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Economic Well-Being, Social Mobility, and Preferences for Income Redistribution: Evidence from a Discrete Choice Experiment

Ilja Neustadt* and Peter Zweifel†

January 4, 2010

Abstract

In this paper, preferences for income redistribution in Switzerland are elicited through a Discrete Choice Experiment (DCE) performed in 2008. In addition to the amount of redistribution as a share of GDP, attributes also included its uses (working poor, the unemployed, old-age pensioners, families with children, people in ill health) and nationality of beneficiary (Swiss, Western European, others). Willingness to pay for redistribution increases with income and education, contradicting the conventional Meltzer-Richard (1981) model. The Prospect of Upward Mobility hypothesis [Hirschman and Rothschild (1973); Benabou and Ok (2001)] receives partial empirical support.

Keywords: Income redistribution, preferences, willingness to pay, discrete choice experiments, stated choice, economic well-being, social mobility

JEL classification: C35, C93, D63, H29

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1 Introduction

Politicians and interest groups often claim to know citizens' preferences with regard to income redistribution. While the typical right-wing stance is to decry it as excessive, the left points to pockets of poverty even in rich societies that need to be eradicated through more redistribution. The economists' contribution to the debate traditionally has been to analyze the effects of redistributive policies on employment, output, and growth. This paper intends to go a step further by measuring citizens' willingness to pay (WTP) for redistribution. Through a Discrete Choice experiment (DCE), it seeks to determine not only the desired amount of redistribution but also to test several hypotheses concerning the determinants of this WTP. The data come from a DCE performed in the fall of 2008 and involving 979 Swiss citizens.

Recently, there has been a great deal of research into the demand for redistribution and its determinants, which will be discussed in detail in Section 2 below. One strand relates the measured amount of redistribution to economic, institutional, and behavioral factors. Examples are Alesina and Giuliano (2009) and Akkoyunlu, Neustadt and Zweifel (2009). However, the observed amount of redistribution is the outcome of an interaction between demand and supply, with supply governed by a country's political institutions and processes. This classical identification problem would have to be addressed in order to make inference about citizens' preferences for redistribution. A second strand of research, exemplified by Alesina and La Ferrara (2005) and Guillaud (2008), relies on surveys designed to measure attitudes towards redistribution. The problem with this approach is its failure to impose a budget constraint. It therefore cannot predict actual decision making (e.g. voting at the polls), where citizens take the consequences in terms of their own income and wealth into account. A third approach seeks to solve this problem through Contingent Valuation (CV) experiments [see e.g. Boeri, Boersch-Supan and Tabellini (2002)]. The weakness of the CV approach is that it holds all the attributes of the good in question constant, varying its price only. In the present context, one would want to vary other attributes of redistribution besides its tax price, viz. its use (for health, old age, etc.) and the type of beneficiary (foreigner, national).

By way of contrast, a DCE allows to measure preferences uncontaminated by supply influences, it imposes the budget constraint through the price attribute, and it does so in a realistic way by making respondents choose between alternatives where all attributes are allowed to vary.

There are two recent contributions whose methodology is similar to the one adopted in this paper. One is by Andreoni and Miller (2002), who test the consistency of altruistic revealed preferences in a dictatorship experiment, varying an implicit price. Their method of inferring preferences through estimating WTP values is close to this paper. The other is by Kuhn (2005), who asked Swiss respondents to estimate wages earned by different professions as well as indicated the wages they deemed fair. The difference between these two values was then used as an indicator of the demand for redistribution. On average, preferences were for the wages of high-earning professions such as lawyers, physicians or federal ministers to be reduced by 10 percent while those of low-income groups, to be increased by some 5 percent. Interestingly, such a redistributive scheme would roughly result in budget balance.

The remainder of this paper is structured as follows. Section 2 contains a literature review from which hypotheses to be tested are derived. Its first part concerns the origin of the potential beneficiaries and the second, income and mobility as determinants of preferences for redistribution. Section 3 presents a general description of the method of DCEs as well as the design of the present experiment. The 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 (2009) and Akkoyunlu et al. (2009) identify a wide set of factors influencing preferences that can be categorized as economic, political, and behavioral determinants. As to the economic determinants, Alesina and La Ferrara (2005) empirically analyze the effects of current and future income on the demand for redistribution in the United States. While low current income bolsters demand, chances for higher future income reduce it when the tax system is expected to become more progressive. Another economic explanation, suggested by the social contract literature, is that a preference for redistribution can at least in part be interpreted as demand for insurance by risk-averse individuals. In a hypothetical situation, where individuals do not yet know their endowment as well as their future position in society ['veil of ignorance', cf. Rawls (1999)], a positive WTP for an income transfer from more favorable future states to less favorable ones. Redistributive policies can thus be interpreted as reflecting this hypothetical demand for insurance.

Beck (1994) investigates individual behavior under the 'veil of ignorance' in an experiment. Placing participants in a hypothetical society with random differences in income, represented by lotteries, he derives the desired amount of income redistribution. Individuals indeed display risk aversion, albeit not of the extreme kind implied by the Rawlsian maximin rule[1]. Furthermore, they show no preference for income redistribution in excess of what can be explained by risk aversion.

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

[1]The Rawlsian maximin rule uses the maximum improvement of the individual with minimum initial wealth as the sole criterion.

with proportional representation have GDP shares of government expenditure that ceteris paribus are 5 percentage points higher than with majority rule. Moreover, Akkoyunlu et al. (2009) show that there is a weak evidence of a positive correlation between the degree of proportional representation and the transfer share in GDP in 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. Switzerland on the one hand has a high degree of proportional representation and a parliamentary democracy; on the other hand, its extensive direct democratic control might serve to limit public welfare spending while enforcing efficiency in redistribution [cf. Feld et al. (2007)].

Among the behavioral determinants of income redistribution, beliefs have been at the center of attention. The theoretical base is laid by Alesina and Angeletos (2005), who develop a model where society's belief whether effort or luck determines economic success gives rise to multiple self-fulfilling equilibria; 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 determinant of the demand for redistribution. She also considers the effects of incentives. If effort determines income, then an increased income tax rate causes a loss in output due to its effect on incentives. This consideration is hypothesized to qualify the link between beliefs and the demand for redistribution. However, the data fail to support this hypothesis.

Boeri et al. (2001) study international attitudes towards redistribution with a focus on pension and unemployment schemes in France, Germany, Italy, and Spain. They also perform CV experiments that impose an explicit trade-off between income and social insurance coverage on respondents. They find that people oppose 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.

2.2 Economic Well-Being and Demand for Income Redistribution

The standard model of income redistribution, originally proposed by Romer (1975) and Roberts (1977) and extended by Meltzer and Richard (1981), assumes that identical non-altruistic utility-maximizing individuals are only differentiated by their income levels and determine their individually optimal consumption and leisure [RRMR model]. The utility function of individual i takes the following quasi-linear form [cf. Persson and Tabellini (2000)],

$$u_i(c_i, l_i) = c_i + v(l_i)$$

where c_i denotes individual consumption, l_i leisure, and $v(\cdot)$ is an increasing and concave function. The government pays a lump-sum transfer T to all citizens, which is financed by a linear uniform income tax τ. Thus, the household budget constraint takes the form

$$c_i + (1-\tau)l_i \quad \leq \quad (1-\tau)(\omega + y_i) + T$$

with ω denoting the household's time endowment and y_i individual productivity[2], distributed in the population according to a distribution function $F(\cdot)$ with $E[y_i] = \mu$ and $\mathrm{Med}[y_i] = m < \mu$. Solving the utility maximization problem yields the following optimal demand for leisure: $\hat{l}_i = v_l^{-1}[1-\tau]$, with v_l denoting i's marginal utility of leisure (subscript i dropped for simplicity). The government's budget constraint reads

$$T \leq \tau \int_{y_i} (\omega + y_i - l_i) dF(y_i).$$

The utility-maximizing tax rate $\hat{\tau}_i$ for individual i is thus implicitly given by

$$\hat{\tau}_i \quad = \quad (y_i - \mu)\, v_{ll}[\hat{l}_i[\hat{\tau}_i]]. \tag{1}$$

By concavity of $v(\cdot)$ ($v_{ll} < 0$), individuals with an income below the mean favor taxation and transfers while individuals with an income above the mean oppose it. In a political

[2] y_i can be alternatively interpreted (i) as personal income before tax or (ii) as level of education.

equilibrium, the majority of voters supports a positive tax rate that corresponds to the value $\hat{\tau}_m = (m - \mu)\, v_{ll}[\hat{l}_i[\hat{\tau}_m]]$ desired by the median voter, whose income is assumed to be below the mean (which holds for most economies). The model's prediction is that the more unequal the income distribution, i.e. the larger the gap between the mean and the median income, the higher the level of taxation and redistribution.

The empirical evidence is quite mixed. On the one hand, Alesina and Rodrik (1994), Persson and Tabellini (1994), and Milanovic (2000) find some supporting evidence. Furthermore, Guillaud (2008), conducting a cross-section analysis of survey data from four EU countries, shows that poorer and less educated individuals are more in favor of redistribution. On the other hand, Alesina and Glaeser (2004), Perotti (1996), and Rodriguez (1999) fail to find supporting evidence for this model.

Based on the RRMR model, we can formulate the static Hypothesis 1 relating the demand for income redistribution to the individual's current economic well-being, measured as personal income, level of education, or self-positioning on a social distance scale, respectively.

Hypothesis 1: *The demand for redistribution is expected to decrease with*

(a) *personal income,*

(b) *educational level,*

(c) *higher self-positioning on a social distance scale.*

2.3 Social Mobility and Demand for Income Redistribution

The idea that attitudes toward public redistribution could be explained by individuals' mobility was originally introduced by de Tocqueville (1835). More recently, Piketty (1995) considers a model of learning from income mobility experience and explains persisting differences in attitudes towards redistribution. In the long run, those who experienced upward mobility believe more in effort and demand less redistribution.

This "Prospect of Upward Mobility" (POUM) hypothesis, originally suggested by Hirschman and Rothschild (1973) as the 'tunnel effect' and more recently reformulated by Benabou and Ok (2001), extends the RRMR model by introducing individuals' expectations, based on their observations regarding the income mobility of others in society. Thus, upward mobility may dampen a poor but forward-looking voter's enthusiasm for income redistribution. The three premises for this result are: (i) future expected income is a concave function of current income, (ii) individuals are not too risk averse, and (iii) commitment to an unchanged fiscal policy.

In a simplified version, the Benabou-Ok model can be illustrated by the following two-period example. Suppose that tomorrow's income y_1 is a concave function of today's income y_0: $y_1 = f(y_0)$ with $f''(y) < 0$ for all $y \in [0, y^{\max}]$. Function $f(\cdot)$ is normalized such that the individual with the mean income μ_0 today earns the same income tomorrow, $\mu_0 = f[\mu_0]$. Then agents with current income below average expect a higher income tomorrow while those above average will expect a decline of income. By concavity of $f(\cdot)$, total income gains of the poor are smaller than total losses of the rich. Thus, tomorrow's average income μ_1 must fall short of today's average μ_0. Therefore, all individuals with current incomes in the interval $(f^{-1}(\mu_1), \mu_0)$ expect their future income to be higher than average μ_1 and thus oppose redistribution in the next period.

Empirical support of the POUM hypothesis is provided by Alesina and La Ferrara (2005) who, using an actual mobility matrix for the United States, show that people who expect high future income oppose redistribution. The 'tunnel effect' also works in the opposite direction, causing forward-looking agents with high incomes but downward mobility expectations to be in favor of redistribution. This prediction is confirmed by Ravallion and Lokshin (2000) using a data set from Russia. Furthermore, Molnár and Kapitány (2006a; 2006b) show that individuals who lack clear expectations about their future income favor redistribution even more than those with negative but clear expectations. Rainer and Siedler (2008) use probabilistic expectations data to show that individuals with a sufficiently large chance of occupational upward mobility exhibit a lower demand for redistribution; conversely, those with a sufficiently large risk of occupational downward mobility opt for more redistribution. Checchi and Filippin (2004), testing the POUM hypothesis by means of a within-subjects experiment, find corroborating evidence under several alternative specifications.

According to Guillaud (2008), however, individuals who subjectively experienced upward mobility over ten years tend to be more (rather than less) supportive of redistributive policies. Moreover, upward intergenerational mobility (measured as the difference in the job prestige compared to the job of the father) leads to a more positive rather than negative attitude towards redistribution. Alesina and Giuliano (2009) review the theoretical literature, providing a framework for incorporating various effects that were previously studied in isolation. They examine the empirical evidence for the United States and briefly across countries, concluding that social mobility (if measured as the change in the occupational prestige) does decrease demand for redistribution once sociodemographic (age, gender, race) and socioeconomic characteristics (income, education) are controlled for.

Based on the POUM hypothesis, we formulate the dynamic Hypothesis 2 relating the demand for redistribution to various mobility measures, viz. difference in education between individuals and their fathers, difference in the occupational prestige between individuals and their fathers (intergenerational mobility), past income mobility, expected income mobility, as well as the experienced change in the self-positioning on a social distance scale (subjective mobility).

HYPOTHESIS 2: *The demand for redistribution is expected to decrease with*

(a) *a higher difference between individuals and their fathers in terms of education,*

(b) *a higher difference between individuals and their fathers in terms of occupational prestige,*

(c) *higher upward income mobility in the past,*

(d) *higher upward income mobility in the future,*

(e) *larger positive change in the self-positioning on a social distance scale.*

3 Discrete Choice Experiments

3.1 Theoretical Foundations

Discrete Choice Experiments (DCEs) provide a tool for measuring 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 their price. By varying the levels of attributes, different product alternatives are generated. A rational individual will always choose the alternative with the highest utility level. From the observed choices, the researcher can infer the utility associated with the attributes. The proposed method, derived from the New Demand Theory of Lancaster (1971), is also known as Conjoint Analysis [Louviere, Hensher and Swait (2000)].

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 willingness to pay (WTP) for this fixed product. Only its price attribute is varied, while in Conjoint Analysis all relevant attributes are varied simultaneously, making it a multi-attribute valuation method [Merino-Castello (2003)]. While a DCE describes the product in less detail than a typical CV study, it allows for analyzing many product varieties by varying the levels of relevant attributes [cf. Louviere et al. (2000), p. 344]. Trade-offs among attributes can be explicitly taken into account and WTP values of attributes estimated separately (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 a DCE [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 simultaneously choose this share and hence the 'size of the pie' and the 'slices of the pie' devoted to different types of recipients and uses (health, old age, etc.). Thus, trade-offs among different attributes of the redistribution plan can be calculated to assess the relative importance of the respective redistributive goals.

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

$$V_{ij} = v_i(a_j, p_j, y_i, s_i, \varepsilon_{ij}). \tag{2}$$

Here, $v_i(\cdot)$ denotes i's indirect utility function, a_j, the amount of attributes associated with alternative j, and p_j, 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 will never observe all the 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,

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

A utility- maximizing individual i will prefer alternative j to alternative l if and only if

$$w_i(a_l, p_l, y_i, s_i) + \varepsilon_{il} \leq w_i(a_j, p_j, y_i, s_i) + \varepsilon_{ij}. \tag{3}$$

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

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

$$= \text{Prob}\left[\varepsilon_{il} - \varepsilon_{ij} \leq w_i(a_j, p_j, y_i, s_i) - w_i(a_l, p_l, y_i, s_i)\right]. \tag{5}$$

Thus, the probability of choosing j amounts to the probability of the systematic utility difference $w_i[j] - w_i[l]$ dominating the 'noise', $\varepsilon_{il} - \varepsilon_{ij}$. By the central limit theorem, 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 (5) can be represented as

$$P_{ij} \quad = \quad \Phi\left(\frac{w_i(a_j, p_j, y_i, s_i) - w_i(a_l, p_l, y_i, s_i)}{\sigma}\right), \tag{6}$$

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

$$w_i(a_j, p_j, y_i, s_i) \quad = \quad c_i + \sum_{k=1}^{K} \beta_k a_k + \varepsilon_{ij}, \tag{7}$$

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

$$\mathrm{MRS}_{m,n} \quad = \quad -\frac{\partial v / \partial a_m}{\partial v / \partial a_n}. \tag{8}$$

In the case of a linear utility function, this can be estimated as 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 the present context, the income tax rate, see e.g. Telser (2002), p. 56][3]:

$$\mathrm{MWTP}(a_m) \quad = \quad \frac{\partial v / \partial a_m}{\partial v / \partial p_j}. \tag{9}$$

[3]By Roy's Identity, $x_{ij} = -\dfrac{\partial v(\cdot)/\partial p_j}{\partial v(\cdot)/\partial y_i}$, 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. If one alternative is chosen, then 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 status quo,

$$\Delta V_{ij} \;=\; c_i + \sum_{k=1}^{K} \beta_k a_k + \beta_p p_j + \varphi_{ij}, \tag{10}$$

where $c_i = c_{il} - c_{ij}$ and $\varphi_{ij} = \varepsilon_{il} - \varepsilon_{ij}$ for each $j \neq l$. This simple model suffices to test Hypothesis 1 (see Section 5.2.1).

For econometric inference, it is important to take into account that the same individual makes several choices. The two-way random-effect specification takes this into account with $\varphi_{ij} = \mu_i + \eta_{ij}$, 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 of an individual are correlated with each other, or, equivalently, the share of the total variance that can be explained by individual-specific error term. The random-effects specification is justified if ρ is high and significant.

The simple model can be extended by including various socioeconomic variables (e.g. income group, level of education, social mobility). These variables need to be interacted with the product attributes as well as with the constant, giving rise to the extended model specification which allows to check for preference heterogeneity and thus to test Hypotheses 1 and 2, cf. Section 5.2. By means of a t test we can investigate whether the differences in marginal WTP values between different socioeconomic groups are statistically significant. The computation of the variance of the marginal WTP values can be performed by the delta method, cf. Hole (2007)[4].

3.2 Experimental Design

In order to elicit the preferences of Swiss citizens for income redistribution, a representative telephone survey with 979 respondents was conducted in the fall of 2008. Prior to the telephone survey, the attributes and their levels used to define 'income redistribution' 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 five types of recipients, viz. the working poor, the unemployed, old-age pensioners, families with children, and ill people);

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

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

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

Clearly, these attributes and their levels combine to form a total number of possible scenarios that cannot be realized in an experiment. The scenarios define the n rows of the observation matrix X, with associated covariance matrix $\Omega = \sigma^2 \left(X'X\right)^{-1}$ of parameters β to be estimated.

So-called D-efficient design calls for the minimization of the geometric mean of the eigenvalues of Ω,

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

[4]The estimate of the variance is given by

$$\begin{aligned}\mathrm{Var}\left[-\frac{\hat\beta_k}{\hat\beta_p}\right] &= \left[\frac{\partial\left(-\hat\beta_k/\hat\beta_p\right)}{\partial\hat\beta_k}\right]^2 \mathrm{Var}[\hat\beta_k] + \left[\frac{\partial\left(-\hat\beta_k/\hat\beta_p\right)}{\partial\hat\beta_p}\right]^2 \mathrm{Var}[\hat\beta_p] - 2\frac{\partial\left(-\hat\beta_k/\hat\beta_p\right)}{\partial\hat\beta_k}\frac{\partial\left(-\hat\beta_k/\hat\beta_p\right)}{\partial\hat\beta_p}\mathrm{Cov}[\hat\beta_k,\hat\beta_p] \\ &= \frac{1}{\hat\beta_p^2}\mathrm{Var}[\hat\beta_k] + \frac{\hat\beta_k^2}{\hat\beta_p^4}\mathrm{Var}[\hat\beta_p] + 2\,\frac{\hat\beta_k}{\hat\beta_p^3}\,\mathrm{Cov}[\hat\beta_k,\hat\beta_p]\end{aligned}$$

Attribute	Label	Status Quo Level	Alternative Levels
Shares of benefits going to			
• Working Poor	W_POOR	10%	5%, 15%
• Unemployed	UNEMP	15%	5%, 25%
• Old-Age Pensioners	PENS	45%	35%, 55%
• Families with Children	FAM	5%	10%
• Ill People	ILL	25%	20%, 30%
Shares of benefits going to			
• Swiss citizens	SWISS	75%	60%, 85%
• Western European foreigners	WEU_FOR	10%	5%, 20%
• Other foreigners	OTH_FOR	15%	10%, 20%
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

where K denotes the number of parameters to estimate [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 8 binary choices per respondent.

In order to make sure that decisions were based on a homogeneous information set and made in a consistent way, respondents were provided with a detailed description of the attributes and their possible realizations. The appendix shows the graphical representation of the status quo and two selected alternatives.

4 Descriptive Statistics

4.1 Socioeconomic Characteristics

The sample consists of 979 respondents, 70 percent of them residing in the German-speaking part and 30 percent in the French-speaking part of Switzerland. Some 94 percent are born in the country, 50 percent are men, 20 percent having a monthly income below CHF 2,000 and 23 percent, above CHF 6,000, reflecting the structure of the Swiss population. However, only 1.5 percent of the respondents are unemployed.

42.6 percent of the respondents agreed with the statement, 'By increasing the income tax rates for rich families and financially supporting poor families, the government should try to reduce the income gap between rich and poor.' while 54.6 percent disagreed. On the other hand, 36 percent of the respondents stated that the current level of social benefits was too low, 9 percent stated that it was too high, and 48.7 percent found it exactly right.

	Current		5 years ago		In 5 years	
Income classes, CHF	No.	% of valid answers	No.	% of valid answers	No.	% of valid answers
< CHF 2000	192	20	236	25	135	14
CHF 2000 - 3999	193	20	189	20	187	20
CHF 4000 - 5999	344	36	300	32	349	37
≥CHF 6000	221	23	223	23	264	28
Total valid answers	950	100	948	100	935	100
Missing	29		31		44	
Sample	979		979		979	

Table 2: Current, past, and future expected individual incomes, per month (in CHF)

The frequency distributions of current, past, and expected future incomes are shown in Table 2. Note that incomes <CHF 2000, CHF 2000-3999, and ≥CHF 6000 approximately correspond to the first, second, and fifth income quintiles whereas the bracket CHF 4000-5999 contains the third and the fourth quintiles. From the individual responses entered in Table 2, transition probabilities between the income quintiles can be estimated (which are not available from official Swiss statistics).

Table 3 shows the frequency distributions of the respondents' own as well as their fathers' educational levels.

Table 4 contains the frequency distribution of the differences between the respondents' and fathers' educational levels, which will be referred to as DIFF_ED, as well as the distribution of answers to the question, 'Is there a difference in occupational prestige in the society between your job and your father's job?', later referred to as (DIFF_PREST). This is an indicator of subjective intergenerational mobility INTERG_MOB_SUBJ).

Table 5 shows the current and future expected self-positioning of respondents on a social distance scale. Using these two variables, one can determine the distribution of the subjectively expected social mobility to occur within a generation.

	Respondents		Fathers	
Educational level	No.	% of valid answers	No.	% of valid answers
Less than high school	654	67	670	69
High school	195	20	185	19
College and more	129	13	111	11
Total valid answers	978	100	966	100
Missing	1		13	
Sample	979		979	

Table 3: Respondents' and fathers' educational levels

	Education		Occupational prestige	
Difference	No.	% of valid answers	No.	% of valid answers
Positive	194	20	331	35
No difference	600	62	361	38
Negative	172	18	138	15
Total valid answers	966	100	944	100
Missing	13		35	
Sample	979		979	

Table 4: Difference in education and occupational prestige between respondents and fathers

4.2 Respondents' Choice Behavior

There is a total of $979 \cdot 8 = 7,832$ decisions, of which almost 20 percent were made in favor of an alternative over the status quo (see Table 6). There are at least three explanations for this low percentage. First, in spite of checking in the pretests, the levels of the attributes

	Current		In 5 years	
Social class	No.	% of valid answers	No.	% of valid answers
Lowest (1) to 3	201	21	138	14
Class 4	405	42	361	38
Class 5	270	28	331	34
6 to highest (9)	98	10	134	14
total valid answers	974	100	964	100
missing	5		15	
sample	979		979	

Table 5: Self-positioning on a social distance scale, current and in 5 years

in the experiment may not have been sufficiently extreme to make respondents switch. Second, some attributes (e.g. benefits going to the unemployed; see Table 8), may not have been sufficiently valued to cause a switch. Finally, there may be errors in decision making because the consistency test revealed 14 percent of choices to be inconsistent. However, there may simply be marked status quo bias in the face of highly complex decision-making situations (see the large negative constant in Table 8). Nonetheless, only 21 percent of respondents never opted for an alternative (see Table 6). Conversely, almost 80 percent departed from the status quo at least once.

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

Table 6: 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 7: Distribution of the numbers of chosen alternatives per respondent

5 Estimation Results

5.1 Simple Model: Product Attributes Only

Estimation of equation (10) includes REDIST^2 to allow for a possible nonlinearity of the indirect utility function. Moreover, it has to take into account that uses and types of beneficiaries add up to 100 percent (see Table 1). In order to avoid perfect collinearity, PENS (Pensioners) and OTH_FOR (Other foreigners) were dropped to obtain

$$\begin{aligned} \Delta V \quad = \quad & c_0 + \beta_1 \mathrm{W\_POOR} + \beta_2 \mathrm{UNEMP} + \beta_3 \mathrm{ILL} + \beta_4 \mathrm{FAM} + \\ & + \gamma_1 \mathrm{SWISS} + \gamma_2 \mathrm{WEU\_FOR} + \\ & + \delta_1 \mathrm{REDIST} + \delta_2 \mathrm{REDIST}^2 + \eta \mathrm{TAX} + \varphi \end{aligned} \tag{11}$$

Estimation of a few of the $5 \cdot 3 = 15$ specifications with alternative exclusions produced results similar to those displayed in Table 8. Specifically, they agree in that additional redistribution causes respondents to opt for the alternative with a lower probability, which is even more true of an increase in the income tax to finance it [for the influence of its

Variable	Coeff.	Std. err.	z	$P > \|z\|$	Marg. eff.
Recipients' Social Group					
W_POOR	0.02784	0.00714	3.90	0.000	0.00697
UNEMP	0.01134	0.00452	2.51	0.012	0.00284
ILL	0.01600	0.00463	3.46	0.001	0.00400
FAM	0.06378	0.00942	6.77	0.000	0.01596
Recipient's Nationality					
SWISS	0.03656	0.00552	6.63	0.000	0.00915
WEU_FOR	0.02925	0.00869	3.37	0.001	0.00732
REDIST	-0.00523	0.00176	-2.97	0.003	-0.00131
REDIST^2	-0.06619	0.01174	-5.64	0.000	-0.01656
TAX	-0.02053	0.00183	-11.21	0.000	-0.00514
CONSTANT	-1.29878	0.06132	-21.18	0.000	n.a.

# observations	7,650
Log likelihood	-3,566.76
$\chi^2(0)$	108.87
Prob > χ^2	0.000
σ_u	0.41610
ρ	0.14759

Table 8: Random effects probit estimates for the simple model

composition, see Neustadt and Zweifel (2009)]. Moreover, the negative constant points to a strong status quo bias. By eq. (9), the marginal willingness to pay (MWTP) for redistribution is given by

$$\text{MWTP}_{\text{REDIST}} = \frac{\partial \Delta V / \partial \text{REDIST}}{\partial \Delta V / \partial \text{TAX}} = -\frac{\delta_1 + 2\delta_2 \text{REDIST}}{\eta} \tag{12}$$

Thus, one obtains an estimated MWTP value of -0.25 percentage points of income share per additional percentage point of GDP devoted to redistribution, in excess of the status quo. Evaluated at the mean personal income of the sample, this amounts to CHF -11.78 per month. However, this figure is dwarfed by the compensation one would have to pay respondents to depart from the status quo, amounting to an estimated 63 percent of their monthly income, or 5.27 percent of their annual income.

5.2 Extended Model: Preference Heterogeneity

5.2.1 Economic Well-Being and Preferences for Redistribution

Here, the simple model is extended by including one of the socioeconomic variables at a time (personal income, education, self-positioning on a social distance scale) as well as its interactions with the attributes. Thus, in the case of income, e.g., eq. (12) is modified to read[5],

$$\Delta V = c_0 + \cdots + c_0'\text{INC} + \cdots + \beta_1\text{REDIST} + \cdots + \beta_1'\text{REDIST} \cdot \text{INC} + \ldots$$

Variable	MWTP, % of income	MWTP, CHF	Std. err., CHF	
Income group 1 (low)	-1.14215	-11.42	6.08	***
Income group 2	-0.64081	-19.22	9.37	***
Income group 3	-0.43293	-21.65	9.83	***
Income group 4 (high)	0.02117	1.81	13.47	
No high school	-0.62526	-25.13	7.12	**
High school, no college	-0.08911	-4.58	7.70	**
College	0.01501	1.04	14.71	
Social group 1 (low)	-0.40762	-14.72	8.49	***
Social group 2	-0.65405	-28.45	8.81	***
Social group 3	-0.30303	-15.06	12.36	*
Social group 4 (high)	0.25550	17.61	11.01	*

Note: *** (**,*) denotes statistical significance at the 1 (5, 10) percent level.

Table 9: Marginal WTP values for redistribution (in percent of monthly personal income and CHF) derived from the extended model with measures of economic well-being

Hypothesis 1 states that the demand for redistribution is expected to decrease with higher values of (a) income, (b) education, and (c) social status. Hypothesis 1(a), with its focus on personal income, cannot be confirmed (see Table 9). In fact, MWTP for

[5]The full specification is available from authors on request. The relevant results are shown in Table 9.

redistribution as a percentage of income is most strongly negative in the lowest income group and consistently increases up to the second-highest. In terms of CHF amounts, negative MWTP values reach a maximum among the middle groups No. 2 and 3. However, the differences in MWTP values between Income Groups 1 and 2 ($t = 0.65$) as well as between Income Groups 2 and 3 ($t = 0.75$) are not significant. Still, differences in MWTP values within all other pairs of groups are shown to be significant at the 95 percent level (with the exception of the difference between Income Groups 1 and 3 being significant at the 90 percent level).

Similarly, Hypothesis 1(b) finds no empirical support, with MWTP values increasing rather than decreasing with higher levels of education. The evidence is mixed concerning Hypothesis 1(c) since resistance against redistribution seems to increase from the lowest to group No. 2 of the social self-positioning scale. However, the difference between Groups 1 and 2 is only weakly significant ($t = -1.20$).

5.2.2 Social Mobility and Preferences for Redistribution

This time, the simple model is extended to include (besides the control variables respondent's education, father's education, personal income, self-positioning on a social distance scale) one of the following mobility measures: (a) intergenerational mobility in education (DIFF_ED), (b) intergenerational mobility in occupational prestige, (c) income mobility in the past, (d) expected income mobility in the future, or (e) the change in the self-positioning on a social distance scale. Therefore, in the case of the intergenerational mobility in education, eq. (12) is modified to become

$$\Delta V = c_0 + \dots + c_0' \text{DIFF\_ED} + \dots + \beta_1 \text{REDIST} + \dots + \beta_1' \text{REDIST} \cdot \text{DIFF\_ED} + \dots$$

Hypothesis 2 states that the demand for redistribution is expected to decrease with upward income or social mobility. In its version 2(a), it is rejected because negative MWTP is maximum among participants whose educational level is lower than their fathers', with the differences with the other two groups being highly significant (see Table 10). Hypothesis 2(b), with its focus on mobility in occupational prestige, finds partial support in that

Variable	MWTP, % of income	MWTP, CHF	Std. err., CHF	Test
Downward mobility in education	-1.57572	-6.26	3.50	2a:
No mobility in education	-0.23996	-1.06	0.53	R
Upward mobility in education	-0.32110	-1.84	1.11	
Downward mobility in prestige	0.39446	1.62	1.00	2b:
No mobility in prestige	-0.38294	-1.84	1.12	(C)
Upward mobility in prestige	-0.09002	-0.51	1.22	
Downward past income mobility	-0.13457	-0.60	1.29	2c:
No past income mobility	-0.58353	-2.49	0.69	(C)
Upward past income mobility	-0.08165	-0.49	1.38	
Downward expected income mobility	0.10437	0.83	1.79	2d:
No expected income mobility	-0.55952	-2.60	0.73	(C)
Upward expected income mobility	-0.20783	-0.76	0.83	
Downward social mobility	-0.18929	-0.84	0.68	2e:
No social mobility	-0.54176	-2.52	0.75	(C)
Upward social mobility	0.14992	0.77	1.76	

Note: (C)=partially confirmed, R=rejected

Table 10: Marginal WTP values for redistribution (in percent of monthly personal income and CHF) derived from the extended model with mobility measures

the MWTP of respondents with downward mobility is positive, and, the others, negative. Similarly, Hypothesis 2(c) can be accepted only to the extent that citizens with downward income mobility in the past exhibit the least resistance against redistribution. As to Hypothesis 2(d), there are weak signs suggesting that citizens with downward expected income mobility in the future might have a positive MWTP, in contrast to those with no mobility expectations. But statistical significance of two of three MWTP values is lacking to begin with, amounting to partial confirmation of Hypothesis 2(d) only. Finally, Hypothesis 2(e) is merely confirmed to the extent that individuals with downward social mobility exhibit a higher MWTP than those with no social mobility, with the corresponding t value suggesting statistical significance of the difference in MWTP values.

The one consistent pattern seems to be the following. In four out of five cases (except mobility in education), citizens with no past or future expected mobility display the highest negative MWTP values both in terms of a share in their income and in absolute amount. This seems to point to risk aversion in the face of the 'veil of ignorance' [Beck (1994)]; however, this argument has been traditionally used to predict positive rather than the observed negative MWTP for income redistribution. On the other hand, risk aversion constitutes one of the main explanations of status quo bias (see Section 5.1). Therefore, this DCE seems to suggest that Swiss citizens, while markedly risk averse, do not believe income redistribution organized by the government to be an effective means of protection against the risk impinging on their economic and social status, with the one exception of education (which is predominantly public in Switzerland). Such an attitude could be justifiably called realistic for citizens of a small country whose economic fortune has depended on developments abroad for decades if not centuries.

6 Conclusion and Discussion

In this paper, we elicited citizens' willingness to pay for redistribution through a Discrete Choice experiment performed in 2008. Based on the simple model that relates choices to the attributes of redistribution only, the average Swiss citizen must be paid a compensation of CHF 11.78 (some US$ 9.40) per month (0.02 percent of annual 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 annual income.

However, such an experiment also permits to test several hypotheses concerning the determinants of the demand for redistribution without any confounding supply-side influences. By including one of three measures of current economic well-being at a time, the extended model allows us to test static Hypothesis 1, stating that demand for redistribution decreases with income. However, it is found to increase with level of education and (in part) with personal income as well as higher self-positioning on a social scale.

With the inclusion of five measures of social mobility, dynamic Hypothesis 2 (POUM) could be tested as well. Except for mobility in education, citizens with no mobility at all display the highest resistance against redistribution, contrary to POUM but underscoring the importance of status quo bias.

The analysis presented in this paper is subject to several limitations. First, only purely economic explanations of demand for redistribution (income, social mobility) were tested. However, recent contributions to the field show that up to 90 percent of cross-country differences in public spending can be related to institutional and behavioral factors [see e.g. Alesina and Glaeser (2004), Akkoyunlu et al. (2009)]. Thus, future work should be devoted to an analysis of behavioral determinants of stated willingness to pay for redistribution. Second, the status quo bias found in this paper calls for more detailed analysis. To the extent that it reflects risk aversion, it should induce demand for redistribution - contrary to the results presented here. Finally, the evidence only relates to a point of time and thus may be subject to transitory shocks. Still, by appealing to citizens' stated preferences, the present contribution sheds some light on the debate between those who claim that there is excess redistribution and those who claim there is too little.

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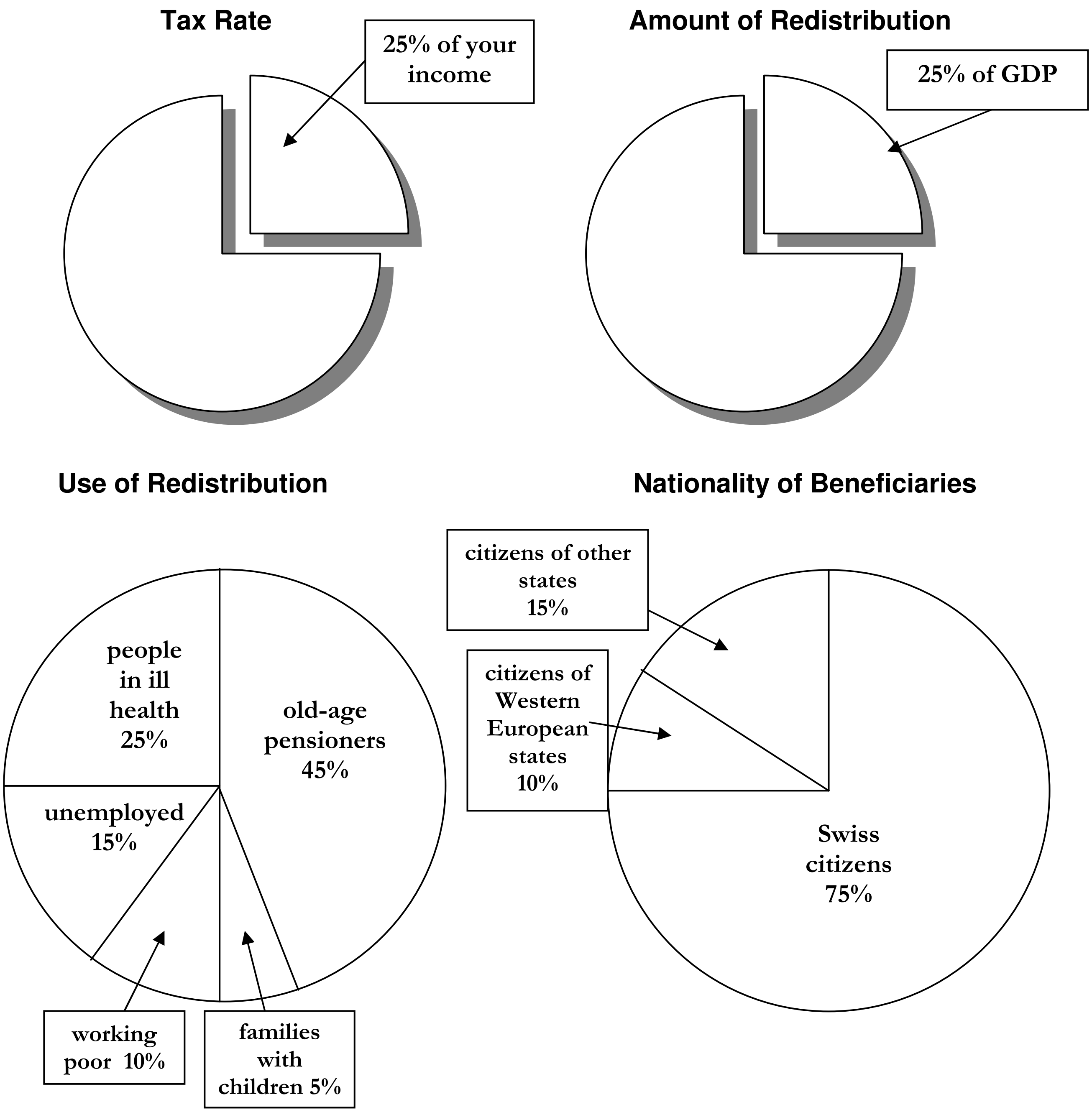
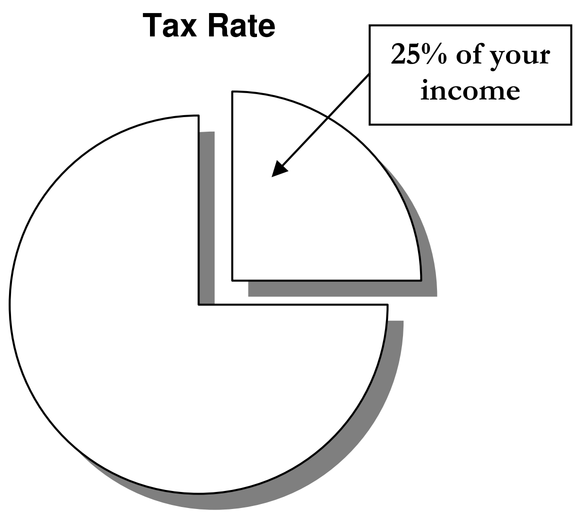
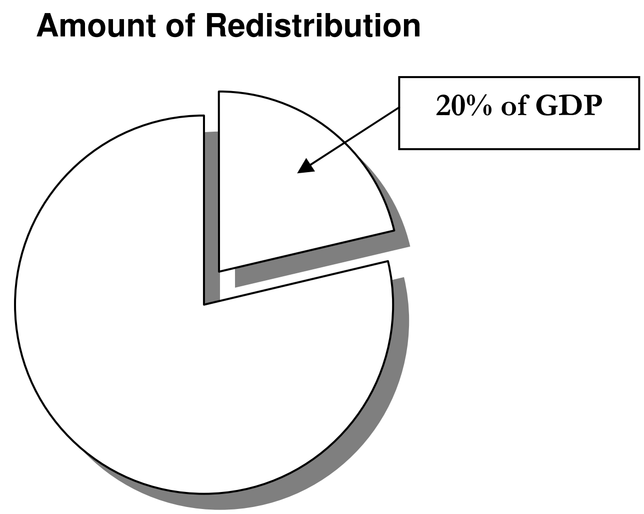
Status Quo

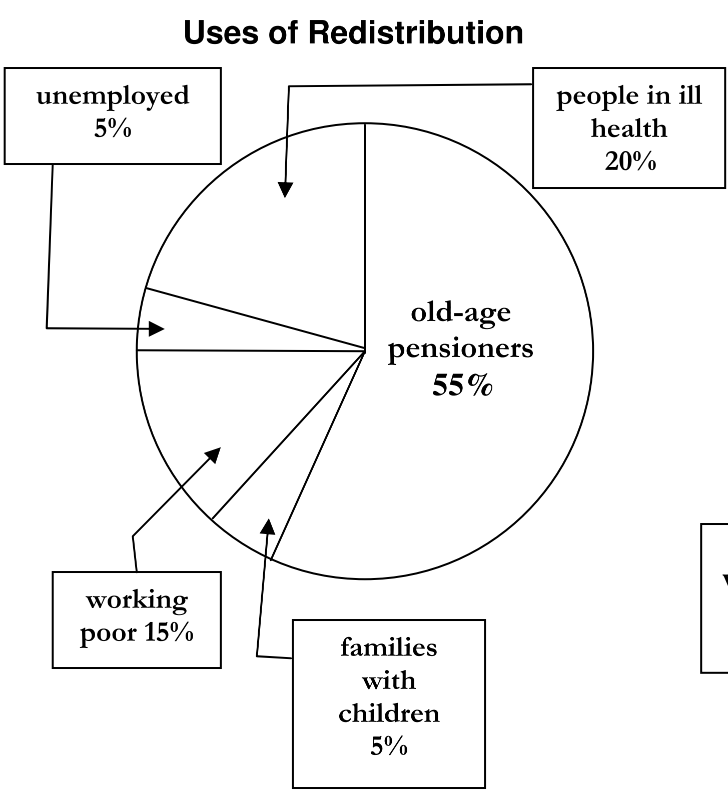
(current state of redistribution)

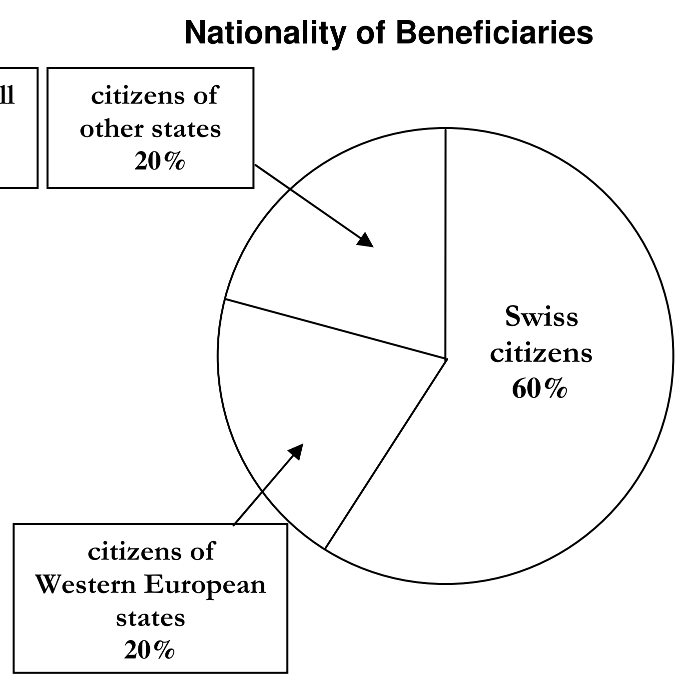


Alternative 1









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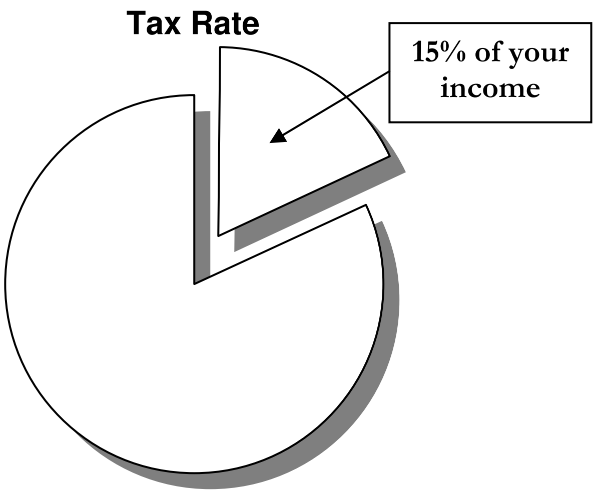

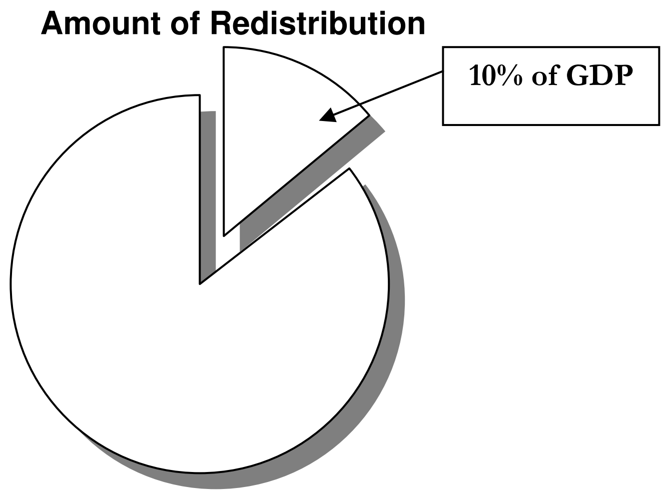

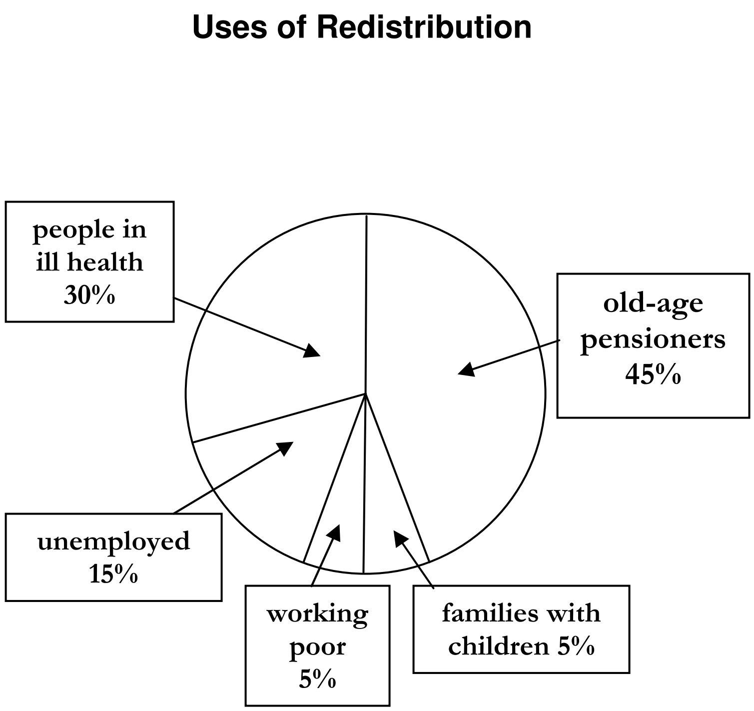

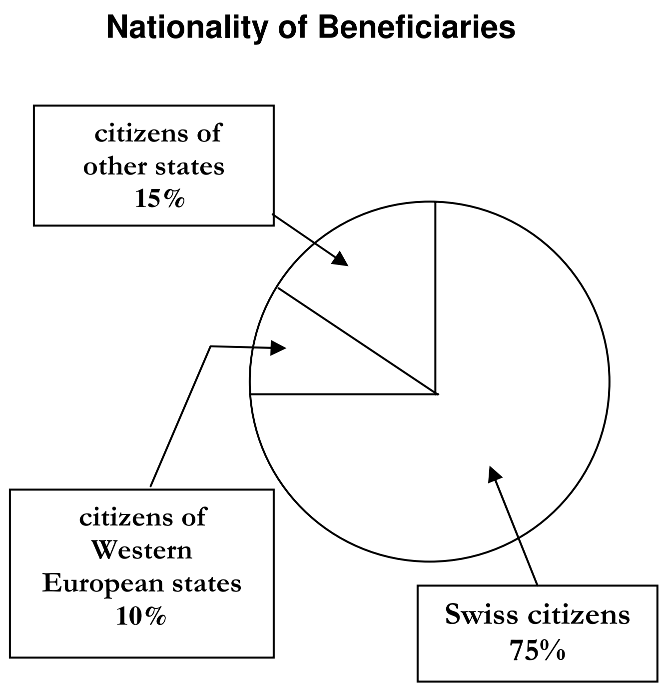

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