directly asked about their WTP are less frequently observed in DCEs [Ryan (2004)].

A particular advantage of a DCE in the present context is that it permits to explicitly impose the budget constraint through a price attribute in the guise of the tax share of income used to finance the transfers considered. Respondents can be made to simultane-

ously choose this share and hence the 'size of the pie' and its 'slices' devoted to different types of recipients (individuals in ill health, old age, etc.). Thus, trade-offs among different attributes of the good 'redistribution' can be determined, resulting in an assessment of their relative importance.

The econometric method used is based on Random Utility Theory [see Luce (1959), Manski and Lerman (1977) and McFadden (1974, 1981, 2001)]. Thus, individual i values alternative j according to the utility V_{ij} attained, which is given by

$$V_{ij} = v_i(a_j, p_j, y_i, s_i, \varepsilon_{ij}). \tag{1}$$

Here, $v_i(\cdot)$ denotes i's indirect utility function, a_j, the amount of attributes associated with alternative j, and p_j, the price. The individual's income and sociodemographic characteristics are symbolized by y_i and s_i, respectively. Finally, ε_{ij} denotes the error term, which is due to the fact that the experimenter never observes all arguments entering v_i, imparting a stochastic element to observed choices. As usual, the utility function is additively split into a systematic component $w(\cdot)$ and a stochastic one,

$$V_{ij} = w_i(a_j, p_j, y_i, s_i) + \varepsilon_{ij}.$$

Individual i will prefer alternative j to alternative l if and only if

$$w_i(a_l, p_l, y_i, s_i) + \varepsilon_{il} \leq w_i(a_j, p_j, y_i, s_i) + \varepsilon_{ij}. \tag{2}$$

Due to the presence of the stochastic term, only the probability P_{ij} of individual i choosing alternative j rather than alternative l can be estimated, with

$$P_{ij} = \text{Prob}\left[w_i(a_l, p_l, y_i, s_i) + \varepsilon_{il} \leq w_i(a_j, p_j, y_i, s_i) + \varepsilon_{ij}\right] \tag{3}$$

$$= \text{Prob}\left[\varepsilon_{il} - \varepsilon_{ij} \leq w_i(a_j, p_j, y_i, s_i) - w_i(a_l, p_l, y_i, s_i)\right]. \tag{4}$$

Thus, the probability of choosing j amounts to the probability of the systematic utility difference $w_i[j] - w_i[l]$ dominating the 'noise', $\varepsilon_{il} - \varepsilon_{ij}$. The error terms $\{\varepsilon_{il},\ \varepsilon_{ij}\}$ can be assumed to be normally distributed with mean zero and variances σ_l^2 and σ_j^2 as well as covariance σ_{lj}. Under these assumptions, $\varphi_{ij} := \varepsilon_{il} - \varepsilon_{ij}$ is also normally distributed

with mean zero and variance $\sigma^2 := \mathrm{Var}[\varphi_{ij}] = \sigma_l^2 + \sigma_j^2 - 2\sigma_{lj}$. Thus, equation (4) can be represented as

$$P_{ij} \quad = \quad \Phi\left(\frac{w_i(a_j, p_j, y_i, s_i) - w_i(a_l, p_l, y_i, s_i)}{\sigma}\right), \tag{5}$$

where $\Phi(\cdot)$ denotes the cdf of a standard normal distribution. This model is known as the binary probit model [cf. Ben-Akiva and Lerman (1985)]. Hensher et al. (1999) provide empirical evidence that a linear specification of the function $w(\cdot)$ leads to good predictions in its middle ranges. Therefore, one posits

$$w_i(a_j, p_j, y_i, s_i) \quad = \quad c_i + \sum_{k=1}^{K} \beta_k a_k + \varepsilon_{ij}, \tag{6}$$

where c_i represents an individual-specific constant, a_k, $k = 1, \ldots, K$, are the attributes of the alternative, and β_k, $k = 1, \ldots, K$, are the parameters to be estimated. These parameters can be interpreted as the (constant) marginal utilities of the corresponding attributes.

The marginal rate of substitution between two attributes m and n is given by

$$\mathrm{MRS}_{m,n} \quad = \quad -\frac{\partial v/\partial a_m}{\partial v/\partial a_n}. \tag{7}$$

In the case of a linear utility function, this can be estimated by the ratio of the respective slope parameters,

$$\mathrm{MRS}_{m,n} = -\frac{\hat{\beta}_m}{\hat{\beta}_n},$$

representing the marginal WTP for an additional unit of a_m expressed in units of a_n. Therefore, the marginal WTP for attribute a_m can be calculated by dividing the marginal utility of this attribute by the marginal utility of the price attribute [in our context, the income tax rate, see e.g. Telser (2002), p. 56][2]:

$$\mathrm{MWTP}(a_m) \quad = \quad \frac{\partial v/\partial a_m}{\partial v/\partial p_j}. \tag{8}$$

[2]By Roy's Identity, $x_{ij} = -\frac{\partial v(\cdot)/\partial p_j}{\partial v(\cdot)/\partial y_i}$. Therefore, the (uncompensated) demand of individual i for commodity j corresponds to the negative ratio of partial derivatives of the indirect utility function with respect to price p_j and income y_i. In the present context, the optimal quantity demanded is equal to one, i.e. $x_{ij} = 1$. Therefore, Roy's Identity yields $\frac{\partial v}{\partial y_i} = -\frac{\partial v}{\partial p_j}$, i.e. the marginal utility of income is equal to the negative derivative of the indirect utility function with respect to price.

By limiting the specification to the product attributes only (simple model, cf. Section 5.1), one obtains the following expression representing the difference in utility of individual i between alternative j and the status quo l,

$$\Delta V_{ij} \quad = \quad c_i + \sum_{k=1}^{K} \beta_k \Delta a_{kj} + \beta_p \Delta p_j + \varphi_{ij}, \tag{9}$$

where $\Delta c_i = c_{ij} - c_{il}$, $\Delta a_{kj} = a_{kj} - a_{kl}$, $\Delta p_j = p_j - p_l$, $\varphi_{ij} = \varepsilon_{ij} - \varepsilon_{il}$ for each $j \neq l$.

For econometric inference, it is important to take into account that the same individual makes several choices. A popular variant is the two-way random-effect specification, $\varphi_{ij} = \mu_i + \eta_{ij}$, where μ_i denotes the component that varies only across individuals but not across the choice alternatives. The terms μ_i and η_{ij} are assumed uncorrelated with the product attributes $(a_{i1}, \ldots, a_{iK})$ and between themselves. By a standard assumption in a probit model, $\sigma_\eta = 1$. Hence $\mathrm{Var}[\varphi_{ij}] = \sigma_\eta^2 + \sigma_\mu^2 = 1 + \sigma_\mu^2$ and $\mathrm{Corr}[\varphi_{ij}, \varphi_{il}] = \frac{\sigma_\mu^2}{1+\sigma_\mu^2} =: \rho$. The parameter ρ indicates how strongly the various responses are correlated with each other, or, equivalently, the share of the total variance that is explained by the individual-specific error term. The random-effects specification is justified if ρ is high and significant. Variances of marginal WTP values can be computed using the delta method [cf. Hole (2007)].

3.2 Experimental Design

The experiment was conducted with a representative sample of 979 respondents in the fall of 2008. Respondents were mailed full decision sets including graphical representations of the status quo and alternatives and were asked to submit their binary choices during a telephone survey a few days later. In order to make sure that decisions were based on a homogeneous information set and made in a consistent way, respondents additionally received a detailed description of the attributes and their possible realizations. The Appendix shows the graphical representation of the status quo (Exhibit 1) and two selected alternatives (Exhibits 2 and 3). The telephone survey also included questions covering a wide range of socioeconomic and behavioral characteristics of the respondents.

Prior to the experiment, the attributes and their levels used to define 'income redistri-

bution' had been checked in two pretests for their relevance. They form four groups (see Table 1),

1. Shares of the total redistribution budget (to be spent on three groups, viz. Swiss citizens, Western European foreigners, and other foreigners);

2. Shares of the total redistribution budget (to be spent on five groups of recipients, viz. old-age pensioners, people with ill health, the unemployed, working poor, and families with children);

3. Total amount of redistribution, defined as a share of GDP;

4. Share of personal income to be paid by the respondent as tax to finance redistribution (the price attribute).

While economics suggests that the total amount of redistribution as a share of GDP (REDIST in Table 1) should vary in step with the income tax as a share of personal income (TAX), this parallelism would cause perfect multicollinearity between REDIST and TAX. Yet the regression coefficient of TAX needs to be estimated with high precision because it enters the calculation of all WTP values [see eq. (8)]. Fortunately, respondents did not notice the lack of parallel changes in the two attributes.

The nine attributes and their levels result in a total number of possible scenarios that cannot be realized in an experiment. Let the scenarios define the n rows of the observation matrix X, with associated covariance matrix $\Omega = \sigma^2 (X'X)^{-1}$ of parameters β to be estimated. Then, so-called D-efficient design calls for the minimization of the geometric mean of the eigenvalues of Ω,

$$D \text{ efficiency} = \left(|\Omega|^{\frac{1}{K}} \right)^{-1},$$

where K denotes the number of parameters to be estimated [cf. Carlsson and Martinsson (2003)]. Using this optimization procedure and incorporating several restrictions, the number of alternatives was reduced to 35 and randomly split in five groups. One alternative was included twice in each decision set for a consistency test, resulting in eight binary choices per respondent.

Attribute	Label	Status Quo Level	Alternative Levels
Shares of benefits going to			
• Swiss citizens	CH	75%	60%, 85%
• Western European foreigners	WEU	10%	5%, 10%, 20%
• Other foreigners	OTH	15%	10%, 15%, 20%
Shares of benefits going to			
• Working Poor	WP	10%	5%, 15%
• Unemployed	UNEMP	15%	5%, 25%
• Old-Age Pensioners	PENS	45%	35%, 55%
• Families with Children	FAM	5%	10%
• People with ill health	ILL	25%	20%, 30%
Total amount of redistribution	REDIST	25% (of GDP)	10%, 20%, 30%, 40%, 50%
Income tax	TAX	25% (of personal income)	10%, 15%, 40%

Table 1: Attributes and their levels

4 Descriptive Statistics

4.1 Socioeconomic Characteristics

The sample consists of 979 Swiss citizens, 70 percent of them residing in the German-speaking part and 30 percent in the French-speaking part of Switzerland. While 94 percent are born in the country, six percent are foreign-born. 50 percent are men; 20 percent have a monthly income below CHF 2,000 and 23 percent, above CHF 6,000; 27 percent are younger than 36 while 29 percent are at least 60 years of age (see Table 2). These characteristics reflect the structure of the Swiss population.

Age groups	N	% of valid answers
18-35	264	27
36-59	435	44
60 and older	280	29
Total valid answers	979	100
Sample	979	

Table 2: Respondents' age

Unemployment expectation	N	% of valid answers
expect to be unemployed	97	10
do not expect	832	90
Total valid answers	929	100
Missing	50	
Sample	979	

Table 3: Expectation to become/stay unemployed within two years

Health status	N	% of valid answers
health problems	512	53
no health problems	458	47
Total valid answers	970	100
Missing	9	
Sample	979	

Table 4: Health status, also including family members

Some 10 percent of respondents expect to become or to stay unemployed within the next two years (see Table 3). Further, when asked about the health status of their families, 53 percent of respondents stated that they themselves or their family members experience health problems (see Table 4).

The structure of the sample permits to test Hypothesis 1, which emphasizes imperfect altruism. Also, we can test Hypotheses 2 to 5, which are based on the view that income redistribution serves an insurance function.

4.2 Respondents' Choice Behavior

A total of $979 \cdot 8 = 7,832$ choices were observed, of which not quite 20 percent were in favor of an alternative over the status quo (see Table 5). This is a low percentage, for which there are at least four explanations. First, in spite of checking in the pretests, the levels of the attributes in the experiment may not have been sufficiently spread to induce

Choices	N	in percent
alternative	1,562	19.94
status quo	6,088	77.73
no decision	182	2.32
Total	7,832	100

Table 5: Total number of choices

# choices for alternative	No.	in percent
0	209	21.35
1	309	31.56
2	226	23.08
3	131	13.38
4	57	5.82
5	16	1.63
6	10	1.02
7	0	0.00
8	5	0.51
Total valid answers	965	98.57
Missing	14	1.43
Sample	979	100

Table 6: Distribution of the numbers of chosen alternatives per respondent

respondents to switch. Second, some attributes (e.g. benefits going to the working poor; see Table 7), may not have been sufficiently valued to cause switching. Third, there may be errors in decision making because the consistency test revealed 14 percent of choices to be inconsistent [which, however, is a value in the usual range, cf. e.g. Becker and Zweifel (2008)]. Finally, there may be a strong status quo bias in the face of a complex decision-making situation and the hypothetic nature of the alternative scenarios (see the large negative constant in Table 7). Still, only 21 percent of respondents never opted for an alternative (see Table 6), while almost 80 percent departed from the status quo at least once. This is reflected by the fact that only 2 respondents indicated sufficient difficulties in understanding the choice experiment.

5 Estimation Results

5.1 Relevance of Product Attributes and Testing of Hypotheses 1 and 2

Estimation of eq. (9) calls for two adjustments in view of Table 1. First, let a respondent allocate 15 percent of the redistributive budget to the working poor (WP), while opting for 20 percent of the GDP being devoted to redistribution (REDIST). This implies that the preferred share of GDP going to the working poor amounts to 3 percent in this case. Let another respondent also allocate 15 percent of the total to WP but 40 percent to REDIST. This time, the preferred share of the GDP in favor of WP is 6 percent. To reflect this difference, WP needs to be replaced by $\widetilde{\text{WP}} = \text{WP} \cdot \text{REDIST}$, and similarly for the other shares of benefits listed in Table 1. The second adjustment is that the two adding-up restrictions inherent in Table 1 need to be imposed,

$$\widetilde{\text{WP}} + \widetilde{\text{UNEMP}} + \widetilde{\text{ILL}} + \widetilde{\text{FAM}} + \widetilde{\text{PENS}} = \text{REDIST} \tag{10}$$

$$\widetilde{\text{CH}} + \widetilde{\text{WEU}} + \widetilde{\text{OTH}} = \text{REDIST}. \tag{11}$$

Being an important attribute on its own, REDIST needs to be included in the estimation. This means that one of its components must be excluded from both eqs. (10) and (11). The choice of exclusion restriction is arbitrary but might affect estimated WTP values[3]. This effect is analogous to an omitted variable bias, whose size varies with the absolute value of the pertinent coefficient [Greene (2000), p. 334]. Preliminary regressions indicated that $\widetilde{\text{FAM}}$ has the highest coefficient, followed by $\widetilde{\text{WP}}$, $\widetilde{\text{PENS}}$, $\widetilde{\text{UNEMP}}$, and finally $\widetilde{\text{ILL}}$. Similarly, $\widetilde{\text{CH}}$ was found to dominate $\widetilde{\text{WEU}}$, which in turn dominated $\widetilde{\text{OTH}}$. This suggests the following regression strategy for implementing restriction (10). Start with $\widetilde{\text{FAM}}$, checking for omitted variable bias caused by excluding the less important attributes

[3]Note that the situation is not the same as selecting the reference category for a dummy variable in a linear regression model, which is known to leave coefficient estimation unchanged. Since probit estimation is non-linear, moving the reference value of the regressor up or down affects the estimated slope along the sigmoid function.

one at a time. Next, turn to second-ranking $\widetilde{\text{WP}}$ without excluding $\widetilde{\text{FAM}}$ because this would cause an unnecessary amount of bias. By the same token, it would make little sense to exclude $\widetilde{\text{FAM}}$ and $\widetilde{\text{WP}}$ when focus is on $\widetilde{\text{PENS}}$, and similarly for $\widetilde{\text{UNEMP}}$. The same strategy was applied to restriction (11).

Variable	Coeff.	SE	z	$P > \|z\|$	Marginal effect	WTP, % of inc.
Recipient's Nationality						
1. $\widetilde{\text{CH}}$ if $\widetilde{\text{WEU}}$ excluded	0.01494	0.01420	1.05	0.293	0.00381	0.73
2. **$\widetilde{\text{CH}}$ if $\widetilde{\text{OTH}}$ excluded**	0.10146	0.01819	5.58	0.000	0.02587	4.93
3. **$\widetilde{\text{WEU}}$ if $\widetilde{\text{OTH}}$ excluded**	0.08652	0.02682	3.23	0.001	0.02206	4.20
Recipients' Social Group						
4. $\widetilde{\text{FAM}}$ if $\widetilde{\text{WP}}$ excluded	0.05374	0.02805	1.92	0.055	0.01370	2.61
5. $\widetilde{\text{FAM}}$ if $\widetilde{\text{PENS}}$ excluded	0.07942	0.02660	2.99	0.003	0.02025	3.86
6. $\widetilde{\text{FAM}}$ if $\widetilde{\text{UNEMP}}$ excluded	0.09795	0.02751	3.56	0.000	0.02498	4.75
7. **$\widetilde{\text{FAM}}$ if $\widetilde{\text{ILL}}$ excluded**	0.15181	0.02975	5.10	0.000	0.03871	7.37
8. $\widetilde{\text{WP}}$ if $\widetilde{\text{PENS}}$ excluded	0.02569	0.01708	1.50	0.133	0.00655	1.25
9. $\widetilde{\text{WP}}$ if $\widetilde{\text{UNEMP}}$ excluded	0.04421	0.01740	2.54	0.011	0.01127	2.15
10. **$\widetilde{\text{WP}}$ if $\widetilde{\text{ILL}}$ excluded**	0.09808	0.02398	4.09	0.000	0.02501	4.76
11. $\widetilde{\text{PENS}}$ if $\widetilde{\text{UNEMP}}$ excluded	0.01853	0.00818	2.27	0.023	0.00472	0.90
12. **$\widetilde{\text{PENS}}$ if $\widetilde{\text{ILL}}$ excluded**	0.07239	0.01693	4.28	0.000	0.01846	3.51
13. **$\widetilde{\text{UNEMP}}$ if $\widetilde{\text{ILL}}$ excluded**	0.05387	0.01759	3.06	0.002	0.01374	2.61
TAX (for any specification)	-0.02060	0.00180	-11.42	0.000	-0.00525	–
CONSTANT (for any specification)	-0.92929	0.02969	-31.30	0.000	-	-45.11

Note: Bold entries show preferred specifications.

Table 7: Summary of random-effects probit estimates for different model specifications.

For example, the WTP estimates entered on lines No. 1 and 12 of Table 7 are derived from the model

$$\begin{aligned}\Delta\tilde{V}_{ij} &= c_0 + \beta_1\widetilde{\mathrm{WP}}_j + \beta_2\widetilde{\mathrm{UNEMP}}_j + \beta_3\widetilde{\mathrm{ILL}}_j + \beta_4\widetilde{\mathrm{FAM}}_j + \\ &\quad +\beta_5\widetilde{\mathrm{CH}}_j + \beta_6\widetilde{\mathrm{WEU}}_j + \\ &\quad +\beta_7\mathrm{REDIST}_j + \beta_8\mathrm{TAX}_j + \varphi_{ij}.\end{aligned}$$

Estimation results are displayed in Tables 7 and 8. As was to be expected, the coefficient and marginal effect of $\widetilde{\mathrm{FAM}}$ are most strongly affected when second-ranking $\widetilde{\mathrm{WP}}$ is excluded. The preferred estimate appears on line No. 7, with $\widetilde{\mathrm{ILL}}$ excluded. For $\widetilde{\mathrm{WP}}$, it is the one on line No. 10, and for $\widetilde{\mathrm{PENS}}$, on line No. 12. With regard to recipient's nationality, the estimate with smaller bias presumably is the one on line No. 3 rather than No. 2. However, regardless of the exclusion restriction imposed, a higher share of the GDP devoted to any of the types of beneficiaries and nationalities has positive utility, while the price attribute (TAX) is negatively valued. Finally, the negative constant points to status quo bias.

Hypothesis 1, revolving around imperfect altruism, is derived both from behavioral economics and insurance theory. The preferred specifications (corresponding to lines No. 2 and No. 3 of Tables 7 and 8) indicate that WTP for redistribution is in favor of Swiss citizens, followed by Western European nationals and to the detriment of other nationalities (the dominated and hence residual category). Since the difference between the coefficients is not significant, this constitutes partial confirmation only of Hypothesis 1, which predicts a clear preference for redistribution benefitting Swiss nationals over one benefitting Western Europeans.

Based on the preferred specifications (in lines 7, 10, 12, and 13 of Tables 7 and 8), Hypothesis 2 receives a considerable measure of confirmation. Among the beneficiaries that cannot count on insurance, families with children rank first, followed by the working poor as predicted (the difference is significant). As to the beneficiaries enjoying insurance protection, pensioners precede the unemployed, again as predicted (here, the difference is insignificant). Contrary to Hypothesis 3, however, WTP for people with ill health is lowest

of all[4], causing them to be defined as the residual category (see above).

In favor of	to the detriment of	WTP in % of income	WTP in CHF	SE in CHF
1. CH	WEU	0.73	33.47	37.97
2. **CH**	**OTH**	4.93	227.31	54.61
3. **WEU**	**OTH**	4.20	193.83	75.52
4. FAM	WP	2.61	120.40	75.59
5. FAM	PENS	3.86	177.94	71.82
6. FAM	UNEMP	4.75	219.45	75.89
7. **FAM**	**ILL**	7.37	340.13	83.55
8. WP	PENS	1.25	57.55	45.64
9. WP	UNEMP	2.15	99.05	47.54
10. **WP**	**ILL**	4.76	219.73	66.34
11. PENS	UNEMP	0.90	41.50	22.87
12. **PENS**	**ILL**	3.51	162.19	47.76
13. **UNEMP**	**ILL**	2.61	120.68	47.53
CONSTANT		-45.11	-2081.99	223.36

Note: Bold entries show preferred specifications.

Table 8: Mean marginal WTP values for reallocation of the redistributive budget between two groups of beneficiaries (in % of monthly disposable income and in CHF, 1 CHF = 0.88 $ in December 2008)

The estimation results obtained in this section do not allow to identify the presence of effects of imperfect altruism or insurance motivation. In order to be able to perform this

[4]A possible explanation for this result is the high amount of redistribution in Switzerland induced by its premium subsidization scheme. While competitive social health insurers must apply community rating, the insured receive a subsidy as soon as their premium exceeds a share of taxable income which varies between 8 and 12 percent, depending on the canton. In addition, there is a risk adjustment scheme which ultimately makes the 'good' risks pay even more to the benefit of 'bad' ones [see Zweifel and Frech (2016)]. Overall, respondents may have deemed redistribution in favor of people with ill health excessive in the status quo.

identification, we need to interact the attributes of income redistribution with socioeconomic characteristics of the respondents. This calls for extensions of the basic model that are analyzed below.

5.2 Extended Models: Testing Hypotheses 3 to 5

Hypotheses 3 to 5 of Section 2.2 make predictions regarding differences in WTP values between groups of respondents. The covariates of interest are age, expectations about unemployment, and family health status.

In order to estimate *ceteris paribus* effects, the attributes listed in Table 1 are interacted first with $AGE60^{+}$, a dummy variable indicating that the respondent is at least 60 years old. This gives rise to a first of four sets of interaction terms extending eq. (12).

5.2.1 Extended Model 1: Age and Demand for Old-Age Pensions vs Family Support (Hypothesis 3)

in favor of	to the detriment of	WTP in % of income	WTP in CHF	SE in CHF
(A) FAM	PENS	5.13	231.89	83.80
(B) WP	PENS	0.47	21.05	62.35
(C) PENS	UNEMP	0.64	28.79	28.71
(D) PENS	ILL	3.35	151.49	49.95

Table 9: Marginal WTP values for attributes (in % of monthly disposable average income and CHF, 1 CHF = 0.88 $ in December 2008) derived for the age group 60 and older

Reestimation of equation (13) with all the attributes in linear and interacted form (using $AGE60^{+}$), imposing the exclusion in line No. 4 of Table 7, and using eq. (8) results in the WTP values displayed in Table 9 (entries A, B, C, D correspond to entries 5, 8, 11, 12 in Tables 7 and 8). Among respondents aged 60 or more, WTP for reallocating 1 percent of GDP to families to the detriment of pensioners amounts to 5.13 percent of the average monthly income in the sample. This is even higher than the 3.86 percent across all groups

(see line No. 5 of Tables 7 and 8). This is a contradiction of Hypothesis 3, stating that the demand for redistribution favoring old-age pensioners is expected to be particularly high in the group aged 60 and more. In turn, WTP for reallocating of 1 percent of GDP to the working poor is lower in this group (0.47 percent compared to 1.25 percent of income in line No. 8 of Table 8), but statistical significance is lacking. In the two cases where pensioners stand to benefit, WTP values in lines C, D of Table 9 are again below those of Table 8 (see lines No. 11 and 12). On the whole, Hypothesis 3 has to be rejected.

5.2.2 Extended Model 2: Employment Expectations and Demand for Unemployment Support (Hypothesis 4)

in favor of	to the detriment of	WTP in % of income	WTP in CHF	SE in CHF
(E) WP	UNEMP	5.34	264.80	118.86
(F) PENS	UNEMP	1.02	50.73	45.27
(G) FAM	UNEMP	-4.12	-204.32	157.61
(H) UNEMP	ILL	-0.88	-43.73	91.43

Table 10: Marginal WTP values for attributes (in % of monthly disposable average income) derived for the respondents who expect to be unemployed during the next two years

This time, equation (13) is complemented with all attributes interacted with the dummy variable $UEXP$, indicating that the respondent expects to become or remain unemployed during the next two years. This extended model allows a test of Hypothesis 4, stating that the demand for unemployment support is particularly high among respondents with expectations to lose their job or to remain unemployed. Here, we observe two statistically significant differences in preferences between respondents with these expectations and others (entries E, F, G, H in Table 10 correspond to entries 9, 11, 6, 13 in Table 8, respectively). Marginal WTP for a reallocation of 1 percent of GDP from the unemployed to families with children exhibited by this group (line G) is -4.12 percent of monthly income, significantly lower than for the general population (4.75 percent, line 6), thus supporting the hypothesis. However, when it comes to the question of whether the social budget should more

strongly benefit the unemployed to the detriment of people with ill health (line H), those who expect to be unemployed are surprisingly against this as well, exhibiting a marginal WTP of -0.88 compared to +2.61 percent of monthly disposable income in the general population (line 13 of Table 8). Thus, Hypothesis 4 cannot be accepted in its entirety.

5.2.3 Extended Model 3: Health Status and Demand for Support of People with Ill Health (Hypothesis 5)

in favor of	to the detriment of	WTP in % of income	WTP in CHF	SE in CHF
(I) WP	ILL	4.41	202.93	65.62
(K) UNEMP	ILL	3.09	142.11	43.57
(L) PENS	ILL	3.57	164.60	42.22
(M) FAM	ILL	6.51	299.79	82.67

Table 11: Marginal WTP values for attributes (in % of monthly disposable average income) derived for the respondents who experience health problems among their relatives

Finally, we consider an extension of the basic model by including the dummy variable $ILLFAM$ for the health status of respondents' family members and themselves. Hypothesis 5 states that WTP for redistribution in favor of people in ill health is expected to be especially high among those who experience health problems, including their close relatives. However, estimation results (see Table 11 with entries I, K, L, M corresponding to entries 10, 13, 12, 7 of Table 8) suggest that family health status does not have an impact on preferences for the composition of the redistribution portfolio. For example, respondents with health problems have a WTP amounting to 4.41 percent of average income for redistributing income in favor of the working poor to the detriment of people with ill health (line I), no different from the 4.76 percent in the general population (line 10 of Table 8). The 'no difference' finding also holds true for the other three ways to distribute income away from the unemployed (lines K, L, M of table 11 compared to lines 13, 12, 7 of Table 8). Therefore, Hypothesis 5 is not confirmed.

6 Conclusion and Discussion

In this paper, we elicited Swiss citizens' willingness to pay (WTP) for the composition of the public redistributive budget through a Discrete Choice experiment performed in 2008. The theoretical background is provided both by the insurance and the imperfect altruism motivation for income redistribution, resulting in five hypotheses.

Hypothesis 1 states that WTP for redistribution in favor of Swiss citizens is highest, followed by immigrants from Western European countries and from the remaining countries. It is partially confirmed in that WTP in favor of the first two groups dominates that in favor of recipients from other parts of the world, but without the predicted difference between Swiss and Western European nationals.

Hypothesis 2 predicts that WTP for redistribution is particularly high if beneficiaries are exposed to major risks that are not insured, namely to have children and to belong to the working poor in the case of Switzerland. Beneficiaries facing a risk that is mitigated by mandatory insurance (illness, unemployment, old age) are predicted to trigger lower WTP for redistribution. Since this ranking is confirmed with one exception, Hypothesis 2 receives a good deal of empirical support.

Hypothesis 3, predicting the demand for redistribution favoring old-age pensioners to be highest among those close to or beyond retirement age, has to be rejected. Hypothesis 4, stating that the demand for unemployment support is especially marked among respondents expecting to be unemployed, can only be confirmed with respect to the trade-off between the unemployed and families with children. Hypothesis 5, stating that WTP for redistribution in favor of people with ill health is particularly high among those who experience health problems including their close relatives, cannot be confirmed due to a lack of statistical significance.

On the whole, the insurance motive as an explanation of the demand for income redistribution receives limited empirical support in this study. This is the more remarkable as the design of this Discrete Choice Experiment permits respondents to express their preferences not only concerning the total amount of redistribution but also with regard

to the allocation of the available funds to competing uses. It is in this second context where the insurance motive should become important in principle because individuals can predict to some extent the allocation that may be in their future interest. The failure to find the predicted effects points to other motives for income redistribution, in particular 'pure' altruism among the aged in favor of younger segments of the population who bear the burden of raising a family while facing the risks of becoming a working poor and a person with ill health. That altruism, at least of the 'imperfect' variety, may be at work is indicated by the fact that there is positive WTP for redistribution in favor of Western European migrants to Switzerland.

In sum, the view of income redistribution as a way of providing insurance against a miserable life at the bottom of the income distribution receives empirical support from this experiment, but only to the extent that WTP values broadly reflect the degree to which recipients are exposed to risks not covered by social insurance. The more specific variant of this insurance view, relating types of beneficiaries (e.g. pensioners) to respondents' current status (e.g. age above 60) has to be rejected.

In addition, the finding that Swiss preferences for redistribution are tilted against migrants from culturally distant countries suggests an important role for imperfect altruism. It would be worthwhile to explore the precise role of this type of altruism in future work. While perfect altruism does not put constraints on how to slice the pie in public redistribution policy, imperfect altruism conditions citizens' support of policy on the perceived cultural distance between financiers and beneficiaries. However, a suggestion for policy that can be drawn from the available evidence is that programs designed to modify the distribution of income need to take the cultural distance between payers and (foreign) beneficiaries into account in order to find the support of a majority of citizens.

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A Appendix

Exhibit 1: Status Quo Card (current state of redistribution)

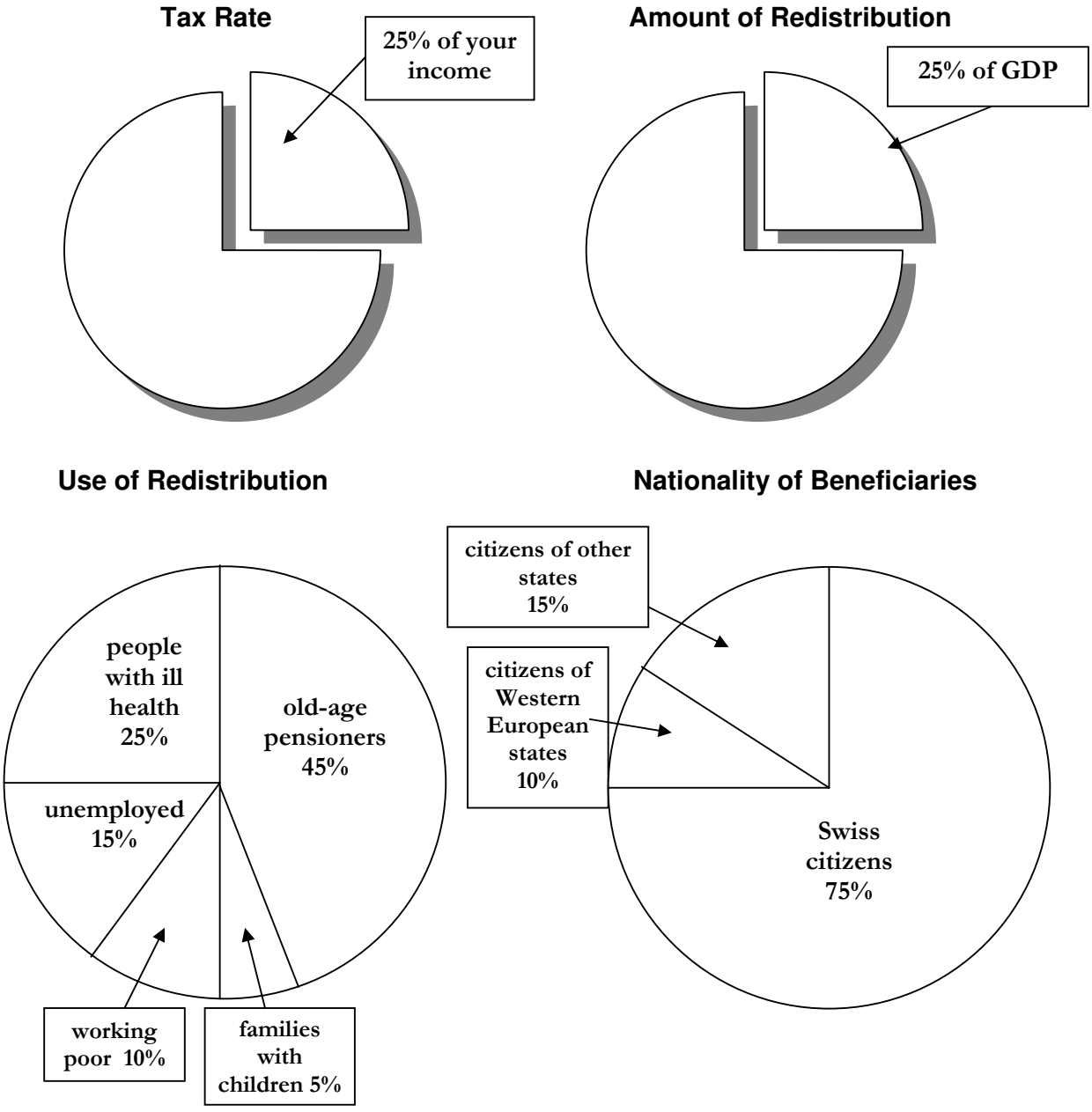

Exhibit 2: Card for Alternative No. 1

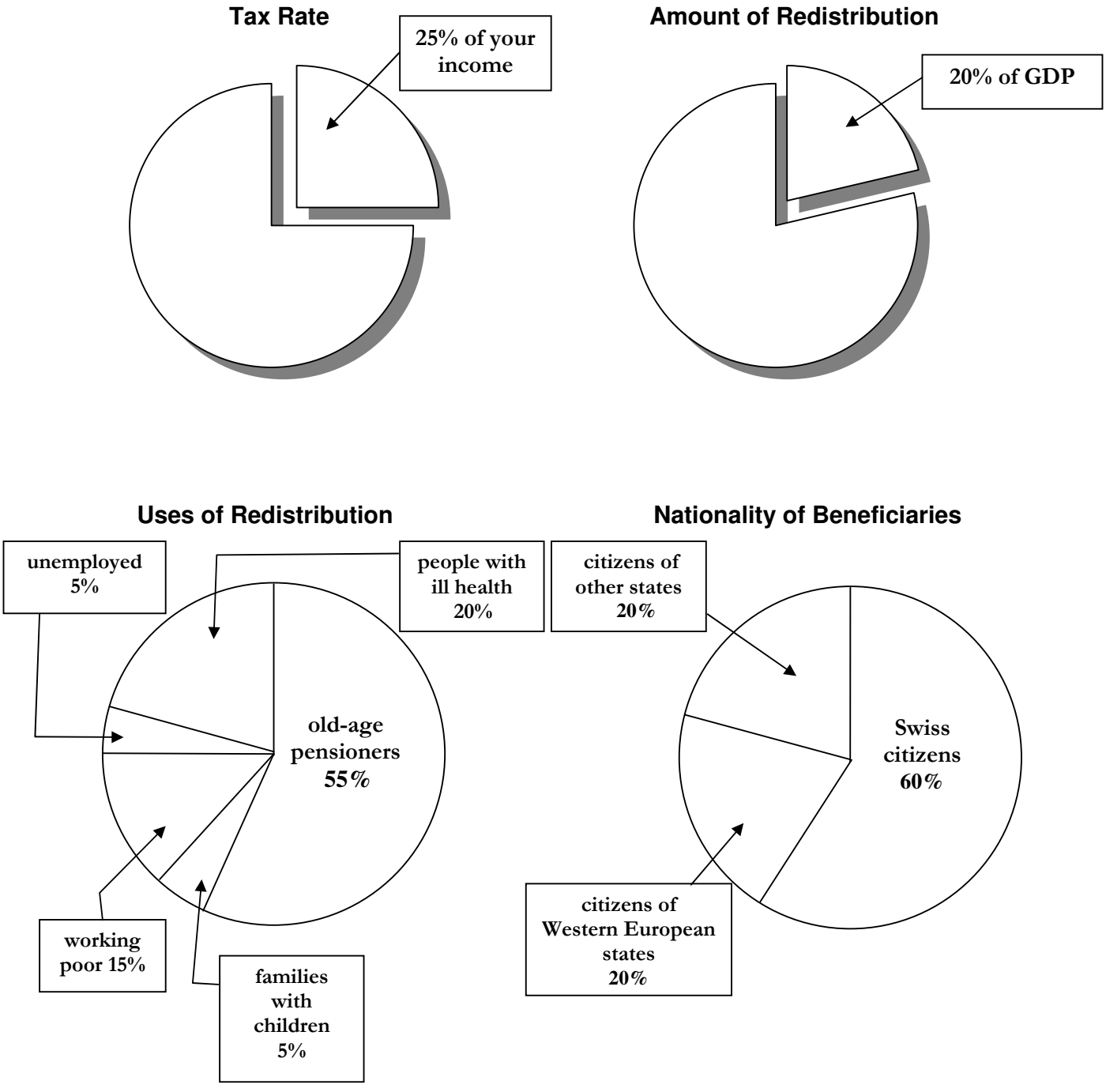

Exhibit 3: Card for Alternative No. 2